

Third VIRP Progress Report



**Former Duluth Dry
Cleaner Site**
3146 Main Street
Duluth, GA
HSI # 10892



Prepared for:
City of Duluth

3167 Main Street
Duluth, GA 30096



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PG Certification

"I certify under penalty of law that this report and all attachments were prepared by me or under my direct supervision in accordance with the Voluntary Remediation Program Act (O.C.G.A. Section 12- 8-101, et seq.). I am a professional engineer/professional geologist who is registered with the Georgia State Board of Registration for Professional Engineers and Land Surveyors/Georgia State Board of Registration for Professional Geologists and I have the necessary experience and am in charge of the investigation and remediation of this release of regulated substances.

The information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."



Katie T. Ross, P.G.
Project Manager

October 31, 2017



Registration No. 1776
State of Georgia

October 2017

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1.0 Introduction

Wenck Associates, Inc. (Wenck) was authorized by the City of Duluth to implement the Voluntary Investigation and Remediation Plan (VIRP), which was submitted in January 2016 and approved by the Georgia Environmental Protection Division (EPD) in a letter dated March 4, 2016. The site is currently owned by the City of Duluth. The site consists of one parcel located at the intersection of Main Street and Knox Drive in Duluth, Georgia (the Site). The location and topography features of the Site are presented on **Figure 1**. A Site Detail Map is presented as **Figure 2**.

This Third VIRP Progress Report provides a summary of the activities conducted at the Site from March 2017 through September 2017.

1.1 SUMMARY OF SITE ACTIVITIES

The following scope of services was performed by Wenck between March 2017 and September 2017:

- ▲ Installed one shallow monitoring well (MW-12) due west of the Site in the City Hall parking lot to evaluate groundwater conditions and groundwater flow;
- ▲ Surveyed monitoring well MW-12;
- ▲ Oversight of public and private utility locate and property boundary survey;
- ▲ Performed site-wide groundwater sampling for volatile organic compounds (VOCs) from all wells; as well as geochemical parameters from select wells (MW-1, MW-5, and MW-6) in September 2017; and
- ▲ Prepared this report.

2.0 Site Background

2.1 HISTORICAL ACTIVITIES

A dry cleaning business operated at the Site from 1975 to 1993. The dry cleaner closed in 1993 and the existing building was used to operate a woodworking shop from 1993 to 1998. As a result of the historic operation of a dry cleaner at the Site, a release of chlorinated VOCs from dry cleaning solvents, namely tetrachloroethene (PCE) and its daughter products, have impacted soil and groundwater. The VOCs have impacted onsite soil and groundwater and are migrating downgradient of the Site to the west northwest.

In 1998, the building was demolished and converted into a parking lot. In 2000, the City of Duluth purchased the Site. The Site was sold to EJT Downtown, LLC in 2007. The original discovery of the release occurred in 2008 during a Phase II Environmental Site Assessment (ESA) performed by Ahlberg Engineering, Inc., (AEI). Results of the Phase II indicated the presence of PCE and other compounds in soil and groundwater onsite in the vicinity of the former dry cleaning building.

The EPD determined that a release exceeding a reportable quantity had occurred at the Site based upon information provided in the April 4, 2008 release notification. The City of Duluth reacquired the property in 2014 and is now the current owner of the Site. Following the listing on the HSI, limited sub-surface investigations were conducted in 2010 by the US Army Corps of Engineers (USACE) and in 2015 by Wenck. These activities, along with the 2008 Phase II, are summarized in the January 2016 VIRP, which was approved by the EPD in March 2016.

2.2 SITE GEOLOGY AND HYDROGEOLOGY

According to the 2010 Brownfields Assessment, the uppermost hydrologic unit in the area of the Site is an unconfined surficial aquifer which is comprised of a saprolite-bedrock aquifer. The saprolite-bedrock aquifer is recharged by rainfall and discharges into streams in valley bottoms. The saprolite stores and transmits water in the pore spaces between the soils (clays, silts, and sands) that comprise the saprolite. The saprolite has a much higher storage capacity but lower transmissivity than the underlying bedrock. The bedrock stores and transmits water through secondary porosity features (fractures, joints, and faults). The bedrock can be capable of transmitting very large volumes of water; the transmissivity depends on the density and orientation of the secondary porosity features. Based on groundwater elevations measured intermittently since October 2015, shallow groundwater flows to the northwest.

3.0 Investigation Activities

During the reporting period, one permanent monitoring well (MW-12) was installed on property owned by the City of Duluth.

Groundwater sampling activities were performed in general accordance with the U.S. Environmental Protection Agency (EPA) Region 4 Science and Ecosystem Support Division (SESD) Quality System and Technical Procedures for groundwater sampling (SESDPROC-301-R3) sampling. Methods and procedures are described below.

3.1 GROUNDWATER

3.1.1 Monitoring Well Installation

Monitoring well MW-12 was installed on June 19, 2017 to further evaluate groundwater conditions and groundwater flow evaluation (**Figure 2**). The monitoring well was constructed as a threaded, two-inch diameter PVC well with 10 feet of screen installed from 35 to 45 feet below ground surface (bgs). The well was developed by purging at least five well volumes from the well. The well installation log is presented in **Appendix A**.

3.1.2 Groundwater Sampling

Groundwater sampling was conducted on September 18 and September 19, 2017. Groundwater samples were collected from ten (10) monitoring wells (MW-1 through MW-8, MW-11, and MW-12). Off-site wells MW-9 and MW-10 were installed as part of a real estate transaction and were abandoned in 2017 during re-development of the property.

Groundwater was purged via a bladder pump using low-flow techniques. The following field parameters were measured using direct reading instruments: dissolved oxygen (DO), pH, conductivity, water temperature, and oxidation-reduction potential (ORP). Turbidity was not measured during the sampling event due to an inoperable turbidity meter. Turbidity measurements will be collected during the next groundwater sampling event. In general, the water sampled was clear and appeared to have low turbidity prior to sampling. The tabulated results of these field measurements are presented in **Table 2**. Groundwater parameters during purging were considered stable when at least three (3) sets of readings were within the following ranges:

- ▲ pH (± 0.1 SU);
- ▲ SC ($\pm 10\%$);
- ▲ Temperature ($\pm 1^{\circ}\text{C}$);
- ▲ DO ($\pm 0.2\text{mg/L}$ or 10%, whichever was greater); and
- ▲ ORP (± 10 mV).

Field logs of the sampling activities are provided in **Appendix B**.

The samples were collected in laboratory supplied bottles, placed in a cooler with ice, and submitted under chain-of-custody control to Pace Analytical Services, LLC (Pace) for

laboratory analysis. Laboratory reports and chain-of-custody documentation are included in **Appendix C**.

3.2 SURVEYING

The newly installed well (MW-12) was surveyed on August 21, 2017 by Precision Planning, Inc., a Georgia licensed surveyor. The survey established the horizontal and vertical coordinates relative to North American horizontal (1983) and vertical (1988) datum.

3.3 DECONTAMINATION AND DISPOSAL ACTIVITIES

Investigation-derived waste (IDW), including soil cuttings, development and purge water, was drummed for off-site disposal. In total, two drums of soil cuttings and one drum of decontamination/development & purge water for the installation of MW-12 were disposed off-site by EQ Industrial Services on August 23, 2017. One drum of decontamination/purge water for the September sampling event was disposed off-site by EQ Industrial Services on September 26, 2017. IDW waste manifests documenting disposal are presented in **Appendix D**.

4.0 Findings

4.1 GROUNDWATER FLOW CHARACTERISTICS

Depth to groundwater at wells MW-1 through MW-8, MW-11, and MW-12 was measured using a water level indicator. All measurements were recorded to the nearest 0.01 foot. Groundwater elevations were calculated using top of casing elevations presented in the VIRP and in this report. A summary of the depth to water and groundwater elevations is provided in **Table 1**.

Based on the current data, groundwater appears to be flowing to the northwest with an average hydraulic gradient of 0.017 feet/foot (**Figure 3**).

4.2 ANALYTICAL RESULTS

Site-wide groundwater sampling was performed to evaluate conditions at the Site. The groundwater sample results are summarized in **Table 3**. Laboratory reports and supporting chain-of-custody documentation are included in **Appendix C**.

4.2.1 Site-Wide Groundwater Results

Groundwater sampling in September 2017 included collection of samples from ten (10) monitoring wells (MW-1 through MW-8, MW-11, and MW-12). Groundwater samples were analyzed to determine concentrations of VOCs (EPA Method 8260B). Additionally, MW-1, MW-5 and MW-6 were analyzed for the following natural attenuation parameters:

- Sulfide
- Chloride;
- Nitrate (as N);
- Sulfate;
- Total Organic Carbon (TOC);
- Alkalinity as CaCO³;
- Methane;
- Ethane; and
- Ethene.

4.2.1.1 Volatile Organic Compounds

Detectable concentrations of VOCs were present in 6 of the 10 wells sampled (MW-1 through MW-6). Concentrations of VOCs were less than laboratory detection limits at MW-7, MW-8, MW-11, and MW-12. As shown on **Table 3**, three (3) constituents were detected above the delineation criteria, including: PCE, TCE and cis-1,2-dichloroethene (cis-1,2-DCE). Results are as follows:

- PCE exceeded the Type 1 risk reduction standard (RRS) at wells MW-1 through MW-5 with a maximum concentration of 6.900 ug/L.
- TCE exceeded the Type 1 RRS at two wells, MW-1 (110 ug/L) and MW-2 (15 ug/L).
- Cis-1,2-DCE exceeded the Type 1 RRS at one well, MW-1 (620 ug/L).

From the previous reporting period, the concentration detected in MW-6 is no longer above the Type 1 RRS. PCE was detected at the highest concentration at MW-1 at 6,900 ug/L and MW-2 at 1,000 ug/L. Trichloroethene (TCE) was detected in monitoring wells MW-1, MW-2, and MW-3. Concentrations of TCE at wells MW-1 and MW-2 were above the Type 1 RRS of 5 ug/L. Concentrations of PCE, TCE, and associated degradation product (cis-1,2-DCE were highest at MW-1. Concentrations of other breakdown products, such as trans-1,2-dichloroethene and vinyl chloride were less than laboratory detection limits at all the wells sampled.

Cis-1,2-DCE was detected in well MW-1 at a concentration of 620 ug/L, which is above the Type 1 RRS of 70 ug/L. The detected concentrations of VOCs in the remaining samples were less than applicable RRS. In addition, VOCs were not detected in newly installed delineation well MW-12.

The detected concentrations were generally consistent with previous observations at wells MW-4, MW-5, and MW-6. PCE concentrations at wells MW-1 and MW-3 during this event (6,900 ug/L and 680 ug/L) were less than the previous sampling event (13,000 ug/L and 2,400 ug/L), respectively. Conversely, PCE concentrations at well MW-2 during this event (1,000 ug/L) were higher than the previous sampling event (660 ug/L). There is a landscaped slope between MW-1 and MW-2 that is the only unpaved portion of the site. The sampling event was shortly after Hurricane Irma affected the greater Atlanta area and it is believed that recharge in this portion of the site may cause groundwater mounding and temporary flow toward the south from the landscaped slope during periods of high infiltration.

4.2.1.2 Natural Attenuation Parameters

Natural attenuation parameters were measured in upgradient, source area and downgradient portions of the groundwater plume (MW-1, MW-5 and MW-6). These included sulfide, chloride, nitrate as N, sulfate, TOC, alkalinity, and dissolved gases (methane, ethane and ethene).

In general, the natural attenuation parameters monitored during the current reporting period do indicate that limited reductive dichlorination of PCE is occurring. This is supported by the presence of PCE breakdown products including TCE, and cis-1,2-DCE. Additionally, TOC was slightly increased in MW-1. The nitrate concentration was also highest at MW-1. Chloride concentrations were highest at MW-5 (18 mg/L) and were more than two times the upgradient concentration at MW-6 (7.9 mg/L), which demonstrates that dechlorination is occurring in the source area.

4.3 EXTENT OF IMPACTS

A summary of constituents detected in groundwater at the Site in 2015 is provided in **Table 3**. **Figure 5** presents a cross section location map. The extent of VOCs and their concentrations above delineation criteria in September 2017 is presented on the cross sections presented as **Figures 6 and 7**. September 2017 groundwater conditions for the constituents above the EPD-approved Type 1 RRS are provided on **Figure 4**.

Based on the analytical results, PCE and associated breakdown products are delineated in shallow groundwater to the north by wells MW-7, MW-8 and MW-12 and to the west by MW-11 and the east by MW-6. An additional monitoring well will be installed at the southern

property boundary to complete delineation to the south during the next reporting period. The vertical extent of the groundwater plume is currently unknown and will be determined in the next reporting period.

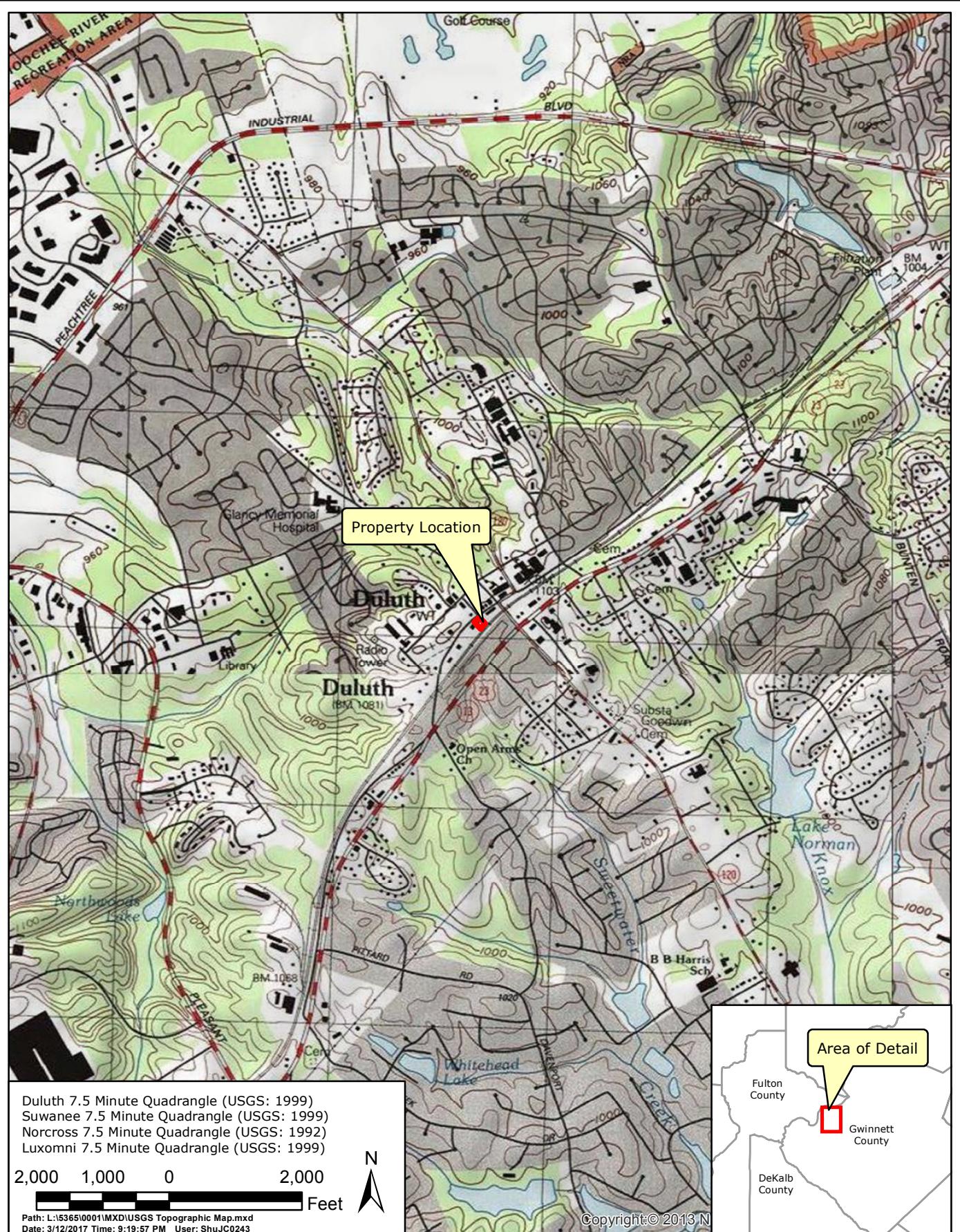
5.0 Recommendations and Schedule

Based on the most recent groundwater results, installation of one bedrock well clustered with MW-3 is recommended to determine the vertical extent of contamination. Additionally, at the request of EPD, an additional shallow well will be installed at the property boundary south of MW-2. Activities planned for the next six-month reporting period (October 2017 through March 2017) include the following:

- ▲ Install one shallow monitoring well (MW-13) south of MW-2;
- ▲ Install one bedrock well (MW-14) clustered with MW-3 to determine the vertical extent of contamination;
- ▲ Perform site-wide groundwater sampling for VOCs and geochemical parameters (MW-1, MW-5 and MW-6) in March 2017;
- ▲ Survey the new monitoring wells (MW-13 & MW-14); and
- ▲ Prepare the Fourth VIRP Progress Report.

The Fourth VIRP Progress Report will be submitted by April 28, 2018.

Figures



CITY OF DULUTH - FORMER DRYCLEANER

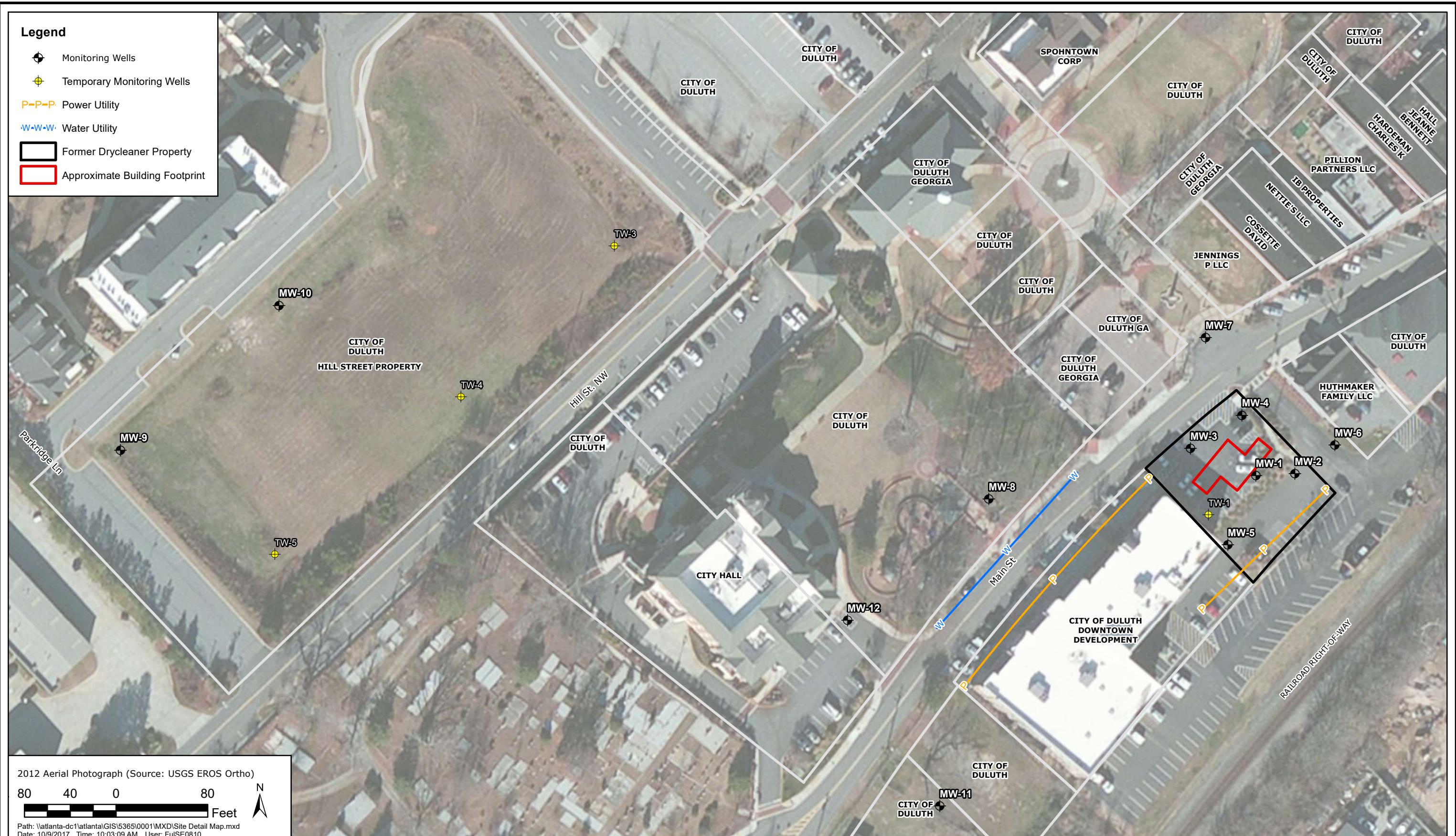
USGS Topographic Map



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Figure 1



CITY OF DULUTH - FORMER DRYCLEANER

Site Detail Map



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Figure 2



CITY OF DULUTH - FORMER DRYCLEANER

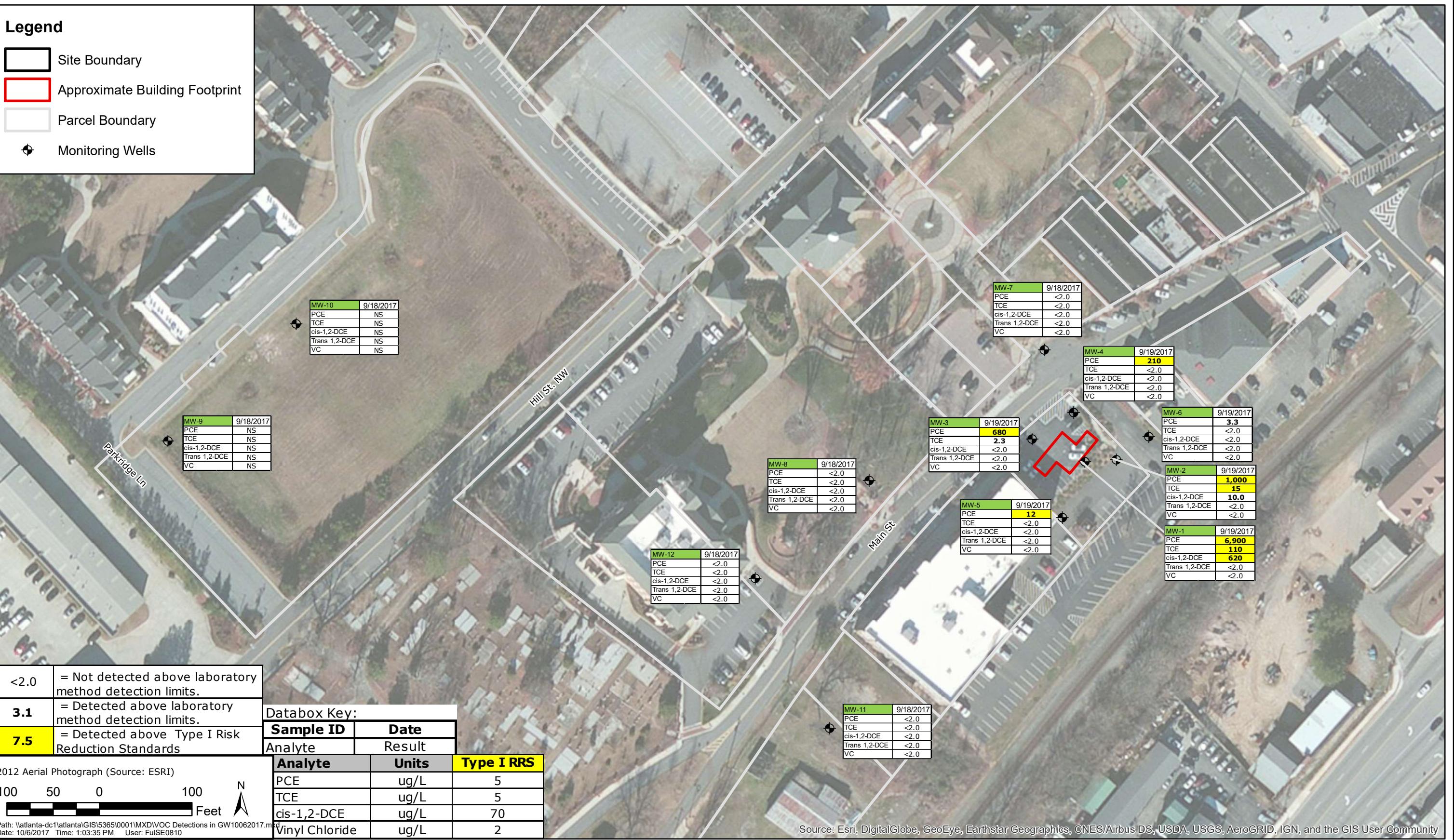
Potentiometric Map - September 2017



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Figure 3



CITY OF DULUTH - FORMER DRYCLEANER

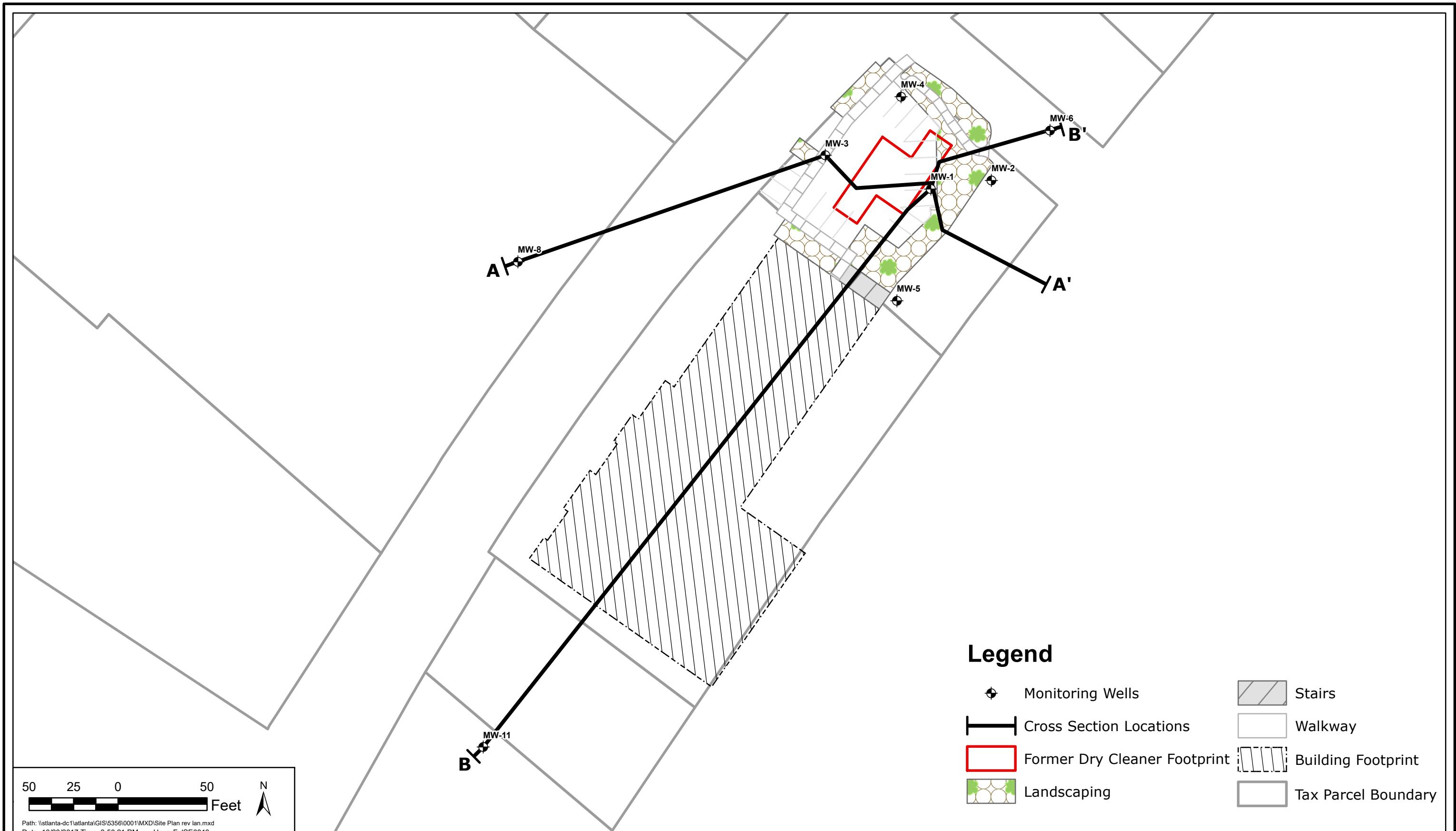
VOC Detections in Groundwater - September 2017



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Figure 4



CITY OF DULUTH

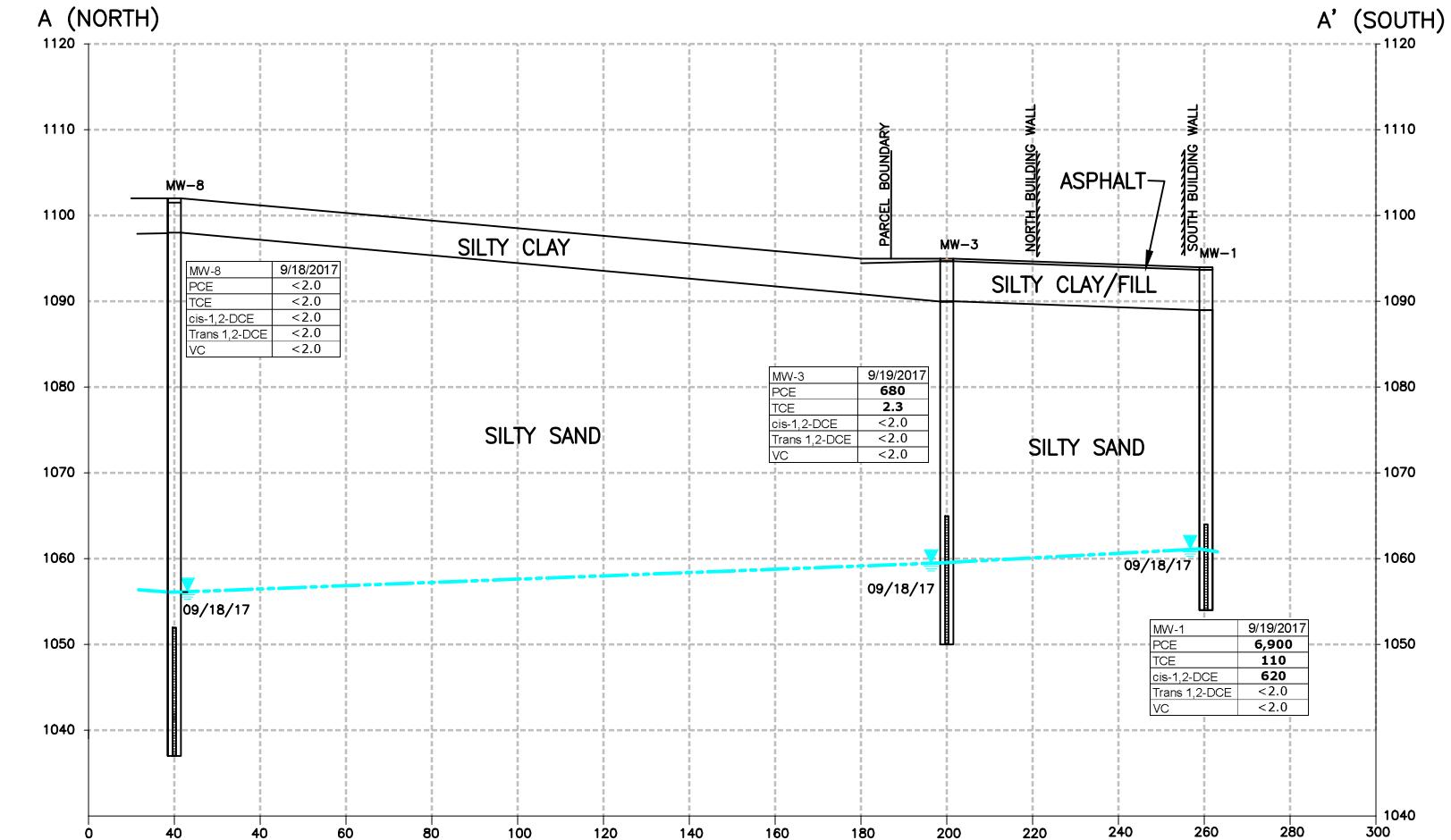
Cross-Section Location



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Figure 5



10 FEET
20 FEET
SCALE

LEGEND

PCE	GROUNDWATER ELEVATION
TCE	WELL SCREEN
Cis-1,2-DCE	TETRACHLOROETHENE
TRANS-1,2	TRICHLOROETHENE
VC	cis-1,2-DICHLOROETHENE
	TRANS-1,2-DICHLOROTHENE
	VINYL CHLORIDE

NOTES:

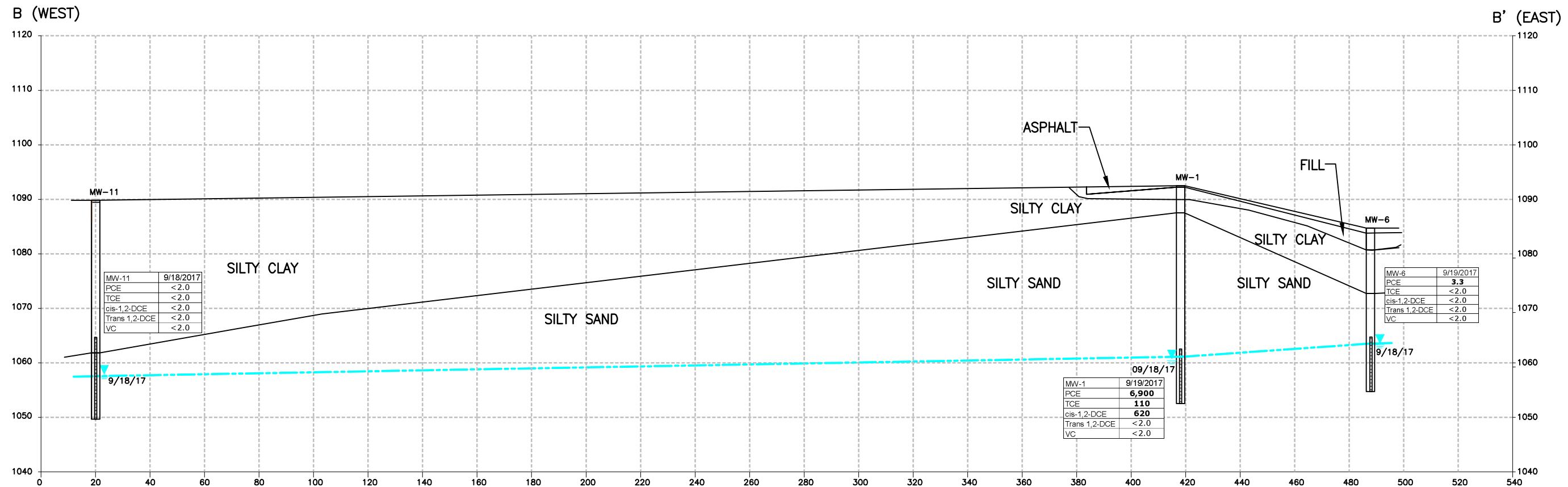
ALL RESULTS ARE MICROGRAMS PER KILOGRAMS (µg/L).

<1.0	= ANALYTE NOT DETECTED ABOVE THE LABORATORY DETECTION LIMIT.
5.7	= ANALYTE DETECTED ABOVE THE LABORATORY DETECTION LIMIT.
190	= EXCEEDS GEORGIA TYPE 3 RISK REDUCTION STANDARDS.
NA	= NOT ANALYZED.

PRIME CONSULTANT
WENCK
ASSOCIATES
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PROJECT TITLE
VRP PROGRESS REPORT 3
CITY OF DULUTH
3146 MAIN STREET
HSI SITE NUMBER 10892

SHEET TITLE
CROSS SECTION A-A'
DWN BY JVB APP'D DL DWG DATE OCT. 2017
CHK'D DL SCALE AS NOTED
PROJECT NO. SHEET NO. REV NO.
5365-0001 FIGURE 6



10 FEET
20 FEET
SCALE

LEGEND

	GROUNDWATER ELEVATION
	WELL SCREEN
PCE	TETRACHLOROETHENE
TCE	TRICHLOROETHENE
Cis-1,2-DCE	cis-1,2-DICHLOROETHENE
TRANS-1,2	TRANS-1,2-DICHLOROTHENE
VC	VINYL CHLORIDE

NOTES:

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190	= EXCEEDS GEORGIA TYPE 3 RISK REDUCTION STANDARDS.
NA	= NOT ANALYZED.

Tables

TABLE 1
Summary of Groundwater Elevations

Former Duluth Dry Cleaner
3146 Main Street
Duluth, Fulton County, Georgia
GEPD HSI # 10892



Well Number	Date Measured	Top of Casing Elevation (feet)	Depth of Screened Interval (feet BLS)	Screened Interval Elevation (feet)	Water Depth (feet)	Corrected Groundwater Elevation (feet)
MW-1	10/6/2015	1092.80	30.18-40.18	1053.23-1063.23	31.75	1061.05
	10/5/2015				31.74	1061.06
	12/6/2015				30.19	1062.61
	8/1/2016				29.55	1063.25
	2/13/2017				32.86	1059.94
	9/18/2017				32.06	1060.74
MW-2	10/6/2015	1086.01	19.55-29.55	1056.86-1066.86	24.38	1061.63
	10/5/2015				24.16	1061.85
	12/6/2015				22.2	1063.81
	7/31/2016				22.2	1063.81
	2/13/2017				25.23	1060.78
	9/18/2017				24.42	1061.59
MW-3	10/6/2015	1093.63	30.52-45.52	1048.61-1063.61	33.57	1060.06
	10/5/2015				33.53	1060.10
	12/6/2015				32.55	1061.08
	8/1/2016				30.9	1062.73
	2/13/2017				34.84	1058.79
	9/18/2017				34.16	1059.47
MW-4	10/6/2015	1092.91	29.64-39.64	1053.85-1043.85	33.78	1059.13
	10/5/2015				31.66	1061.25
	12/6/2015				30.2	1062.71
	8/1/2016				30.7	1062.21
	2/13/2017				32.87	1060.04
	9/18/2017				31.96	1060.95
MW-5	7/29/2016	1085.33	20.15-30.15	1055.18-1045.18	22.81	1062.52
	2/6/2017				25.88	1059.45
	9/18/2017				25.28	1060.05
MW-6	7/28/2016	1085.50	20.35-30.35	1055.15-1045.15	21.07	1064.43
	2/6/2017				23.85	1061.65
	9/18/2017				22.93	1062.57
MW-7	7/29/2016	1092.78	25.45-35.45	1057.33-1047.33	25.90	1066.88
	2/13/2017				28.75	1064.03
	9/18/2017				27.72	1065.06
MW-8	8/1/2016	1101.97	49.5-64.5	947.47-932.47	41.53	1060.44
	2/6/2017				45.82	1056.15
	9/18/2017				45.78	1056.19
MW-9	1/11/2016	1072.07	15-25	1047.07-1037.07	13.10	1058.97
	2/13/2017				NM	---
	9/18/2017				NM	---
MW-10	1/11/2016	1070.70	6-16	1054.7-1044.7	7.70	1082.18
	2/13/2017				NM	---
	9/18/2017				NM	---

TABLE 1
Summary of Groundwater Elevations

Former Duluth Dry Cleaner
3146 Main Street
Duluth, Fulton County, Georgia
GEPD HSI # 10892



Well Number	Date Measured	Top of Casing Elevation (feet)	Depth of Screened Interval (feet BLS)	Screened Interval Elevation (feet)	Water Depth (feet)	Corrected Groundwater Elevation (feet)
MW-11	2/13/2017	1089.88	25-40	1064.88-	32.40	1057.48
	9/18/2017			1049.88	31.97	1057.91
MW-12	9/18/2017	1096.60	35-45	1061.6 - 1051.6	40.33	1056.27

NOTES:

MW-9 & MW-10 were previously identified as MW-1 & MW-2 in PGC Phase II ESA.

MW-9 & MW-10 depths to groundwater & water level elevations were measured from ground surface on 1/11/16 by PCG.

MW-9 & MW-10 were abandoned due to redevelopment activities in this reporting period.

NM = Not Measured

TABLE 2
Summary of Groundwater Field and Natural Attenuation Parameters

Former Duluth Dry Cleaner
3146 Main Street
Duluth, Fulton County, Georgia
GAEPD HSI # 10892



Well ID	Date Sampled	Temperature °C	pH	Dissolved Oxygen mg/L	ORP mV	Conductivity µs/cm	Turbidity NTU	Sulfide (mg/L)	Chloride (mg/L)	Nitrate as N (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Alkalinity as CaCO3 (mg/L)	Ferrous Iron (mg/L)	Methane/Ethane (µg/L)
MW-1	10/6/2015	22.33	4.61	9.68	391	81	8.22	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2016	22.77	4.08	1.33	422	92	18.70	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	16.35	4.18	0	415	51	3.70	<1.0	3.3	4.5	<5.0	1.2	<10.0	0	<10.0
	9/19/2017	25.18	3.09	5.85	273	0.071	NA	<1.0	3.8	7.0	<5.0	1.3	<1.0	NA	<10.0
MW-2	10/6/2015	22.71	5.21	21.05	267	89	379.00	NA	NA	NA	NA	NA	NA	NA	NA
	7/31/2016	21.83	4.49	1.31	380	230	9.60	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	16.77	5.52	3	321	103	7.90	NA	NA	NA	NA	NA	NA	NA	NA
	9/19/2017	19.56	4.77	1.87	296	0.093	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-3	10/6/2015	23.31	4.87	7.39	386	126	0.00	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2016	35.12	4.26	2.23	435	62	9.60	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	20.53	4.38	3	382	104	9.70	NA	NA	NA	NA	NA	NA	NA	NA
	9/19/2017	18.56	3.91	4.65	386	0.110	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-4	10/6/2015	23.69	5.23	7.35	257	41	822.00	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2016	26.54	4.6	2.88	425	24	1.87	NA	NA	NA	NA	NA	NA	NA	NA
	8/1/2016	740.00	2.80	2.88	425	24	1.87	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	19.57	4.56	2.28	379	5.4	5.40	NA	NA	NA	NA	NA	NA	NA	NA
	9/19/2017	30.25	3.87	3.27	240	0.019	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-5	7/29/2016	22.2	5.15	4.3	335	89	0.36	NA	NA	NA	NA	NA	NA	NA	NA
	2/6/2017	20.01	5.75	5.11	163	0.106	0	<1.0	21	0.24	<5.0	<1.0	11	NA	<10.0
	9/19/2017	26.6	4.86	1.94	200	0.084	NA	<1.0	18	0.29	6	<1.0	12	NA	<10.0
MW-6	7/28/2016	24.82	4.78	446	395	146	12.20	NA	NA	NA	NA	NA	NA	NA	NA
	2/6/2017	20.3	4.48	6.98	352	180	10.6	<1.0	4.5	1.2	210	<1.0	<10.0	NA	<10.0
	9/19/2017	24.76	4.07	6.62	278	0.147	NA	<1.0	7.9	0.8	NA	<1.0	<1.0	NA	<10.0
MW-7	7/29/2016	25.65	5.18	4.73	370	79	0.00	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	20.28	4.82	5.86	351	0.041	0	NA	NA	NA	NA	NA	NA	NA	NA
	9/18/2017	23.70	3.70	4.62	273	0.047	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2
Summary of Groundwater Field and Natural Attenuation Parameters

Former Duluth Dry Cleaner
3146 Main Street
Duluth, Fulton County, Georgia
GAEPD HSI # 10892



Well ID	Date Sampled	Temperature °C	pH	Dissolved Oxygen mg/L	ORP mV	Conductivity µs/cm	Turbidity NTU	Sulfide (mg/L)	Chloride (mg/L)	Nitrate as N (mg/L)	Sulfate (mg/L)	Total Organic Carbon (mg/L)	Alkalinity as CaCO3 (mg/L)	Ferrous Iron (mg/L)	Methane/Ethane/Ethene (µg/L)
MW-8	8/1/2016	19.3	5.03	3.06	330	38	27	NA	NA	NA	NA	NA	NA	NA	NA
	2/6/2017	18.97	5.37	7.7	259	0.047	9.53	NA	NA	NA	NA	NA	NA	NA	NA
	9/18/2017	24.24	4.98	3.16	332	0.040	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-9	1/13/2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/18/2017	NA	NA	NA	NA	NA	NA	NS	NA	NA	NA	NA	NA	NA	NA
MW-10	1/13/2016	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/18/2017	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-11	11/20/2016	17.36	4.58	0.96	349	131	53.4	NA	NA	NA	NA	NA	NA	NA	NA
	2/13/2017	18.9	4.57	4.55	358	226	6.2	NA	NA	NA	NA	NA	NA	NA	NA
	9/18/2017	15.25	4.41	3.76	325	0.283	NA	NA	NA	NA	NA	NA	NA	NA	NA
MW-12	9/18/2017	24.12	3.88	4.94	252	0.087	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

All measurements recorded with Horiba U53 meter.

MW-9 & MW-10 were previously identified as MW-1 & MW-2 in PGC Phase II ESA

MW-9 & MW-10 were abandoned due to redevelopment activities in this reporting period.

Due to an equipment malfunction, turbidity readings were not able to be taken during the September sampling event.

mg/L - milligrams per liter

mV - millivolts

µs/cm - microsiemens per centimeter

NTU - nephelometric turbidity units

NA = Not Analyzed for this parameter

<1.0	= Analyte not detected above the laboratory detection limit
5.7	= Analyte detected above the laboratory detection limit

TABLE 3
Summary of Groundwater Analytical Results
Volatile Organic Compounds - Detections

Former Duluth Dry Cleaner
 3146 Main Street
 Duluth, Fulton County, Georgia
 GAEPD HSI # 10892



Well ID	Date Sampled	Tetrachloroethene (ug/L)	Trichloroethene (ug/L)	cis-1,2-Dichloroethene (ug/L)	trans-1,2-Dichloroethene (ug/L)	1,1,1,2-Tetrachloroethane (ug/L)	Benzene (ug/L)	Chloroform (ug/L)	Toluene (ug/L)	Vinyl Chloride (ug/L)
Delineation Criteria Type I / III RRS		5	5	70	100	700	5	80	1,000	2
MW-1	10/6/2015	15,000	120	540	<5.0	NC	10	13	16	2.4
	8/1/2016	14,000	99	440	2.2	5.9	10	10	16	<2.0
	2/13/2017	13,000	120	670	2.3	<2.0	<2.0	13	<2.0	2.8
	9/19/2017	6,900	110	620	<2.0	5.2	<2.0	12	<2.0	<2.0
MW-2	10/6/2015	1,100	7.6	8	<5.0	NC	7.8	<5.0	15	<2.0
	7/31/2016	2,200	12	5.7	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/13/2017	660	7.3	7.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/19/2017	1,000	15	10.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-3	10/6/2015	1,500	<5.0	<5.0	<5.0	NC	<5.0	<5.0	<5.0	<2.0
	8/1/2016	850	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/13/2017	2,400	2.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/19/2017	680	2.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
IW-MW3-50	11/14/2016	260	12	6.6	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
IW-MW3-55	11/14/2016	890	48	25	<5.0	<5.0	<5.0	<5.0	<5.0	3.1
IW-MW3-63	11/14/2016	290	33	23	<5.0	<5.0	<5.0	<5.0	<5.0	2.7
MW-4	10/6/2015	600	<5.0	<5.0	<5.0	NC	12	<5.0	23	<2.0
	8/1/2016	850	3.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	8/1/2016	740	2.8	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/13/2017	490	2.1	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/19/2017	210	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-5	7/29/2016	32	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/6/2017	30	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/19/2017	12	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-6	7/28/2016	7.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/6/2017	8.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/19/2017	3.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-7	7/29/2016	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/13/2017	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/18/2017	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

TABLE 3
Summary of Groundwater Analytical Results
Volatile Organic Compounds - Detections

Former Duluth Dry Cleaner
 3146 Main Street
 Duluth, Fulton County, Georgia
 GAEPD HSI # 10892



Well ID	Date Sampled	Tetrachloroethene (ug/L)	Trichloroethene (ug/L)	cis-1,2-Dichloroethene (ug/L)	trans-1,2-Dichloroethene (ug/L)	1,1,1,2-Tetrachloroethane (ug/L)	Benzene (ug/L)	Chloroform (ug/L)	Toluene (ug/L)	Vinyl Chloride (ug/L)
Delineation Criteria Type I / III RRS		5	5	70	100	700	5	80	1,000	2
MW-8	8/1/2016	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/6/2017	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/18/2017	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
MW-9	1/13/2016	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/13/2017	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/18/2017	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-10	1/13/2016	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	2/13/2017	NS	NS	NS	NS	NS	NS	NS	NS	NS
	9/18/2017	NS	NS	NS	NS	NS	NS	NS	NS	NS
MW-11	11/20/2016	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	2/13/2017	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
	9/18/2017	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
TW-1	11/14/2016	51.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
MW-12	9/18/2017	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

Notes:

MW-9 & MW-10 were previously identified as MW-1 & MW-2 in PGC Phase II ESA

MW-9 & MW-10 were abandoned due to redevelopment activities in this reporting period.

<1.0
5.7
190

= Analyte not detected above the laboratory detection limit

= Analyte detected above the laboratory detection limit

= Exceeds Georgia Type I / III Risk Reduction Standards

NC = No Criteria

NS = Not Sampled

Appendix A

Monitoring Well Installation Log



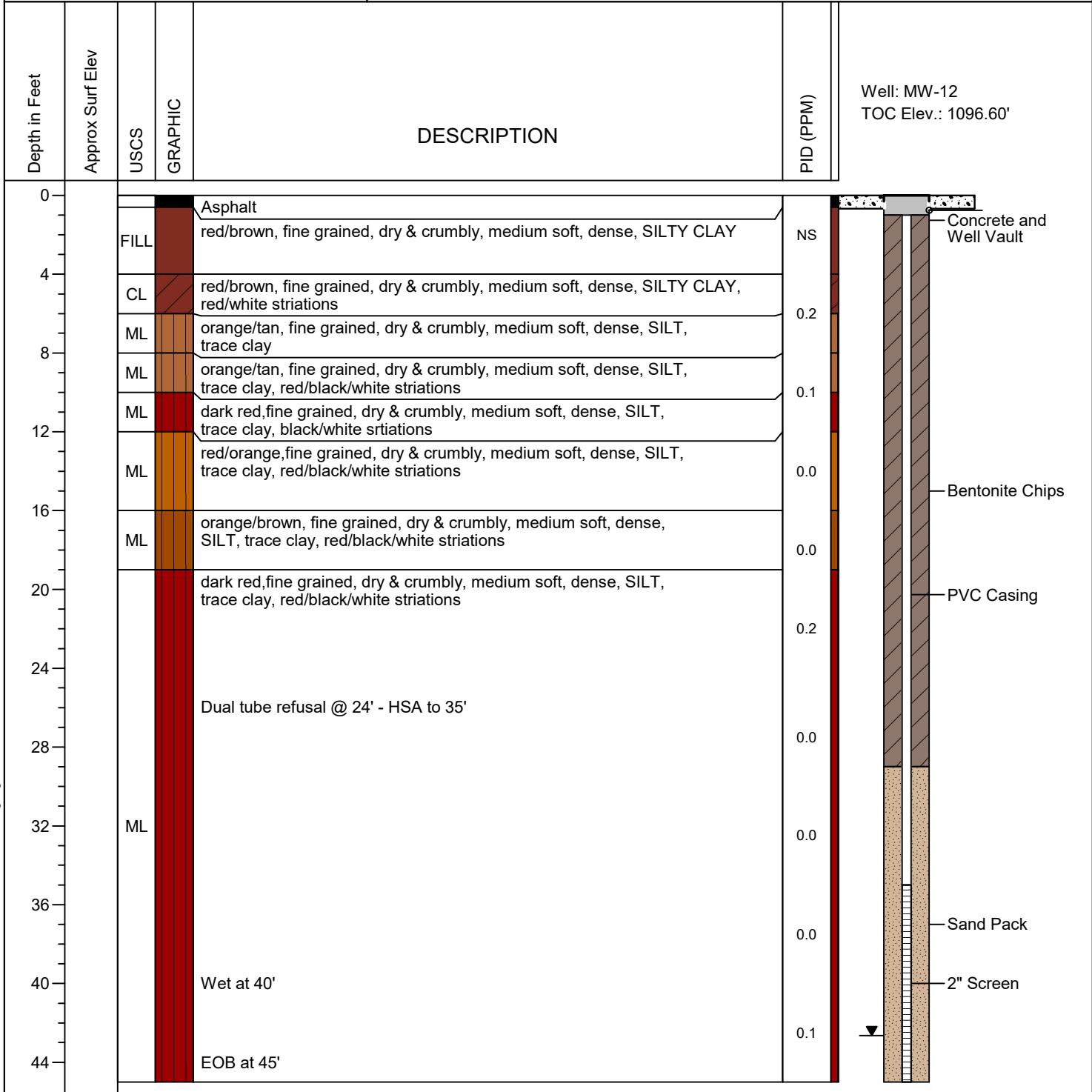
WENCK

LOG OF BORING MW-12

Responsive partner. Exceptional outcomes.

(Page 1 of 1)

City of Duluth Main St. Project # 5365	Date Started : 6/19/2017	Drilling Contractor : Atlas Geo
	Date Completed : 6/19/2017	Driller : David, Adam
	Hole Diameter : 8 inch	Logged By : LM, SF
	Drilling Method : HSA 4x8	
	Sampling Method : Dual Tube (4')	



Notes:

Hand Auger to 4'

-
10ft screen

Water level

Total Depth is 45 feet below TOC.

Total Depth is 48 feet below TCC.

Appendix B

Monitoring Well Sampling Logs

GROUNDWATER SAMPLING LOG
Page 1 of 1

Project: <u>City of Duluth</u>	Project Number: <u>B5365</u>	
Location: <u>Duluth</u>	Well ID: <u>MW-1</u>	
Date: <u>9/19/17</u>	Start Time at Well: <u>4:40</u>	End Time at Well: <u>6:30</u>
Sampler: <u>JEF</u>	Weather: <u>Sunny 90's</u>	Comments:

WELL CHARACTERISTICS

Well Diameter (in): <u>2</u>	Well Screen Depth Interval: <u>30.16</u> (ft) to <u>90.18</u> (ft)	Initial Depth to Water (ft): <u>32.06</u>
Total Well Depth (ft): <u>39.8</u>	Well Capacity (gallons per foot): <u>0.163</u>	1 Well Volume (gallons): <u>1.26</u>
		3 Well Vol. (gal): <u>3.78</u>
Total Vol. Purged (gal): <u>3.2L</u>		

Well capacity (gallons per foot): $0.75" = 0.02; 1" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88$
PURGING DATA

Initial Depth of Tubing (ft): <u>36.5</u> <u>0.16/m</u>	Final Depth of Tubing (ft): <u>36.5</u>	Total Purge Time: <u>65 min</u>	Purge Equipment (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Electric Submersible Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Other (specify) _____
Initial Purge Rate (gpm): <u>0.1L/m</u>	Final Purge Rate (gpm): <u>0.1L/m</u>	Purge Method (circle one): <u>Low Flow-Low Stress Micro-purge</u>	Meter(s) used (circle one): <input checked="" type="checkbox"/> YSI 556 <input type="checkbox"/> LaChotte 2020 <input type="checkbox"/> Horiba U53
5:05			
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)
5:07	0.2L	32.25	30.34
5:12	0.7L	32.30	28.12
5:17	1.2L	32.40	26.81
5:22	1.7L	32.45	26.41
5:27	2.2L	32.55	25.62
5:32	2.7L	32.59	25.43
5:37	3.2L	32.63	25.18
5:44	3	a m P	1

Stabilization: Temperature - $\pm 0.1^\circ$; pH - ± 0.1 ; Conductivity - $\pm 5\%$; Dissolved Oxygen - $\pm 0.2 \text{ mg/L}$ (or 10% saturation); Turbidity - $\leq 10 \text{ NTUs}$ (or stable)
SAMPLING

Sampled by (print): <u>JEF</u>	Collection Method (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Straw method <input type="checkbox"/> Vacuum Jug <input type="checkbox"/> Other	Time Sampling Initiated: <u>5:44</u>	Time Sampling Completed: <u>6:10</u>
Sample ID	Sample Time	Number of Containers	Volume
MW-1	5:44	2	40mL HCL TOC
		3	40mL HCL VOC
		2	40mL - MFE
		1	250mL ZnAc Sulfide
Notes:			
		1	500mL Alk, chloride, nitrate, sulfate
DUP-1		3	40mL HCL

GROUNDWATER SAMPLING LOG

 Page 1 of 1

Project: <u>City of Duluth</u>	Project Number: <u>B55365-0001</u>	
Location: <u>Duluth</u>	Well ID: <u>MW-2</u>	
Date: <u>9/19/17</u>	Start Time at Well: <u>3:20</u>	End Time at Well: <u>4:15</u>
Sampler: <u>WAB</u>	Weather: <u>HOT 92°</u>	Comments:

WELL CHARACTERISTICS

Well Diameter (in): <u>2</u>	Well Screen Depth Interval: <u>19.55</u> (ft) to <u>29.55</u> (ft)	Initial Depth to Water (ft): <u>24.42</u>
Total Well Depth (ft): <u>29.55</u>	Well Capacity (gallons per foot): <u>0.163</u>	1 Well Volume (gallons): <u>0.84</u>
		3 Well Vol. (gal): <u>2.5</u>
Total Vol. Purged (gal): <u>1.25</u>		

Well capacity (gallons per foot): 0.75" = 0.02; 1" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

PURGING DATA

Initial Depth of Tubing (ft): <u>27.5</u>	Final Depth of Tubing (ft): <u>27.5</u>	Total Purge Time: <u>42 min</u>	Purge Equipment (circle one): Bailer Submersible Pump Bladder Pump Electric Peristaltic Pump Other (specify) <u>YSI 856</u>
Initial Purge Rate (gpm):	Final Purge Rate (gpm):	Purge Method (circle one): Low Flow-Low Stress Micro-purge	Meter(s) used (circle one): Lamotte 2020 (Horiba U53) <u>YSI 856</u>

3120

Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)	pH SU	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	Color/ Odor	ORP (mV)
3:30	1256	24.70	23.59	4.72	0.111	3.35		Clear/No	272
3:35	6.56	25.18	21.84	4.55	0.085	2.88			288
3:40	1756	27.28	18.23	4.74	0.096	1.94			292
3:45	1,0014	21.82	19.02	4.70	0.093	1.85			298
3:50	1,256	27.35	19.56	4.77	0.093	1.87			296
3:55		8 stopped - Sample							

Stabilization: Temperature - ± 0.1°; pH - ± 0.1; Conductivity - ± 5%; Dissolved Oxygen - ± 0.2 mg/L (or 10% saturation); Turbidity - ≤ 10 NTUs (or stable)

SAMPLING

Sampled by (print): <u>WAB</u>	Collection Method (circle one): Bailer Straw method Vacuum Jug Other	Time Sampling Initiated: <u>3:55</u>	Time Sampling Completed: <u>4:02</u>
Sample ID	Sample Time	Number of Containers	Volume
MW-2	3:55	3	400mL HCl VOC/8269 G

Notes:

GROUNDWATER SAMPLING LOG

Project: <u>City of Duluth</u>	Project Number: <u>B5365-0001</u>	
Location: <u>Duluth</u>	Well ID: <u>MW-3</u>	
Date: <u>9/19/17</u>	Start Time at Well: <u>5:05</u>	End Time at Well: <u>6:07</u>
Sampler: <u>WAB</u>	Weather: <u>Sunny 90's</u>	Comments:

WELL CHARACTERISTICS

Well Diameter (in): <u>2</u>	Well Screen Depth Interval: <u>30.52</u> (ft) to <u>45.52</u> (ft)	Initial Depth to Water (ft): <u>34.16</u>
Total Well Depth (ft): <u>44.87</u>	Well Capacity (gallons per foot): <u>0.163</u>	1 Well Volume (gallons): <u>1.63</u> 3 Well Vol. (gal): <u>4.8</u> Total Vol. Purged (gal): <u>1.25</u>
Well capacity (gallons per foot): 0.75" = 0.02; 1" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88		

PURGING DATA

Initial Depth of Tubing (ft): <u>40</u>	Final Depth of Tubing (ft): <u>40</u>	Total Purge Time: <u>30 min</u>	Purge Equipment (circle one): Bailer <input checked="" type="checkbox"/> Bladder Pump <input checked="" type="checkbox"/> Electric Submersible Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Other (specify) <u>BSF</u>
Initial Purge Rate (gpm): <u>0.16/m</u>	Final Purge Rate (gpm): <u>0.14/m</u>	Purge Method (circle one): Low Flow-Low Stress Micro-purge	Meter(s) used (circle one): YSI 586 <input checked="" type="checkbox"/> Lamotte 2020 <input type="checkbox"/> Horiba U53
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)
<u>5:10</u>	<u>1</u>	<u>35.28</u>	<u>24.51</u>
<u>5:15</u>	<u>.25</u>	<u>35.53</u>	<u>19.53</u>
<u>5:20</u>	<u>.30</u>	<u>35.74</u>	<u>18.92</u>
<u>5:25</u>	<u>.80</u>	<u>35.90</u>	<u>18.70</u>
<u>5:30</u>	<u>1.0</u>	<u>35.99</u>	<u>18.62</u>
<u>5:35</u>	<u>1.25</u>	<u>36.11</u>	<u>18.56</u>
<u>STOP - sample</u>			

Stabilization: Temperature - ± 0.1°; pH - ± 0.1; Conductivity - ± 5%; Dissolved Oxygen - ± 0.2 mg/L (or 10% saturation); Turbidity - ≤ 10 NTUs (or stable)

SAMPLING

Sampled by (print): <u>WAB</u>	Collection Method (circle one): Bailer <input checked="" type="checkbox"/> Straw method <input type="checkbox"/> Vacuum Jug <input type="checkbox"/> Other			Time Sampling Initiated: <u>5:42</u>	Time Sampling Completed: <u>5:47</u>
Sample ID	Sample Time	Number of Containers	Volume	Preservative	Analysis/ EPA Method
<u>MW-3</u>	<u>5:42</u>	<u>3</u>	<u>40ml</u>	<u>HCl</u>	<u>VOC</u>

Notes:

Project: <u>City of Duluth</u>	Project Number: <u>B5365-0001</u>	
Location: <u>Duluth</u>	Well ID: <u>MW-4</u>	
Date: <u>9/19/17</u>	Start Time at Well: <u>2:30</u>	End Time at Well: <u>4:00</u>
Sampler: <u>SEF</u>	Weather: <u>Sunny 100°F</u>	Comments:

WELL CHARACTERISTICS

Well Diameter (in): <u>2</u>	Well Screen Depth Interval: <u>29.64</u> (ft) to <u>39.64</u> (ft)	Initial Depth to Water (ft): <u>31.96</u>
Total Well Depth (ft): <u>39.20</u>	Well Capacity (gallons per foot): <u>0.163</u>	1 Well Volume (gallons): <u>1.18</u>
		3 Well Vol. (gal): <u>3.54</u> Total Vol. Purged (gal): <u>30L</u>

Well capacity (gallons per foot): 0.75" = 0.02; 1" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

PURGING DATA

Initial Depth of Tubing (ft): <u>36</u>	Final Depth of Tubing (ft): <u>36</u>	Total Purge Time: <u>40 min</u>	Purge Equipment (circle one): Bailer Submersible Pump Peristaltic Pump Other	Bladder Pump Electric
Initial Purge Rate (gpm): <u>0.11 L/min</u>	Final Purge Rate (gpm): <u>0.14 L/min</u>	Purge Method (circle one): Low Flow-Low Stress Micro-purge	Meter(s) used (circle one): X81556 Lamotte 2020	Horiba U53
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)	pH SU
3:00	0.5L	32.98	30.29	4.07
3:05	1.0L	33.15	26.85	3.60
3:10	1.5L	33.52	26.42	3.65
3:15	2.0L	33.50	29.75	3.71
3:20	2.5L	33.50	29.75	3.78
3:25	3.0L	33.86	30.25	3.87
3:30	5.0L	31.11	27.7	4.01

255

Stabilization: Temperature - ± 0.1°; pH - ± 0.1; Conductivity - ± 5%; Dissolved Oxygen - ± 0.2 mg/L (or 10% saturation); Turbidity - ≤ 10 NTUs (or stable)

SAMPLING

Sampled by (print): <u>SEF</u>	Collection Method (circle one): Bailer Straw method Vacuum Jug Other	Time Sampling Initiated: <u>3:30</u>	Time Sampling Completed: <u>3:35</u>
Sample ID	Number of Containers	Volume	Preservative
MW-4	3	40mL	HCl
			VOC/8260
			G

Notes:
Slightly turbid, cleared up as purged.
Recharge is slow. Slowed purge rate for draw down at 3:10.

GROUNDWATER SAMPLING LOG

Page 1 of 1

Project: <u>City of Duluth</u>	Project Number: <u>B5365-8001</u>	
Location: <u>Duluth</u>	Well ID: <u>MW-5</u>	
Date: <u>9/19/17</u>	Start Time at Well: <u>11:45</u>	End Time at Well: <u>11:05</u>
Sampler: <u>SEF, WAB</u>	Weather: <u>Sunny 80's</u>	Comments:

WELL CHARACTERISTICS

Well Diameter (in): <u>2</u>	Well Screen Depth Interval: <u>20</u> (ft) to <u>30</u> (ft)	Initial Depth to Water (ft): <u>25.28</u>	
Total Well Depth (ft): <u>30</u>	Well Capacity (gallons per foot): <u>0.163</u>	1 Well Volume (gallons): <u>0.76</u>	
		3 Well Vol. (gal): <u>2.28</u>	
Total Vol. Purged (gal): <u>3.0L</u>			
Well capacity (gallons per foot): $0.75'' = 0.02; 1'' = 0.04; 2'' = 0.16; 3'' = 0.37; 4'' = 0.65; 5'' = 1.02; 6'' = 1.47; 12'' = 5.88$			

PURGING DATA

Initial Depth of Tubing (ft): <u>27</u>	Final Depth of Tubing (ft): <u>27</u>	Total Purge Time: <u>55 min</u>	Purge Equipment (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Electric Submersible Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Other (specify) <u>SEF</u>						
Initial Purge Rate (gpm): <u>0.5 L/m</u>	Final Purge Rate (gpm): <u>0.5 L/m</u>	Purge Method (circle one): <u>Low Flow-Low Stress Micro-purge</u>	Meter(s) used (circle one): <input checked="" type="checkbox"/> VSI 5B6 <input type="checkbox"/> Lamotte 2020 <input type="checkbox"/> Horiba U53						
<u>12:00</u>									
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)	pH SU	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	Color / Odor	ORP (mV)
12:05	2.5L	25.77	26.73	4.33	0.083	3.74	-	ds/no	218
12:10	1.0L	25.77	25.38	4.51	0.082	2.59	-	" "	207
12:15	1.5L	25.80	25.59	4.54	0.083	2.31	-	" "	210
12:20	2.0L	25.84	25.59	4.66	0.083	2.08	-	" "	205
12:25	2.5L	25.89	25.57	4.74	0.083	1.91	-	" "	205
12:30	3.0L	25.97	26.60	4.86	0.084	1.94	-	" "	200
12:35	3	a	u	p	e				
Stabilization: Temperature - ± 0.1°; pH - ± 0.1; Conductivity - ± 5%; Dissolved Oxygen - ± 0.2 mg/L (or 10% saturation); Turbidity - ≤ 10 NTUs (or stable)									

SAMPLING

Sampled by (print): <u>SEF</u>	Collection Method (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Straw method <input type="checkbox"/> Vacuum Jug <input type="checkbox"/> Other	Time Sampling Initiated: <u>12:35</u>	Time Sampling Completed: <u>12:55</u>
Sample ID	Sample Time	Number of Containers	Volume
MW-5	12:35	2	40 mL HCl TOC G
		2	40 mL MEE ↓
		3	40mL HCl VOC ↓
		1	250mL ZnAc Sulfide ↓
Notes:	1	500mL	Alk, Mn, Chloride, Sulfate, Nitrate;



GROUNDWATER SAMPLING LOG

Page _____ of _____

Project: City of Duluth	Project Number: B5365-0001
Location: Duluth	Well ID: MW-7e
Date: 9/19/17	Start Time at Well: 9:15
Sampler: SEFWAB	Weather: Sunny - 70's
	Comments:

WELL CHARACTERISTICS

Well Diameter (in):	2	Well Screen Depth Interval:	20 (ft) to 30 (ft)	Initial Depth to Water (ft):	22.93
Total Well Depth (ft):	30.20	Well Capacity (gallons per foot):	0.163	1 Well Volume (gallons):	1.18
				3 Well Vol. (gal):	3.54
				Total Vol. Purged (gal):	4.25 L

Well capacity (gallons per foot): 0.75" = 0.02; 1" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

PURGING DATA

Stabilization: Temperature - $\pm 0.1^\circ$; pH - ± 0.1 ; Conductivity - $\pm 5\%$; Dissolved Oxygen - $\pm 0.2 \text{ mg/L}$ (or 10% saturation); Turbidity - $\leq 10 \text{ NTUs}$ (or stable)

SAMPLING

Sampled by (print):		Collection Method (circle one): Bailer <input checked="" type="radio"/> Straw method Vacuum Jug Other			Time Sampling Initiated:	10:40	Time Sampling Completed:	11:10
Sample ID	Sample Time	Number of Containers	Volume	Preservative	Analysis/ EPA Method		Sample Type (G - Grab, C - Composite, Other (specify))	
MW-6	10:40	2	40 ml	HCL	TOC		G	
		2	40 ml	-	MEE			
		3	40 ml	HCL	VOC			
		1	250 ml	ZnAc	Sulfide			

Notes:

~~Very Turb.~~ Slightly turbid at start, cleared up
↓ ↓ | 500mL - Alk, Mn, Cl, N, Sifte G

GROUNDWATER SAMPLING LOG

Page 1 of 1

Project:	City of Duluth		Project Number:	B5365-0001	
Location:	Duluth		Well ID:	MW-7	
Date:	9/16/17	Start Time at Well:	2:00	End Time at Well:	3:20
Sampler:	SFE, 9-WAB	Weather:	SUNNY, 80's	Comments:	

WELL CHARACTERISTICS

Well Diameter (in):	2	Well Screen Depth Interval:	25.45 (ft) to 35.45 (ft)	Initial Depth to Water (ft):	27.72
Total Well Depth (ft):	35.5	Well Capacity (gallons per foot):	0.163	1 Well Volume (gallons):	5.88
				3 Well Vol. (gal):	3.70
				Total Vol. Purged (gal):	4.01

Well capacity (gallons per foot): $0.75'' = 0.02; 1'' = 0.04; 2'' = 0.16; 3'' = 0.37; 4'' = 0.65; 5'' = 1.02; 6'' = 1.47; 12'' = 5.88$

PURGING DATA

Initial Depth of Tubing (ft):	30	Final Depth of Tubing (ft):	30	Total Purge Time:	36 min	Purge Equipment (circle one):	Bailer	Bladder Pump	Electric
Initial Purge Rate (gpm):	0.14m	Final Purge Rate (gpm):	0.14m	Purge Method (circle one):	Low Flow-Low Stress Micro-purge	Meter(s) used (circle one):	YSI 556	Lamotte 2020	Horiba U53
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)	pH SU	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	Color/Odor	ORP (mV)
2:33	1.5L	27.98	24.43	4.06	0.055	5.30	—	cl/nb	244
2:38	2.0L	28.53	25.60	3.68	0.051	4.61	—	" "	266
2:43	2.5L	28.77	26.26	3.90	0.053	4.35	—	" "	269
2:48	3.0L	29.01	25.46	3.77	0.050	4.72	—	" "	269
2:53	3.5L	29.65	23.96	3.75	0.047	4.64	—	" "	268
2:58	4.0L	29.98	23.40	3.70	0.047	4.62	—	" "	273
3:03	3	a m	?	1	2				

Stabilization: Temperature - $\pm 0.1^\circ$; pH - ± 0.1 ; Conductivity - $\pm 5\%$; Dissolved Oxygen - $\pm 0.2 \text{ mg/L}$ (or 10% saturation); Turbidity - $\leq 10 \text{ NTUs}$ (or stable)

SAMPLING

Sampled by (print): <i>SFE</i>	Collection Method (circle one): Bailer <input checked="" type="radio"/> Straw method <input type="radio"/> Vacuum Jug <input type="radio"/> Other	Time Sampling Initiated: <i>3:03</i>	Time Sampling Completed: <i>3:08</i>
Sample ID	Sample Time	Number of Containers	Volume
MW-7	3:03	3	40ml HCl
			VOC/B260
			G

Notes:

Project: City of Duluth		Project Number: B5365 -0001	
Location: Duluth		Well ID: MW-8	
Date: 9/18/17	Start Time at Well: 1:12, 3:40	End Time at Well: 4:25	
Sampler: SBF	Weather: Sunny 80's	Comments:	

WELL CHARACTERISTICS

Well Diameter (in): 2	Well Screen Depth Interval: 49.5 (ft) to 64.5 (ft)	Initial Depth to Water (ft): 36.04
Total Well Depth (ft): 64.5	Well Capacity (gallons per foot): 0.1163	1 Well Volume (gallons): 4.81
		3 Well Vol. (gal): 12.93 Total Vol. Purged (gal): 2.5L

Well capacity (gallons per foot): $0.75'' = 0.02; 1'' = 0.04; 2'' = 0.16; 3'' = 0.37; 4'' = 0.65; 5'' = 1.02; 6'' = 1.47; 12'' = 5.88$

PURGING DATA

Initial Depth of Tubing (ft): 57	Final Depth of Tubing (ft): 57	Total Purge Time: 30 min	Purge Equipment (circle one): Bailer Submersible Pump Bladder Pump Peristaltic Pump Electric Other (specify) _____						
Initial Purge Rate (gpm): 0.1L/m	Final Purge Rate (gpm): 0.1L/m	Purge Method (circle one): Low Flow-Low Stress Micro-purge	Meter(s) used (circle one): YSI 856 Lamotte 2020 Horiba U53 SBF						
1:45									
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)	pH SU	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	Color / Odor	ORP (mV)
3:45	0.81	57.76	24.04	4.98	0.040	4.67	-	cl/no	318
3:50	1.31	45.62	24.39	5.01	0.041	3.47	-	" "	327
3:55	1.81	45.60	24.46	5.01	0.041	3.46	-	" "	328
4:00	2.31	46.60	24.70	5.00	0.041	3.38	-	" "	330
4:05	2.51	45.61	25.24	4.98	0.040	3.16	-	" "	332
4:10	3	a	m	0	1	c	-	-	335
Stabilization: Temperature - ± 0.1°; pH - ± 0.1; Conductivity - ± 5%; Dissolved Oxygen - ± 0.2 mg/L (or 10% saturation); Turbidity - ≤ 10 NTUs (or stable)									

SAMPLING

Sampled by (print): SBF	Collection Method (circle one): Bailer Straw method Vacuum Jug Other	Time Sampling Initiated: 4:10	Time Sampling Completed: 4:15
Sample ID	Sample Time	Number of Containers	Volume
MW-8		3	40ml HCl VOC/8260

Notes:

unable to draw water. Set up @ MW-7 while WAB attempts to pull water. Able to purge water at 3:40 pm.

GROUNDWATER SAMPLING LOG

 Page 1 of 1

Project: <u>City of Duluth</u>	Project Number: <u>B5365-0001</u>	
Location: <u>Duluth</u>	Well ID: <u>MW-11</u>	
Date: <u>9/18/17</u>	Start Time at Well: <u>11:10 am</u>	End Time at Well: <u>12:17</u>
Sampler: <u>SEF & WAB</u>	Weather: <u>Sunny 59°s</u>	Comments:

WELL CHARACTERISTICS

Well Diameter (in): <u>2</u>	Well Screen Depth Interval: <u>25</u> (ft) to <u>40</u> (ft)	Initial Depth to Water (ft): <u>31.97</u>
Total Well Depth (ft): <u>40.35</u>	Well Capacity (gallons per foot): <u>0.11e3</u>	1 Well Volume (gallons): <u>1.36</u>
		3 Well Vol. (gal): <u>4.08</u> Total Vol. Purged (gal): <u>2.7L</u>

Well capacity (gallons per foot): 0.75" = 0.02; 1" = 0.04; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

PURGING DATA

Initial Depth of Tubing (ft): <u>36</u>	Final Depth of Tubing (ft): <u>36</u>	Total Purge Time: <u>37 min</u>	Purge Equipment (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Electric Submersible Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Other (specify) <u>SF</u>						
Initial Purge Rate (gpm): <u>0.1L/m</u>	Final Purge Rate (gpm): <u>0.1L/m</u>	Purge Method (circle one): <u>Low Flow-Low Stress Micro-purge</u>	Meter(s) used (circle one): <u>YSI 586</u> <u>Lamotte 2020</u> <u>Hofiba U53</u>						
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)	pH SU	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	Color/ Odor	ORP (mV)
11:38	0.2L	32.42	16.59	4.61	0.286	4.95	-	yellow/no	248
11:39	0.7L	32.42	15.87	4.65	0.279	4.37	-	" "	264
11:44	1.2L	32.55	15.59	4.55	0.279	4.05	-	" "	290
11:49	1.7L	32.63	15.91	4.50	0.278	3.65	-	" "	302
11:54	2.2L	32.68	15.32	4.45	0.281	3.78	-	" "	314
11:59	2.7L	32.73	15.25	4.41	0.283	3.76	-	" "	325
12:02	3	32.73	MN	P				C	

Stabilization: Temperature - ± 0.1°; pH - ± 0.1; Conductivity - ± 5%; Dissolved Oxygen - ± 0.2 mg/L (or 10% saturation); Turbidity - ≤ 10 NTUs (or stable)

SAMPLING

Sampled by (print): <u>SEF + WAB</u>	Collection Method (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Straw method <input type="checkbox"/> Vacuum Jug <input type="checkbox"/> Other	Time Sampling Initiated: <u>12:02</u>	Time Sampling Completed: <u>12:07</u>
Sample ID	Sample Time	Number of Containers	Volume
MW-11	12:02	3	40ml HCL VOC/8260 G

Notes:

GROUNDWATER SAMPLING LOG

 Page 1 of 1

Project: <u>CITY OF DULUTH</u>	Project Number: <u>B5365 -0001</u>	
Location: <u>Duluth</u>	Well ID: <u>MW-12</u>	
Date: <u>9/18/17</u>	Start Time at Well: <u>4:25</u>	End Time at Well: <u>5:30</u>
Sampler: <u>SEF & WAB</u>	Weather: <u>Sunny 80's</u>	Comments:

WELL CHARACTERISTICS

Well Diameter (in): <u>2</u>	Well Screen Depth Interval: _____ (ft) to _____ (ft)	Initial Depth to Water (ft): <u>40.33</u>
Total Well Depth (ft): <u>45.30</u>	Well Capacity (gallons per foot): <u>0.163</u>	1 Well Volume (gallons): <u>0.81</u>
		3 Well Vol. (gal): <u>2.43</u>
		Total Vol. Purged (gal):
Well capacity (gallons per foot): $0.75'' = 0.02$; $1'' = 0.04$; $2'' = 0.16$; $3'' = 0.37$; $4'' = 0.65$; $5'' = 1.02$; $6'' = 1.47$; $12'' = 5.88$		

PURGING DATA

Initial Depth of Tubing (ft): <u>42.5</u>	Final Depth of Tubing (ft): <u>42.5</u>	Total Purge Time: <u>36 min</u>	Purge Equipment (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Bladder Pump <input type="checkbox"/> Submersible Pump <input type="checkbox"/> Peristaltic Pump <input type="checkbox"/> Electric <input type="checkbox"/> Other (specify) _____						
Initial Purge Rate (gpm): <u>0.1L/m</u>	Final Purge Rate (gpm): <u>0.1L/m</u>	Purge Method (circle one): <u>Low Flow-Low Stress Micro-purge</u>	Meter(s) used (circle one): <u>YSI 556</u> <u>Lamotte 2020</u> <u>Horiba U53</u>						
Reading Time	Total Volume Purged (gal)	Depth to Water (ft)	Temperature (°C)	pH SU	Conductivity (µS/cm)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)	Color / Odor	ORP (mV)
4:35	1.61	41.57	21.39	4.18	0.093	4.62	—	silty/no	223
4:40	2.01	40.79	27.59	4.13	0.088	4.98	—	" "	230
4:45	2.51	41.08	21.80	4.00	0.087	5.54	—	" "	245
4:50	3.01	41.06	24.70	3.91	0.067	5.12	—	" "	247
4:55	3.51	41.21	24.45	3.89	0.067	4.98	—	" "	250
5:00	4.01	41.34	24.12	3.86	0.067	4.94	—	" "	252
5:03	5	a m	P	1	e				
Stabilization: Temperature - ± 0.1°; pH - ± 0.1; Conductivity - ± 5%; Dissolved Oxygen - ± 0.2 mg/L (or 10% saturation); Turbidity - ≤ 10 NTUs (or stable)									

SAMPLING

Sampled by (print): <u>WAB, SEF</u>	Collection Method (circle one): <input checked="" type="checkbox"/> Bailer <input type="checkbox"/> Straw method <input type="checkbox"/> Vacuum Jug <input type="checkbox"/> Other	Time Sampling Initiated: <u>5:03</u>	Time Sampling Completed: <u>5:08</u>			
Sample ID	Sample Time	Number of Containers	Volume	Preservative	Analysis/ EPA Method	Sample Type (G - Grab, C - Composite, Other (specify))
MW-12	5:03	3	40 ml	HCl	VOC/8260	G

Notes:

Appendix C

Laboratory Reports and Chain-of-Custody Documentation



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

Laboratory Report

Prepared For:

WENCK Associates

**1080 Holcomb Bridge Road, Building 100, Suite 190
Roswell, GA 30076**

Attention: Ms. Katie T. Ross

Report Number: AAI0590

October 02, 2017

Project: Duluth, City of

Project #:5365

We appreciate the opportunity to provide the analytical support for your project. The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Approved:

Eden D. Buchanan 

Signature

This report may not be reproduced, except in full, without written approval from Pace Analytical Services, LLC. Pace Analytical Services, LLC. certifies that the following analytical results meet all requirements of the National Environmental Laboratory Accreditation Conference (NELAC).

All test results relate only to the samples analyzed.



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-7	AAI0590-01	Ground Water	09/18/17 15:03	09/20/17 08:37
MW-8	AAI0590-02	Ground Water	09/18/17 16:10	09/20/17 08:37
MW-11	AAI0590-03	Ground Water	09/18/17 12:02	09/20/17 08:37
MW-12	AAI0590-04	Ground Water	09/18/17 17:03	09/20/17 08:37
MW-1	AAI0590-05	Ground Water	09/19/17 17:44	09/20/17 08:37
MW-2	AAI0590-06	Ground Water	09/19/17 15:55	09/20/17 08:37
MW-3	AAI0590-07	Ground Water	09/19/17 17:42	09/20/17 08:37
MW-4	AAI0590-08	Ground Water	09/19/17 15:30	09/20/17 08:37
MW-5	AAI0590-09	Ground Water	09/19/17 12:35	09/20/17 08:37
MW-6	AAI0590-10	Ground Water	09/19/17 10:40	09/20/17 08:37
Dup-1	AAI0590-11	Ground Water	09/19/17 00:00	09/20/17 08:37
Trip Blank	AAI0590-12	Water	09/18/17 00:00	09/20/17 08:37



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Case Narrative

The Methane, Ethane, Ethene by RSK 175 Modified analysis was performed by Pace Analytical Services, LLC, 2225 Riverside Dr., Asheville, NC 28804. The lab contact is Kevin Godwin at Telephone (704)875-9092. Please see the included subcontractor report.



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-7
Date/Time Sampled: 09/18/2017 3:03:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-01
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-7
Date/Time Sampled: 09/18/2017 3:03:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-01
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Tetrachloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	



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WENCK Associates
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Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-7

Lab Number ID: AAI0590-01

Date/Time Sampled: 09/18/2017 3:03:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 19:40	7090576	JG	
Surrogate: Dibromofluoromethane	95 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 19:40	7090576		
Surrogate: 1,2-Dichloroethane-d4	97 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 19:40	7090576		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 19:40	7090576		
Surrogate: 4-Bromofluorobenzene	99 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 19:40	7090576		



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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590

Project: Duluth, City of

Client ID: MW-8

Lab Number ID: AA10590-02

Date/Time Sampled: 09/18/2017 4:10:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	



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Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-8
Date/Time Sampled: 09/18/2017 4:10:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-02
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Tetrachloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	



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October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-8

Lab Number ID: AAI0590-02

Date/Time Sampled: 09/18/2017 4:10:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:10	7090576	JG	
Surrogate: Dibromofluoromethane	96 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 20:10	7090576		
Surrogate: 1,2-Dichloroethane-d4	98 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 20:10	7090576		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 20:10	7090576		
Surrogate: 4-Bromofluorobenzene	103 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 20:10	7090576		



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-11
Date/Time Sampled: 09/18/2017 12:02:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-03
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	



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WENCK Associates
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Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590
Client ID: MW-11
Date/Time Sampled: 09/18/2017 12:02:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AAI0590-03
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Tetrachloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-11

Lab Number ID: AAI0590-03

Date/Time Sampled: 09/18/2017 12:02:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 20:40	7090576	JG	
Surrogate: Dibromofluoromethane	96 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 20:40	7090576		
Surrogate: 1,2-Dichloroethane-d4	97 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 20:40	7090576		
Surrogate: Toluene-d8	96 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 20:40	7090576		
Surrogate: 4-Bromofluorobenzene	101 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 20:40	7090576		



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October 02, 2017

Report No.: AA10590
Client ID: MW-12
Date/Time Sampled: 09/18/2017 5:03:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-04
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	



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Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-12
Date/Time Sampled: 09/18/2017 5:03:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-04
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Tetrachloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-12

Lab Number ID: AAI0590-04

Date/Time Sampled: 09/18/2017 5:03:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:10	7090576	JG	
Surrogate: Dibromofluoromethane	97 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 21:10	7090576		
Surrogate: 1,2-Dichloroethane-d4	96 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 21:10	7090576		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 21:10	7090576		
Surrogate: 4-Bromofluorobenzene	104 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 21:10	7090576		



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590
Client ID: MW-1
Date/Time Sampled: 09/19/2017 5:44:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AAI0590-05
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry										
Alkalinity as CaCO ₃	ND	1	mg/L	SM 2320 B		1	9/26/17 14:15	9/26/17 16:26	7090675	DJS
Sulfide	ND	1	mg/L	EPA 9030B/9034		1	9/21/17 11:00	9/21/17 16:45	7090499	DJS
Total Organic Carbon	1.3	1.0	mg/L	EPA 9060A		1	9/25/17 13:00	9/25/17 15:19	7090621	DJS
Inorganic Anions										
Chloride	3.8	1.0	mg/L	EPA 9056A		1	9/20/17 12:05	9/20/17 14:50	7090473	SLH
Sulfate	ND	5.0	mg/L	EPA 9056A	J	1	9/20/17 12:05	9/20/17 14:50	7090473	SLH
Nitrate as N	7.0	0.05	mg/L	EPA 9056A		1	9/20/17 12:05	9/20/17 14:50	7090473	SLH
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Acrolein	ND	50	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Acrylonitrile	ND	50	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Benzene	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Bromobenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Bromoform	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Bromomethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Bromodichloromethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Bromoform	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Bromomethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
n-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
sec-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
tert-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Carbon Disulfide	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Chlorobenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
1-Chlorobutane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Chloroethane	ND	5.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Chloroform	12	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Chloromethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
2-Chlorotoluene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
4-Chlorotoluene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Dibromochloromethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG
Dibromomethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 21:40	7090576	JG



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-1
Date/Time Sampled: 09/19/2017 5:44:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-05
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
cis-1,2-Dichloroethene	620	200	ug/L	EPA 8260B	100	9/21/17 12:00	9/22/17 20:09	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	



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WENCK Associates
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Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590
Client ID: MW-1
Date/Time Sampled: 09/19/2017 5:44:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AAI0590-05
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,1,1,2-Tetrachloroethane	5.2	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Tetrachloroethene	6900	200	ug/L	EPA 8260B	100	9/21/17 12:00	9/22/17 20:09	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Trichloroethene	110	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 21:40	7090576	JG	
Surrogate: Dibromofluoromethane	98 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 21:40	7090576		
Surrogate: Dibromofluoromethane	98 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 20:09	7090576		
Surrogate: 1,2-Dichloroethane-d4	99 %	78-120		EPA 8260B		9/21/17 12:00	9/22/17 20:09	7090576		
Surrogate: 1,2-Dichloroethane-d4	97 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 21:40	7090576		
Surrogate: Toluene-d8	96 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 20:09	7090576		
Surrogate: Toluene-d8	99 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 21:40	7090576		
Surrogate: 4-Bromofluorobenzene	101 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 20:09	7090576		
Surrogate: 4-Bromofluorobenzene	102 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 21:40	7090576		



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-2
Date/Time Sampled: 09/19/2017 3:55:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-06
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
cis-1,2-Dichloroethene	10	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	



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WENCK Associates
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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-2
Date/Time Sampled: 09/19/2017 3:55:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-06
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Tetrachloroethene	1000	200	ug/L	EPA 8260B	100	9/21/17 12:00	9/22/17 20:39	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Trichloroethene	15	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-2

Lab Number ID: AAI0590-06

Date/Time Sampled: 09/19/2017 3:55:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:10	7090576	JG	
Surrogate: Dibromofluoromethane	99 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 22:10	7090576		
Surrogate: Dibromofluoromethane	99 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 20:39	7090576		
Surrogate: 1,2-Dichloroethane-d4	98 %	78-120		EPA 8260B		9/21/17 12:00	9/22/17 20:39	7090576		
Surrogate: 1,2-Dichloroethane-d4	99 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 22:10	7090576		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 20:39	7090576		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 22:10	7090576		
Surrogate: 4-Bromofluorobenzene	104 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 20:39	7090576		
Surrogate: 4-Bromofluorobenzene	102 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 22:10	7090576		



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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-3
Date/Time Sampled: 09/19/2017 5:42:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-07
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	



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Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-3
Date/Time Sampled: 09/19/2017 5:42:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-07
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Tetrachloroethene	680	20	ug/L	EPA 8260B	10	9/21/17 12:00	9/22/17 21:09	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Trichloroethene	2.3	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-3

Lab Number ID: AAI0590-07

Date/Time Sampled: 09/19/2017 5:42:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 22:40	7090576	JG	
Surrogate: Dibromofluoromethane	96 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 22:40	7090576		
Surrogate: Dibromofluoromethane	98 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 21:09	7090576		
Surrogate: 1,2-Dichloroethane-d4	99 %	78-120		EPA 8260B		9/21/17 12:00	9/22/17 21:09	7090576		
Surrogate: 1,2-Dichloroethane-d4	97 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 22:40	7090576		
Surrogate: Toluene-d8	98 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 21:09	7090576		
Surrogate: Toluene-d8	96 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 22:40	7090576		
Surrogate: 4-Bromofluorobenzene	106 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 21:09	7090576		
Surrogate: 4-Bromofluorobenzene	102 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 22:40	7090576		



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Environmental Monitoring & Laboratory Analysis
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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-4
Date/Time Sampled: 09/19/2017 3:30:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-08
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	



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WENCK Associates
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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-4
Date/Time Sampled: 09/19/2017 3:30:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-08
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Tetrachloroethene	210	20	ug/L	EPA 8260B	10	9/21/17 12:00	9/22/17 21:39	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	



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WENCK Associates
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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-4

Lab Number ID: AAI0590-08

Date/Time Sampled: 09/19/2017 3:30:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:10	7090576	JG	
Surrogate: Dibromofluoromethane	96 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 23:10	7090576		
Surrogate: Dibromofluoromethane	100 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 21:39	7090576		
Surrogate: 1,2-Dichloroethane-d4	99 %	78-120		EPA 8260B		9/21/17 12:00	9/22/17 21:39	7090576		
Surrogate: 1,2-Dichloroethane-d4	98 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 23:10	7090576		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 21:39	7090576		
Surrogate: Toluene-d8	94 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 23:10	7090576		
Surrogate: 4-Bromofluorobenzene	103 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 21:39	7090576		
Surrogate: 4-Bromofluorobenzene	101 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 23:10	7090576		



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-5

Lab Number ID: AAI0590-09

Date/Time Sampled: 09/19/2017 12:35:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry										
Alkalinity as CaCO ₃	12	1	mg/L	SM 2320 B		1	9/26/17 14:15	9/26/17 16:26	7090675	DJS
Sulfide	ND	1	mg/L	EPA 9030B/9034		1	9/21/17 13:00	9/21/17 16:45	7090499	DJS
Total Organic Carbon	ND	1.0	mg/L	EPA 9060A		1	9/25/17 13:00	9/25/17 15:36	7090621	DJS
Inorganic Anions										
Chloride	18	5.0	mg/L	EPA 9056A		5	9/20/17 12:05	9/27/17 13:41	7090473	RLC
Sulfate	6.0	5.0	mg/L	EPA 9056A		1	9/20/17 12:05	9/20/17 15:11	7090473	SLH
Nitrate as N	0.29	0.05	mg/L	EPA 9056A		1	9/20/17 12:05	9/20/17 15:11	7090473	SLH
Metals, Total										
Manganese	0.665	0.0100	mg/L	EPA 6020B		1	9/22/17 8:55	9/22/17 14:55	7090532	CSW
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Acrolein	ND	50	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Acrylonitrile	ND	50	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Benzene	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Bromobenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Bromoform	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Bromomethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
n-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
sec-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
tert-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Carbon Disulfide	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Chlorobenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
1-Chlorobutane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Chloroethane	ND	5.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Chloroform	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Chloromethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
2-Chlorotoluene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
4-Chlorotoluene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG
Dibromochloromethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/21/17 23:39	7090576	JG



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: MW-5
Date/Time Sampled: 09/19/2017 12:35:00PM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-09
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	



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WENCK Associates
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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-5

Lab Number ID: AAI0590-09

Date/Time Sampled: 09/19/2017 12:35:00PM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Tetrachloroethene	12	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/21/17 23:39	7090576	JG	
Surrogate: Dibromofluoromethane	98 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 23:39	7090576		
Surrogate: 1,2-Dichloroethane-d4	98 %	78-120		EPA 8260B		9/21/17 12:00	9/21/17 23:39	7090576		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 23:39	7090576		
Surrogate: 4-Bromofluorobenzene	106 %	80-120		EPA 8260B		9/21/17 12:00	9/21/17 23:39	7090576		



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WENCK Associates
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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590
Client ID: MW-6
Date/Time Sampled: 09/19/2017 10:40:00AM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AAI0590-10
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
General Chemistry										
Alkalinity as CaCO ₃	ND	1	mg/L	SM 2320 B		1	9/26/17 14:15	9/26/17 16:26	7090675	DJS
Sulfide	ND	1	mg/L	EPA 9030B/9034		1	9/21/17 13:00	9/21/17 16:45	7090499	DJS
Total Organic Carbon	ND	1.0	mg/L	EPA 9060A		1	9/25/17 13:00	9/25/17 15:53	7090621	DJS
Inorganic Anions										
Chloride	7.9	1.0	mg/L	EPA 9056A		1	9/20/17 12:05	9/20/17 16:13	7090473	SLH
Nitrate as N	0.82	0.05	mg/L	EPA 9056A		1	9/20/17 12:05	9/20/17 16:13	7090473	SLH
Metals, Total										
Manganese	1.03	0.0500	mg/L	EPA 6020B		5	9/22/17 8:55	9/22/17 17:37	7090532	CSW
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Acrolein	ND	50	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Acrylonitrile	ND	50	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Benzene	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Bromobenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Bromoform	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Bromomethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
n-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
sec-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
tert-Butylbenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Carbon Disulfide	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Chlorobenzene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
1-Chlorobutane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Chloroethane	ND	5.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Chloroform	ND	2.0	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Chloromethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
2-Chlorotoluene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
4-Chlorotoluene	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
Dibromochloromethane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B		1	9/21/17 12:00	9/22/17 0:09	7090576	JG



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WENCK Associates
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Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590

Project: Duluth, City of

Client ID: MW-6

Lab Number ID: AA10590-10

Date/Time Sampled: 09/19/2017 10:40:00AM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: MW-6

Lab Number ID: AAI0590-10

Date/Time Sampled: 09/19/2017 10:40:00AM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Tetrachloroethene	3.3	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 0:09	7090576	JG	
Surrogate: Dibromofluoromethane	97 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 0:09	7090576		
Surrogate: 1,2-Dichloroethane-d4	99 %	78-120		EPA 8260B		9/21/17 12:00	9/22/17 0:09	7090576		
Surrogate: Toluene-d8	95 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 0:09	7090576		
Surrogate: 4-Bromofluorobenzene	101 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 0:09	7090576		



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: Dup-1
Date/Time Sampled: 09/19/2017 12:00:00AM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-11
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Chloroform	12	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
cis-1,2-Dichloroethene	610	200	ug/L	EPA 8260B	100	9/21/17 12:00	9/22/17 22:38	7090576	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AA10590
Client ID: Dup-1
Date/Time Sampled: 09/19/2017 12:00:00AM
Matrix: Ground Water

Project: Duluth, City of
Lab Number ID: AA10590-11
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,1,1,2-Tetrachloroethane	5.2	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Tetrachloroethene	7200	200	ug/L	EPA 8260B	100	9/21/17 12:00	9/22/17 22:38	7090576	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Trichloroethene	110	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: Dup-1

Lab Number ID: AAI0590-11

Date/Time Sampled: 09/19/2017 12:00:00AM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Ground Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/21/17 12:00	9/22/17 4:38	7090576	JG	
Surrogate: Dibromofluoromethane	98 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 4:38	7090576		
Surrogate: Dibromofluoromethane	99 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 22:38	7090576		
Surrogate: 1,2-Dichloroethane-d4	96 %	78-120		EPA 8260B		9/21/17 12:00	9/22/17 4:38	7090576		
Surrogate: 1,2-Dichloroethane-d4	100 %	78-120		EPA 8260B		9/21/17 12:00	9/22/17 22:38	7090576		
Surrogate: Toluene-d8	100 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 4:38	7090576		
Surrogate: Toluene-d8	96 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 22:38	7090576		
Surrogate: 4-Bromofluorobenzene	102 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 4:38	7090576		
Surrogate: 4-Bromofluorobenzene	102 %	80-120		EPA 8260B		9/21/17 12:00	9/22/17 22:38	7090576		



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WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590
Client ID: Trip Blank
Date/Time Sampled: 09/18/2017 12:00:00AM
Matrix: Water

Project: Duluth, City of
Lab Number ID: AAI0590-12
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Acetone	ND	100	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Acrolein	ND	50	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Acrylonitrile	ND	50	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Benzene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Bromobenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Bromodichloromethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Bromoform	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Bromomethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
n-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
sec-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
tert-Butylbenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Carbon Disulfide	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Carbon Tetrachloride	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Chlorobenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1-Chlorobutane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Chloroethane	ND	5.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Chloroform	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Chloromethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
2-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
4-Chlorotoluene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Dibromochloromethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2-Dibromo-3-chloropropane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2-Dibromoethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Dibromomethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,3-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,4-Dichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Dichlorodifluoromethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,1-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2-Dichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,1-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
cis-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
trans-1,2-Dichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	



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October 02, 2017

Report No.: AAI0590
Client ID: Trip Blank
Date/Time Sampled: 09/18/2017 12:00:00AM
Matrix: Water

Project: Duluth, City of
Lab Number ID: AAI0590-12
Date/Time Received: 09/20/2017 8:37:00AM

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
1,2-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,3-Dichloropropane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
2,2-Dichloropropane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,1-Dichloropropene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
cis-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
trans-1,3-Dichloropropene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Ethylbenzene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Ethyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Hexachlorobutadiene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
p-Isopropyltoluene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Hexachloroethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Iodomethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Isopropylbenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Methacrylonitrile	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Methyl Acrylate	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Methylene Chloride	ND	5.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Methyl Methacrylate	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Methyl-tert-Butyl Ether	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Naphthalene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
2-Nitropropane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Propionitrile (Ethyl Cyanide)	ND	20	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
n-Propylbenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Styrene	ND	5.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Tetrachloroethene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Tetrahydrofuran	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Toluene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2,3-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2,4-Trichlorobenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,1,1-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,1,2-Trichloroethane	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Trichloroethene	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	



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Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Project: Duluth, City of

Client ID: Trip Blank

Lab Number ID: AAI0590-12

Date/Time Sampled: 09/18/2017 12:00:00AM

Date/Time Received: 09/20/2017 8:37:00AM

Matrix: Water

Analyte	Result	RL	Units	Method	Qual.	DF	Preparation Date	Analytical Date	Batch	Init.
Volatile Organic Compounds by EPA 8260										
Trichlorofluoromethane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2,3-Trichloropropane	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,2,4-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
1,3,5-Trimethylbenzene	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Vinyl Acetate	ND	10	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Vinyl Chloride	ND	2.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
m+p-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
o-Xylene	ND	5.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Xylenes, total	ND	5.0	ug/L	EPA 8260B	1	9/22/17 15:00	9/23/17 11:37	7090673	JG	
Surrogate: Dibromofluoromethane	99 %	80-120		EPA 8260B		9/22/17 15:00	9/23/17 11:37	7090673		
Surrogate: 1,2-Dichloroethane-d4	98 %	78-120		EPA 8260B		9/22/17 15:00	9/23/17 11:37	7090673		
Surrogate: Toluene-d8	97 %	80-120		EPA 8260B		9/22/17 15:00	9/23/17 11:37	7090673		
Surrogate: 4-Bromofluorobenzene	106 %	80-120		EPA 8260B		9/22/17 15:00	9/23/17 11:37	7090673		



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October 02, 2017

Report No.: AAI0590

General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD RPD	RPD Limit	Qual
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Batch 7090499 - EPA 9030

Blank (7090499-BLK1)	Prepared & Analyzed: 09/21/17									
Sulfide	ND	1	mg/L							
LCS (7090499-BS1)	Prepared & Analyzed: 09/21/17									
Sulfide	7	1	mg/L	8.0120	86	40-104				

Batch 7090621 - EPA 9060A

Blank (7090621-BLK1)	Prepared & Analyzed: 09/25/17									
Total Organic Carbon	ND	1.0	mg/L							
LCS (7090621-BS1)	Prepared & Analyzed: 09/25/17									
Total Organic Carbon	20.1	1.0	mg/L	20.000	101	88-112				
Matrix Spike (7090621-MS1)	Source: AAI0528-01				Prepared & Analyzed: 09/25/17					
Total Organic Carbon	18.9	1.0	mg/L	20.000	ND	94	67-141			
Matrix Spike Dup (7090621-MSD1)	Source: AAI0528-01				Prepared & Analyzed: 09/25/17					
Total Organic Carbon	19.3	1.0	mg/L	20.000	ND	96	67-141	2	16	

Batch 7090675 - SM 2320 B

Blank (7090675-BLK1)	Prepared & Analyzed: 09/26/17									
Alkalinity as CaCO ₃	ND	1	mg/L							
LCS (7090675-BS1)	Prepared & Analyzed: 09/26/17									
Alkalinity as CaCO ₃	103	1	mg/L	100.00	103	85-115				



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October 02, 2017

Report No.: AAI0590

General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 7090675 - SM 2320 B										
Duplicate (7090675-DUP1)			Source: AAI0710-01			Prepared & Analyzed: 09/26/17				
Alkalinity as CaCO ₃	21	1	mg/L		21		0	10		



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Report No.: AAI0590

Inorganic Anions - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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Batch 7090473 - EPA 9056A

Blank (7090473-BLK1)				Prepared & Analyzed: 09/20/17				
Chloride	ND	1.0	mg/L					
Nitrate as N	ND	0.05	mg/L					
Sulfate	ND	5.0	mg/L					

LCS (7090473-BS1)				Prepared & Analyzed: 09/20/17				
Chloride	10.6	1.0	mg/L	10.020	106	90-110		
Nitrate as N	11.0	0.05	mg/L	10.010	110	90-110		
Sulfate	10.6	5.0	mg/L	10.050	105	90-110		

Matrix Spike (7090473-MS1)				Source: AAI0590-09 Prepared & Analyzed: 09/20/17				
Chloride	32.3	1.0	mg/L	10.020	20.8	115	90-110	QM-05
Nitrate as N	11.5	0.05	mg/L	10.010	0.29	112	90-110	QM-05
Sulfate	15.3	5.0	mg/L	10.050	5.99	92	90-110	

Matrix Spike (7090473-MS2)				Source: AAI0596-04 Prepared & Analyzed: 09/20/17				
Chloride	30.0	1.0	mg/L	10.020	18.8	112	90-110	QM-05
Nitrate as N	11.2	0.05	mg/L	10.010	0.06	111	90-110	QM-05
Sulfate	64.5	5.0	mg/L	10.050	57.6	69	90-110	QM-05

Matrix Spike Dup (7090473-MSD1)				Source: AAI0590-09 Prepared & Analyzed: 09/20/17				
Chloride	32.3	1.0	mg/L	10.020	20.8	115	90-110	0.06
Nitrate as N	11.5	0.05	mg/L	10.010	0.29	112	90-110	0.04
Sulfate	15.1	5.0	mg/L	10.050	5.99	91	90-110	1



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Report No.: AAI0590

Metals, Total - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 7090532 - EPA 3005A										
Blank (7090532-BLK1)										Prepared & Analyzed: 09/22/17
Manganese	ND	0.0100	mg/L							
LCS (7090532-BS1)										Prepared & Analyzed: 09/22/17
Manganese	0.108	0.0100	mg/L	0.10000		108	80-120			
Matrix Spike (7090532-MS1)										Prepared & Analyzed: 09/22/17
Manganese	2.63	0.0100	mg/L	0.10000	2.52	113	75-125			
Matrix Spike Dup (7090532-MSD1)										Prepared & Analyzed: 09/22/17
Manganese	2.63	0.0100	mg/L	0.10000	2.52	107	75-125	0.2	20	
Post Spike (7090532-PS1)										Prepared & Analyzed: 09/22/17
Manganese	2590		ug/L	100.00	2520	69	80-120			QM-02



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Report No.: AAI0590

Volatile Organic Compounds by EPA 8260 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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Batch 7090576 - EPA 5030B

Blank (7090576-BLK1)	Prepared & Analyzed: 09/21/17									
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Acetone	ND	100	ug/L							
Acrolein	ND	50	ug/L							
Acrylonitrile	ND	50	ug/L							
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L							
Benzene	ND	2.0	ug/L							
Bromobenzene	ND	10	ug/L							
Bromoform	ND	10	ug/L							
Bromomethane	ND	10	ug/L							
n-Butylbenzene	ND	10	ug/L							
sec-Butylbenzene	ND	10	ug/L							
tert-Butylbenzene	ND	10	ug/L							
Carbon Disulfide	ND	10	ug/L							
Carbon Tetrachloride	ND	2.0	ug/L							
Chlorobenzene	ND	10	ug/L							
1-Chlorobutane	ND	10	ug/L							
Chloroethane	ND	5.0	ug/L							
Chloroform	ND	2.0	ug/L							
Chloromethane	ND	10	ug/L							
2-Chlorotoluene	ND	10	ug/L							
4-Chlorotoluene	ND	10	ug/L							
Dibromochloromethane	ND	10	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	10	ug/L							
Dibromomethane	ND	10	ug/L							
1,2-Dichlorobenzene	ND	10	ug/L							
1,3-Dichlorobenzene	ND	10	ug/L							
1,4-Dichlorobenzene	ND	10	ug/L							
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L							
Dichlorodifluoromethane	ND	10	ug/L							
1,1-Dichloroethane	ND	2.0	ug/L							
1,2-Dichloroethane	ND	2.0	ug/L							
1,1-Dichloroethene	ND	2.0	ug/L							
cis-1,2-Dichloroethene	ND	2.0	ug/L							
trans-1,2-Dichloroethene	ND	2.0	ug/L							
1,2-Dichloropropane	ND	2.0	ug/L							
1,3-Dichloropropane	ND	2.0	ug/L							
2,2-Dichloropropane	ND	10	ug/L							
1,1-Dichloropropene	ND	10	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
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(770) 734-4200 FAX (770) 734-4201

WENCK Associates
1080 Holcomb Bridge Road, Building 100, S
Roswell GA, 30076
Attention: Ms. Katie T. Ross

October 02, 2017

Report No.: AAI0590

Volatile Organic Compounds by EPA 8260 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 7090576 - EPA 5030B										
Blank (7090576-BLK1)										
trans-1,3-Dichloropropene	ND	2.0	ug/L							
Ethylbenzene	ND	2.0	ug/L							
Ethyl Methacrylate	ND	10	ug/L							
Hexachlorobutadiene	ND	10	ug/L							
p-Isopropyltoluene	ND	10	ug/L							
Hexachloroethane	ND	10	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	10	ug/L							
Methacrylonitrile	ND	10	ug/L							
Methyl Acrylate	ND	10	ug/L							
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L							
Methylene Chloride	ND	5.0	ug/L							
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L							
Methyl Methacrylate	ND	10	ug/L							
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L							
Methyl-tert-Butyl Ether	ND	10	ug/L							
Naphthalene	ND	10	ug/L							
2-Nitropropane	ND	10	ug/L							
Propionitrile (Ethyl Cyanide)	ND	20	ug/L							
n-Propylbenzene	ND	10	ug/L							
Styrene	ND	5.0	ug/L							
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L							
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L							
Tetrachloroethene	ND	2.0	ug/L							
Tetrahydrofuran	ND	10	ug/L							
Toluene	ND	2.0	ug/L							
1,2,3-Trichlorobenzene	ND	10	ug/L							
1,2,4-Trichlorobenzene	ND	10	ug/L							
1,1,1-Trichloroethane	ND	2.0	ug/L							
1,1,2-Trichloroethane	ND	2.0	ug/L							
Trichloroethene	ND	2.0	ug/L							
Trichlorofluoromethane	ND	10	ug/L							
1,2,3-Trichloropropane	ND	10	ug/L							
1,2,4-Trimethylbenzene	ND	10	ug/L							
1,3,5-Trimethylbenzene	ND	10	ug/L							
Vinyl Acetate	ND	10	ug/L							
Vinyl Chloride	ND	2.0	ug/L							
m+p-Xylene	ND	5.0	ug/L							
o-Xylene	ND	5.0	ug/L							
Xylenes, total	ND	5.0	ug/L							

Surrogate: Dibromofluoromethane

48

ug/L

50.000

96

80-120



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Report No.: AAI0590

Volatile Organic Compounds by EPA 8260 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 7090576 - EPA 5030B										
Blank (7090576-BLK1)										
Surrogate: 1,2-Dichloroethane-d4	50		ug/L	50.000		99	78-120			
Surrogate: Toluene-d8	49		ug/L	50.000		98	80-120			
Surrogate: 4-Bromofluorobenzene	51		ug/L	50.000		103	80-120			
LCS (7090576-BS1)										
Benzene	58		ug/L	50.000		115	67-134			
Chlorobenzene	57		ug/L	50.000		113	69-122			
1,1-Dichloroethene	49		ug/L	50.000		98	58-142			
Toluene	57		ug/L	50.000		114	68-127			
Trichloroethene	56		ug/L	50.000		112	72-132			
Surrogate: Dibromofluoromethane	49		ug/L	50.000		97	80-120			
Surrogate: 1,2-Dichloroethane-d4	50		ug/L	50.000		100	78-120			
Surrogate: Toluene-d8	49		ug/L	50.000		99	80-120			
Surrogate: 4-Bromofluorobenzene	52		ug/L	50.000		103	80-120			
Matrix Spike (7090576-MS1)										
Benzene	55		ug/L	50.000	0.0	110	67-134			
Chlorobenzene	54		ug/L	50.000	0.0	109	69-122			
1,1-Dichloroethene	49		ug/L	50.000	0.0	98	58-142			
Toluene	55		ug/L	50.000	0.0	110	68-127			
Trichloroethene	55		ug/L	50.000	0.0	110	72-132			
Surrogate: Dibromofluoromethane	47		ug/L	50.000		93	80-120			
Surrogate: 1,2-Dichloroethane-d4	49		ug/L	50.000		99	78-120			
Surrogate: Toluene-d8	49		ug/L	50.000		99	80-120			
Surrogate: 4-Bromofluorobenzene	51		ug/L	50.000		103	80-120			
Matrix Spike Dup (7090576-MSD1)										
Benzene	58		ug/L	50.000	0.0	116	67-134	6	9	
Chlorobenzene	57		ug/L	50.000	0.0	113	69-122	4	13	
1,1-Dichloroethene	52		ug/L	50.000	0.0	105	58-142	7	9	
Toluene	58		ug/L	50.000	0.0	115	68-127	4	9	
Trichloroethene	58		ug/L	50.000	0.0	115	72-132	5	11	
Surrogate: Dibromofluoromethane	47		ug/L	50.000		93	80-120			
Surrogate: 1,2-Dichloroethane-d4	50		ug/L	50.000		100	78-120			
Surrogate: Toluene-d8	49		ug/L	50.000		98	80-120			
Surrogate: 4-Bromofluorobenzene	52		ug/L	50.000		103	80-120			



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Report No.: AAI0590

Volatile Organic Compounds by EPA 8260 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
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Batch 7090673 - EPA 5030B

Blank (7090673-BLK1)	Prepared & Analyzed: 09/22/17									
Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Acetone	ND	100	ug/L							
Acrolein	ND	50	ug/L							
Acrylonitrile	ND	50	ug/L							
Allyl Chloride (3-Chloropropylene)	ND	10	ug/L							
Benzene	ND	2.0	ug/L							
Bromobenzene	ND	10	ug/L							
Bromoform	ND	10	ug/L							
Bromomethane	ND	10	ug/L							
n-Butylbenzene	ND	10	ug/L							
sec-Butylbenzene	ND	10	ug/L							
tert-Butylbenzene	ND	10	ug/L							
Carbon Disulfide	ND	10	ug/L							
Carbon Tetrachloride	ND	2.0	ug/L							
Chlorobenzene	ND	10	ug/L							
1-Chlorobutane	ND	10	ug/L							
Chloroethane	ND	5.0	ug/L							
Chloroform	ND	2.0	ug/L							
Chloromethane	ND	10	ug/L							
2-Chlorotoluene	ND	10	ug/L							
4-Chlorotoluene	ND	10	ug/L							
Dibromochloromethane	ND	10	ug/L							
1,2-Dibromo-3-chloropropane	ND	10	ug/L							
1,2-Dibromoethane	ND	10	ug/L							
Dibromomethane	ND	10	ug/L							
1,2-Dichlorobenzene	ND	10	ug/L							
1,3-Dichlorobenzene	ND	10	ug/L							
1,4-Dichlorobenzene	ND	10	ug/L							
trans-1,4-Dichloro-2-butene	ND	5.0	ug/L							
Dichlorodifluoromethane	ND	10	ug/L							
1,1-Dichloroethane	ND	2.0	ug/L							
1,2-Dichloroethane	ND	2.0	ug/L							
1,1-Dichloroethene	ND	2.0	ug/L							
cis-1,2-Dichloroethene	ND	2.0	ug/L							
trans-1,2-Dichloroethene	ND	2.0	ug/L							
1,2-Dichloropropane	ND	2.0	ug/L							
1,3-Dichloropropane	ND	2.0	ug/L							
2,2-Dichloropropane	ND	10	ug/L							
1,1-Dichloropropene	ND	10	ug/L							
cis-1,3-Dichloropropene	ND	2.0	ug/L							



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October 02, 2017

Report No.: AAI0590

Volatile Organic Compounds by EPA 8260 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 7090673 - EPA 5030B										
Blank (7090673-BLK1)										
trans-1,3-Dichloropropene	ND	2.0	ug/L							
Ethylbenzene	ND	2.0	ug/L							
Ethyl Methacrylate	ND	10	ug/L							
Hexachlorobutadiene	ND	10	ug/L							
p-Isopropyltoluene	ND	10	ug/L							
Hexachloroethane	ND	10	ug/L							
Iodomethane	ND	10	ug/L							
Isopropylbenzene	ND	10	ug/L							
Methacrylonitrile	ND	10	ug/L							
Methyl Acrylate	ND	10	ug/L							
Methyl Butyl Ketone (2-Hexanone)	ND	10	ug/L							
Methylene Chloride	ND	5.0	ug/L							
Methyl Ethyl Ketone (2-Butanone)	ND	100	ug/L							
Methyl Methacrylate	ND	10	ug/L							
4-Methyl-2-pentanone (MIBK)	ND	10	ug/L							
Methyl-tert-Butyl Ether	ND	10	ug/L							
Naphthalene	ND	10	ug/L							
2-Nitropropane	ND	10	ug/L							
Propionitrile (Ethyl Cyanide)	ND	20	ug/L							
n-Propylbenzene	ND	10	ug/L							
Styrene	ND	5.0	ug/L							
1,1,1,2-Tetrachloroethane	ND	2.0	ug/L							
1,1,2,2-Tetrachloroethane	ND	2.0	ug/L							
Tetrachloroethene	ND	2.0	ug/L							
Tetrahydrofuran	ND	10	ug/L							
Toluene	ND	2.0	ug/L							
1,2,3-Trichlorobenzene	ND	10	ug/L							
1,2,4-Trichlorobenzene	ND	10	ug/L							
1,1,1-Trichloroethane	ND	2.0	ug/L							
1,1,2-Trichloroethane	ND	2.0	ug/L							
Trichloroethene	ND	2.0	ug/L							
Trichlorofluoromethane	ND	10	ug/L							
1,2,3-Trichloropropane	ND	10	ug/L							
1,2,4-Trimethylbenzene	ND	10	ug/L							
1,3,5-Trimethylbenzene	ND	10	ug/L							
Vinyl Acetate	ND	10	ug/L							
Vinyl Chloride	ND	2.0	ug/L							
m+p-Xylene	ND	5.0	ug/L							
o-Xylene	ND	5.0	ug/L							
Xylenes, total	ND	5.0	ug/L							
Surrogate: Dibromofluoromethane	49		ug/L	50.000		98	80-120			



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Report No.: AAI0590

Volatile Organic Compounds by EPA 8260 - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual
Batch 7090673 - EPA 5030B										
Blank (7090673-BLK1)										
Surrogate: 1,2-Dichloroethane-d4	49		ug/L	50.000		98	78-120			
Surrogate: Toluene-d8	48		ug/L	50.000		96	80-120			
Surrogate: 4-Bromofluorobenzene	51		ug/L	50.000		102	80-120			
LCS (7090673-BS1)										
Benzene	53		ug/L	50.000		106	67-134			
Chlorobenzene	53		ug/L	50.000		106	69-122			
1,1-Dichloroethene	45		ug/L	50.000		91	58-142			
Toluene	53		ug/L	50.000		105	68-127			
Trichloroethene	53		ug/L	50.000		105	72-132			
Surrogate: Dibromofluoromethane	49		ug/L	50.000		97	80-120			
Surrogate: 1,2-Dichloroethane-d4	50		ug/L	50.000		99	78-120			
Surrogate: Toluene-d8	48		ug/L	50.000		96	80-120			
Surrogate: 4-Bromofluorobenzene	52		ug/L	50.000		103	80-120			
Matrix Spike (7090673-MS1)										
Benzene	57		ug/L	50.000	0.0	114	67-134			
Chlorobenzene	55		ug/L	50.000	0.6	110	69-122			
1,1-Dichloroethene	49		ug/L	50.000	0.0	98	58-142			
Toluene	57		ug/L	50.000	0.3	114	68-127			
Trichloroethene	55		ug/L	50.000	0.0	111	72-132			
Surrogate: Dibromofluoromethane	49		ug/L	50.000		98	80-120			
Surrogate: 1,2-Dichloroethane-d4	50		ug/L	50.000		100	78-120			
Surrogate: Toluene-d8	47		ug/L	50.000		93	80-120			
Surrogate: 4-Bromofluorobenzene	51		ug/L	50.000		101	80-120			
Matrix Spike Dup (7090673-MSD1)										
Benzene	55		ug/L	50.000	0.0	110	67-134	4	9	
Chlorobenzene	53		ug/L	50.000	0.6	104	69-122	5	13	
1,1-Dichloroethene	45		ug/L	50.000	0.0	91	58-142	8	9	
Toluene	55		ug/L	50.000	0.3	110	68-127	3	9	
Trichloroethene	54		ug/L	50.000	0.0	108	72-132	2	11	
Surrogate: Dibromofluoromethane	49		ug/L	50.000		98	80-120			
Surrogate: 1,2-Dichloroethane-d4	49		ug/L	50.000		99	78-120			
Surrogate: Toluene-d8	48		ug/L	50.000		95	80-120			
Surrogate: 4-Bromofluorobenzene	51		ug/L	50.000		103	80-120			



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October 02, 2017

Laboratory Certifications

Code	Description	Number	Expires
GADW	Georgia DW Inorganics Eff: 07/01/2016	812	06/30/2018
GADMW	Georgia DW Microbiology Eff: 07/01/2015	812	12/09/2019
NC	North Carolina	381	12/31/2017
NELAC	FL DOH (Non-Pot. Water, Solids) Eff: 07/01/2016	E87315	06/30/2018
NELDW	FL DOH NELAC (Drinking Water) Eff: 07/01/2016	E87315	06/30/2018
SC	South Carolina	98011001	09/30/2017
TX	Texas	T104704397-08-TX	03/31/2018
VA	Virginia	460204	12/14/2017



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October 02, 2017

Legend

Definition of Laboratory Terms

- ND** - None Detected at the Reporting Limit
- TIC** - Tentatively Identified Compound
- CFU** - Colony Forming Units
- SOP** - Method run per Pace Standard Operating Procedure
- RL** - Reporting Limit
- DF** - Dilution Factor
 - * - Analyte not included in the NELAC list of certified analytes.

Sample Information

N-Nitrosodiphenylamine breaks down to diphenylamine in the GCMS; both analytes are reported as N-Nitrosodiphenylamine. Pace is not NELAC certified for diphenylamine.
Phthalic acid and phthalic anhydride are reported as dimethyl phthalate
Maleic acid and maleic anhydride are reported as dimethyl malate
1,2-Diphenylhydrazine breaks down to azobenzene in the GCMS; both analytes are reported as azobenzene
Drinking Water Records will be available for at least 5 years and are subject to disposal after the 5 years have elapsed.

Definition of Qualifiers

- QM-05** The spike recovery was outside acceptance limits for the MS and/or MSD and/or PDS due to suspected matrix interference. Sample results for the QC batch were accepted based on acceptable LCS recoveries.
- QM-02** The spike recovery is outside acceptance limits due to insignificant spike amount as compared to sample concentration.
- J** Estimated value less than Reporting Limit (RL) but greater than Method Detection Limit(MDL) (CLP J-Flag).

Note: Unless otherwise noted, all results are reported on an as received basis.

CHAIN OF CUSTODY RECORD

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, LLC - Atlanta GA
110 TECHNOLOGY PARKWAY, PEACHTREE CORNERS, GA 30092
(770) 734-4200 : FAX (770) 734-4201

PAGE: _____

OF _____

CLIENT NAME:		Weck		ANALYSIS REQUESTED										PRESERVATION		CONTAINER TYPE	
CLIENT ADDRESS/PHONE NUMBER/FAX NUMBER:														# of		P - PLASTIC	
REPORT TO:		Karie Ross		CC: W. Bennett										PRESERVATION:		A - AMBER GLASS	
REQUESTED COMPLETION DATE:		St. Louis		PO#:										# of		G - CLEAR GLASS	
PROJECT NAME/STATE:		City of Duluth		PROJECT #:										C - VIAL		V - VO A	
Collection DATE		Collection TIME		MATRIX CODE*		G		O		R		S		I - STERILE		B - STORM WATER	
1/18/17		15:03		GN		X		MUN-7		MUN-8		E		D		DW - DRINKING WATER	
16:10												R		I		WW - WASTEWATER	
12:09												S		D		GW - GROUNDWATER	
↓		17:03										T		W		SW - SURFACE WATER	
1/19/17		17:44										U		ST - STORM WATER		ST - STORM WATER	
15:55												V		W		W - WATER	
17:42												X		P		P - PRODUCT	
15:30												Y		→		REMARKS/ADDITIONAL INFORMATION	
16:35												Z					
10:40												A					
↓		↓										B					
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Sample Condition Upon Receipt

Pace Analytical

Client Name: Wenck

Project # AA-E0590

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Tracking #: _____

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

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used TR-1

Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Cooler Temperature 4.4°C

Biological Tissue is Frozen: Yes No

Date and Initials of person examining contents: 9/20/17 (DW)

Temp should be above freezing to 6°C

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

Client Notification/ Resolution:

Field Data Required?

Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____

Date: _____

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)



PACE ANALYTICAL SERVICES, LLC.

Environmental Monitoring & Laboratory Analysis
110 Technology Parkway, Peachtree Corners, GA 30092
(770) 734-4200 FAX (770) 734-4201

LOG-IN CHECKLIST

Printed: 9/22/2017 1:31:43PM

Attn: Ms. Katie T. Ross

Client: WENCK Associates
Project: Duluth, City of
Date Received: 09/20/17 08:37

Work Order: AAI0590
Logged In By: Charles Hawks

OBSERVATIONS

#Samples:	12	#Containers:	56
Minimum Temp(C):	4.4	Maximum Temp(C):	4.4
		Custody Seal(s) Used:	N/A

CHECKLIST ITEMS

COC included with Samples	YES
Sample Container(s) Intact	YES
Chain of Custody Complete	YES
Sample Container(s) Match COC	YES
Custody seal Intact	N/A
Temperature in Compliance	YES
Sufficient Sample Volume for Analysis	YES
Zero Headspace Maintained for VOA Analyses	YES
Samples labeled preserved (If Applicable)	YES
Samples received within Allowable Hold Times	YES
Samples Received on Ice	YES
Preservation Confirmed	YES

Comments:

September 28, 2017

Eben Buchanan
Pace Analytical Atlanta
110 Technology Parkway
Peachtree Corners, GA 30092

RE: Project: AAI0590 WENCK ASSOCIATES
Pace Project No.: 92356406

Dear Eben Buchanan:

Enclosed are the analytical results for sample(s) received by the laboratory on September 23, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

The samples were received outside of required temperature range. Analysis was completed upon client approval.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: AAI0590 WENCK ASSOCIATES
Pace Project No.: 92356406

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification #: LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12

South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: AAI0590 WENCK ASSOCIATES
Pace Project No.: 92356406

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92356406001	MW-1	Water	09/19/17 17:44	09/23/17 10:30
92356406002	MW-5	Water	09/19/17 12:35	09/23/17 10:30
92356406003	MW-6	Water	09/19/17 10:40	09/23/17 10:30

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: AAI0590 WENCK ASSOCIATES
Pace Project No.: 92356406

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92356406001	MW-1	RSK 175 Modified	TSM	3	PASI-C
92356406002	MW-5	RSK 175 Modified	TSM	3	PASI-C
92356406003	MW-6	RSK 175 Modified	TSM	3	PASI-C

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AAI0590 WENCK ASSOCIATES

Pace Project No.: 92356406

Sample: MW-1	Lab ID: 92356406001		Collected: 09/19/17 17:44	Received: 09/23/17 10:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 Headspace								Analytical Method: RSK 175 Modified	
Ethane	ND	ug/L	10.0	10.0	1		09/25/17 12:37	74-84-0	
Ethene	ND	ug/L	10.0	10.0	1		09/25/17 12:37	74-85-1	
Methane	ND	ug/L	10.0	10.0	1		09/25/17 12:37	74-82-8	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AAI0590 WENCK ASSOCIATES

Pace Project No.: 92356406

Sample: MW-5 **Lab ID: 92356406002** Collected: 09/19/17 12:35 Received: 09/23/17 10:30 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
RSK 175 Headspace								Analytical Method: RSK 175 Modified	
Ethane	ND	ug/L	10.0	10.0	1			09/25/17 13:07	74-84-0
Ethene	ND	ug/L	10.0	10.0	1			09/25/17 13:07	74-85-1
Methane	ND	ug/L	10.0	10.0	1			09/25/17 13:07	74-82-8

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: AAI0590 WENCK ASSOCIATES
Pace Project No.: 92356406

Sample: MW-6	Lab ID: 92356406003		Collected: 09/19/17 10:40	Received: 09/23/17 10:30	Matrix: Water				
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
RSK 175 Headspace		Analytical Method: RSK 175 Modified							
Ethane	ND	ug/L	10.0	10.0	1		09/25/17 13:38	74-84-0	
Ethene	ND	ug/L	10.0	10.0	1		09/25/17 13:38	74-85-1	
Methane	ND	ug/L	10.0	10.0	1		09/25/17 13:38	74-82-8	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: AAI0590 WENCK ASSOCIATES

Pace Project No.: 92356406

QC Batch:	379182	Analysis Method:	RSK 175 Modified
QC Batch Method:	RSK 175 Modified	Analysis Description:	RSK 175 HEADSPACE
Associated Lab Samples:	92356406001, 92356406002, 92356406003		

METHOD BLANK: 2101219 Matrix: Water

Associated Lab Samples: 92356406001, 92356406002, 92356406003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Ethane	ug/L	ND	10.0	10.0	09/25/17 10:57	
Ethene	ug/L	ND	10.0	10.0	09/25/17 10:57	
Methane	ug/L	ND	10.0	10.0	09/25/17 10:57	

LABORATORY CONTROL SAMPLE: 2101220

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Ethane	ug/L	658	831	126	70-130	
Ethene	ug/L	1120	1450	130	70-130	
Methane	ug/L	396	371	94	70-130	

MATRIX SPIKE SAMPLE: 2101221

Parameter	Units	92356406001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Ethane	ug/L	ND	658	745	113	70-130	
Ethene	ug/L	ND	1120	1340	120	70-130	
Methane	ug/L	ND	396	289	73	70-130	

SAMPLE DUPLICATE: 2101222

Parameter	Units	92356406001 Result	Dup Result	RPD	Max RPD	Qualifiers
Ethane	ug/L	ND	ND		20	
Ethene	ug/L	ND	ND		20	
Methane	ug/L	ND	ND		20	

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

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: AAI0590 WENCK ASSOCIATES

Pace Project No.: 92356406

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: AAI0590 WENCK ASSOCIATES
 Pace Project No.: 92356406

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92356406001	MW-1	RSK 175 Modified	379182		
92356406002	MW-5	RSK 175 Modified	379182		
92356406003	MW-6	RSK 175 Modified	379182		

REPORT OF LABORATORY ANALYSIS

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	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office

Laboratory receiving samples:
Asheville Eden Greenwood Huntersville Raleigh Mechanicsville **WO# : 92356406**

92356406

**Sample Condition
Upon Receipt****Client Name:**

Pace - GA

Project #:Courier:
 Commercial
 FedEx UPS USPS Client
 Pace Other: _____
Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: NC 9-23-17

Packing Material: Bubble Wrap Bubble Bags None Other**Biological Tissue Frozen?** Yes No N/A**Thermometer:** IR Gun ID: 1701Type of Ice: Wet Blue NoneTemp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Correction Factor:

Cooler Temp Corrected (°C): 12.9

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No Yes No

			Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Samples Arrived within Hold Time?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Rush Turn Around Time Requested?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Sufficient Volume?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Correct Containers Used? -Pace Containers Used?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Containers Intact?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Sample Labels Match COC?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
-Includes Date/Time/ID/Analysis Matrix:	W+		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	<input type="checkbox"/> N/A
Trip Blank Present?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
Trip Blank Custody Seals Present?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A

CLIENT NOTIFICATION/RESOLUTIONField Data Required? Yes No

Person Contacted: Eben Buchanan

Date/Time: 9/25/17

Comments/Sample Discrepancy: PM informed of received Temperature. KC

Lot ID of split containers: _____

Project Manager SCURF Review: J/M

Date: 9/25/17

Project Manager SRF Review: J/M

Date: 9/25/17

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers)



Document Name:
Sample Condition Upon Receipt(SCUR)

Document Revised: August 4, 2017
Page 2 of 2

Issuing Authority:

WO# : 92356406

Document No.:
F-CAR-CS-033-Rev.04

Project #

PM: TIH

Due Date: 09/27/17

CLIENT: 93-PaceATL

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

**Bottom half of box is to list number of bottles

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (pH > 9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	VGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	DG9T-40 mL VOA Na2S2O3 (N/A)	V99U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Plastic (NH4)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
2	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		
12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Chain of Custody



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Page 13 of 13
Page 67 of 67

Workorder: AA10590 Workorder Name: Duluth 5365 Owner Received Date: 9/20/2017 Results Requested By: 9/27/2017

Report To:
Eben Buchanan
Pace Analytical Atlanta
110 Technology Parkway
Peachtree Corners, GA 30092
Phone (770)-734-4200

Subcontract To:
Trey Carter
Pace - Huntersville, NC
9800 Kinney AVE STE 100
Huntersville, NC 28078
Telephone : 704-875-9092

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Cool	Preserved Containers	Requested Analysis		
								MEE	RSK175	LAB USE ONLY
1	MW-1	Grab	9/19/17 1744	AA10590-05	GW	1	1			001
2	MW-5	Grab	9/19/17 1235	AA10590-09	GW	1	1			002
3	MW-6	Grab	9/19/17 1040	AA10590-10	GW	1	1			003
4										
5										
6										
7										
8										
9										
10										

Transfers	Released By	Date/Time	Received By	Date/Time	Comments
1			Hull G Pace	9/23/17 10:30	
2					
3					

Cooler Temperature on Receipt 12.7 °C Custody Seal Y or N Y Received on Ice Y or N Y Sample Intact Y or N Y

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC

This chain of custody is considered complete as is since this information is available in the owner laboratory.

CHAIN OF CUSTODY RECORD



Pace Analytical Services, LLC - Atlanta GA
110 TECHNOLOGY PARKWAY, PEACHTREE CORNERS, GA 30092
(770) 734-4200 : FAX (770) 734-4201

PAGE: _____ OF _____

CLIENT NAME:			ANALYSIS REQUESTED										L A B C O N T A I N E R S	I D N U M B E R	CONTAINER TYPE		PRESERVATION				
			CONTAINER TYPE:	V	Y	V	P	P	P										1 - HCl, ≤6°C		
			PRESERVATION:	1	Y	5												2 - H ₂ SO ₄ , ≤6°C			
			# of															3 - HNO ₃			
			C O N T A I N E R S															V - VOA VIAL			
																	S - STERILE				
																	O - OTHER				
																	7 - ≤6°C not frozen				
																	*MATRIX CODES:				
																	DW - DRINKING WATER	S - SOIL			
															WW - WASTEWATER	SL - SLUDGE					
															GW - GROUNDWATER	SD - SOLID					
															SW - SURFACE WATER	A - AIR					
															ST - STORM WATER	L - LIQUID					
															W - WATER	P - PRODUCT					
REMARKS/ADDITIONAL INFORMATION																					
Collection DATE			Collection TIME	MATRIX CODE*	C O M P A B	SAMPLE IDENTIFICATION															
9/18/17			15:03	GW	X	VOC's		TOC	M	F	E	I	W	Y	Z						
			16:10			MW-7a			3												
			12:02			MW-8				7											
			↓ 17:02			MW-11															
			↓ 17:02			MW-12															
9/19/17			17:44			MW-1				2	2										
			15:55			MW-2															
			17:42			MW-3															
			15:30			MW-4															
			13:35			MW-5				2	2										
			10:40			MW-6				2	2										
			↓	↓	↓	DUP-1															
SAMPLER BY AND TITLE:			DATE/TIME:		RELINQUISHED BY:		DATE/TIME:		FOR LAB USE ONLY												
RECEIVED BY:			DATE/TIME:		RELINQUISHED BY:		DATE/TIME:		LAB #:												
RECEIVED BY LAB:			DATE/TIME:		SAMPLE SHIPPED VIA:		CLIENT		Entered into LIMS: Tracking #:												
					UPS	FED-EX	USPS	COURIER	OTHER	FS											
pH checked: Yes	No	NA	Ice: Yes	No	NA	Temperature: Min: 15.4	Max:	Custody Seal: Intact	Broken	Not Present	N/A	# of Coolers	Cooler ID:								
Rev. 12/15/2016																					

Appendix D

IDW Disposal Manifests

NON-HAZARDOUS WASTE MANIFEST		1. Generator ID Number CES QG	2. Page 1 of 1	3. Emergency Response Phone (800) 839-3975	4. Waste Tracking Number 113266	
5. Generator's Name and Mailing Address 3146 MAIN STREET		Generator's Site Address (if different than mailing address)				
DULUTH, GA 30096						
Generator's Phone:						
6. Transporter 1 Company Name EQ INDUSTRIAL SERVICES		U.S. EPA ID Number MIK 435 642 742				
7. Transporter 2 Company Name		U.S. EPA ID Number				
8. Designated Facility Name and Site Address EQIS ATLANTA TRANSFER & PROCESSING 5600 FULTON INDUSTRIAL BLVD, SW ATLANTA, GA 30336 (404) 494-3520		U.S. EPA ID Number GAR 000 039 776				
Facility's Phone:						
9. Waste Shipping Name and Description		10. Containers		11. Total Quantity	12. Unit Wt./Vol.	
1. NON-HAZARDOUS, NON-DOT REGULATED MATERIAL (WATER)		No.	Type	10	G	
1		DM				
2. NON-HAZARDOUS, NON-DOT REGULATED MATERIAL (SOIL)		2	DM	1000	P	
3.						
4.						
13. Special Handling Instructions and Additional Information 1. G150854EQATL / DECON WATER 2. G151643EQATL / IDW SOIL						
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.						
Generator's/Offeror's Printed/Typed Name <i>John R. Hester</i>		Signature		Month	Day	Year
				8	23	17
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.		Port of entry/exit: _____ Date leaving U.S.: _____				
Transporter Signature (for exports only):						
16. Transporter Acknowledgment of Receipt of Materials						
Transporter 1 Printed/Typed Name <i>B. Gordon</i>		Signature		Month	Day	Year
				8	23	17
Transporter 2 Printed/Typed Name		Signature		Month	Day	Year
17. Discrepancy						
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection						
Manifest Reference Number: _____						
17b. Alternate Facility (or Generator)		U.S. EPA ID Number				
Facility's Phone:						
17c. Signature of Alternate Facility (or Generator)		Month Day Year				
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a						
Printed/Typed Name		Signature		Month	Day	Year



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