WENCK File #2606-0016
July 2019

Remedial Investigation Summary

Water Gremlin Company
White Bear Lake Township
MPCA Site ID SR0001534

Prepared for:

Water Gremlin

4400 Otter Lake Road
White Bear Township, MN 55110

WENCK

Responsive partner.
Exceptional outcomes.

Prepared by:

WENCK Associates, Inc.
1800 Pioneer Creek Center
Maple Plain, MN 55359
Phone: 763-479-4200
Fax: 763-479-4242

Table of Contents

1.0 PURPOSE AND SCOPE 1-1

1.1 Purpose 1-1
1.2 Scope of Services 1-1

2.0 SITE DESCRIPTION AND HISTORY 2-1

2.1 Site Location 2-1
2.2 Current Site Conditions and Use 2-1
2.3 Past Site Use 2-2
2.4 Physical Setting 2-3
2.4.1 Topography 2-3
2.4.2 Geology 2-3
2.4.3 Hydrogeology 2-4
2.4.4 Surface Water 2-4

3.0 PREVIOUS INVESTIGATIONS 3-1

4.0 SITE INVESTIGATION METHODS AND PROCEDURES 4-1

4.1 Areas of Concern 4-1
4.2 Rationale and Objective 4-1
4.3 Field Investigation Overview 4-2
4.4 Deviations From Approved RI Work Plan 4-2
4.5 Soil Screening investigation 4-3
4.6 Groundwater Screening Investigation 4-6
4.7 Soil Vapor Screening Investigation 4-8
4.7.1 Sub-Slab Vapor Sampling 4-8
4.7.2 Crawl Space and Outdoor Ambient Air 4-10
4.8 Sediment Sampling 4-11
4.9 Surface Water Sampling 4-12

5.0 INVESTIGATION RESULTS 5-1

5.1 Receptor Survey Results 5-1
5.1.1 Surface Water Survey Results 5-1
5.1.2 Drinking Water Well Survey Results 5-1
5.1.3 On-Site Stormwater Collection Systems 5-2
5.2 Soil 5-2
5.2.1 Surficial Geology 5-2
5.2.2 Field Screening Results 5-3
5.2.3 Soil Analytical Results 5-4
5.3 Groundwater 5-4
5.3.1 Hydrogeology 5-4
5.3.2 Groundwater Analytical Results 5-4
5.4 Soil Vapor 5-5
5.4.1 Sub-Slab Vapor Sampling 5-6
5.4.2 Crawl Space and Outdoor Ambient Air 5-6
5.5 Sediment Samples 5-7

5.5.1 Sediment Description 5-7
5.5.2 Sediment Analytical Results 5-7
5.6 Surface Water 5-8
5.7 Analytical Results Quality Assurance/Quality Control 5-8
5.7.1 Blind Duplicate Sample Summary 5-8
5.7.2 Matrix Spike/Matrix Spike Duplicate Sample Summary 5-9
5.7.3 Trip Blank Summary 5-9
5.7.4 Rinsate Sample Summary 5-10
5.7.5 QA/QC Summary 5-10

6.0 RISK EVALUATION 6-1

6.1 Site Conceptual Model 6-1
6.2 Physical Setting 6-1
6.2.1 Topography 6-1
6.2.2 Geology 6-2
6.2.3 Hydrogeology 6-3
6.2.4 Surface Water 6-3
6.3 Contaminants of Concern 6-3
6.4 Contamination Mechanism 6-4
6.5 Transport Mechanisms 6-4
6.6 Potential Exposure Media 6-5

7.0 DISCUSSION 7-1

7.1 General 7-1
7.2 Soil Conditions 7-1
7.3 Groundwater Conditions 7-1
7.4 Soil Vapor Conditions 7-1
7.5 Sediment Conditions 7-2
7.6 Surface Water Conditions 7-3
7.7 Exposure Pathway Analysis and Risk Assessment 7-3

8.0 CONCLUSIONS 8-1

9.0 STANDARD OF CARE 9-1

10.0 REFERENCES 10-1

FIGURES

1 Site Location Map
2 Remedial Investigation Area Detail Map
3 Exterior Remedial Investigation Locations Map
4 Sub-Slab and Crawl Space Vapor Samples
5 Cross-Section Index Map
6 Surface Water Survey
7 Well Receptor Survey
8 Geologic Cross-Section A-A'
9 Geologic Cross-Section B-B'
10 Geologic Cross-Section C-C'
11 Geologic Cross-Section D-D'
12 Soil and Sediment Exceedances
13 VOC Exceedances in Groundwater
14 Sub-Slab Vapor Detections
15 Crawl Space and Background Air Detections

TABLES

1 Investigation Sample Coordinates
2 Soil Analytical Results Summary
3 Groundwater Analytical Results Summary
4 Sub-Slab Vapor Analytical Results Summary
5 Crawl Space and Background Air Analytical Results Summary
6 Sediment Analytical Results Summary
7 Surface Water Analytical Results Summary

APPENDICES

A Wenck May 2019 Remedial Investigation Work Plan
B Soil Boring Logs
C Soil Vapor Sample Field Forms
D Laboratory Reports (Level 2) and Chain-of Custody Documentation
E Validation Reports and Supporting Documentation

1.0 Purpose and Scope

1.1 PURPOSE

Wenck Associates, Inc. (Wenck) conducted this Remedial Investigation (RI) of the Water Gremlin Company Facility located at 4400 Otter Lake Road, White Bear Lake Township, Ramsey County, Minnesota (the Site) in accordance with Remedial Investigation Work Plan dated May 2019 (RI Work Plan) and approved by the Minnesota Pollution Control Agency (MPCA) on May 15, 2019. The purpose of the RI described herein was to assess soil, sediment, surface water, groundwater, sub-slab vapor and crawl space conditions identified as Areas of Concern (AOCs) in accordance with the approved RI Work Plan. The RI Work Plan was prepared to meet the requirements of Section 10, paragraphs aa. and cc. of the March 1, 2019 Stipulation Agreement (STIP) between Water Gremlin Company and the MPCA. A copy of the approved RI Work Plan is included in **Appendix A**. Upon issuance of the STIP, Water Gremlin enrolled in the MPCA's remediation program. The investigation and related activities are being conducted under MPCA Site ID SR0001534.

1.2 SCOPE OF SERVICES

The following scope of service was completed for this RI:

- Preparation of the RI Work Plan and submittal to the MPCA for approval.
- Preparation of the Site Safety and Health Plan (SSHP). The SSHP was prepared to cover all field work under the MPCA-approved RI Work Plan. The SSHP included emergency phone numbers and directions to the local hospital. The SSHP also addressed safety and health requirements based on site-specific conditions encountered during the field activities.
- Cleared public and private utilities;
- Completed 18 push-probe soil borings to assess current soil conditions;
- Completed 16 push-probe borings using a Geoprobe Screen Point 15 (SP-15) screen for collection of multiple vertical groundwater samples from selected boring locations;
- Completed of seven (7) hand auger soil borings, five (5) within the wetland area southeast of the building and two (2) within landscaped areas west of the building to assess current soil conditions;
- Installed and sampled 25 permanent sub-slab vapor pins inside the North Campus building;
- Observed and collected soil samples recovered from the push-probe and hand auger borings, created soil boring logs, and field-screened soil for the presence of volatile organics with a photoionization detector (PID);
- Collected a total of 31 soil samples for analysis of volatile organic compounds (VOCs) by EPA Method 8260B, and 30 soil samples for analysis of lead by EPA Method 6020;
- Collected 58 groundwater samples from temporary well screens for laboratory analysis of VOCs;
- Collected 25 sub-slab samples, six (6) crawl space air samples below the Tool Room and two (2) outdoor ambient air samples from various locations throughout the North Campus building for VOC analysis by EPA Method TO-15;
- Collected six (6) surface water samples from County 14 Ditch for laboratory analysis of VOCs and lead;

- Collected eight (8) sediment samples, five (5) from the County 14 Ditch and three (3) from the eastern stormwater pond for laboratory analysis of VOCs and lead;
- Collected appropriate QA/QC samples per the approved RI Work Plan; and
- Prepared this Remedial Investigation report documenting the results of the investigation and providing recommendations for additional investigation.

2.0 Site Description and History

2.1 SITE LOCATION

The Site is located in a commercial and residential area at 4400 Otter Lake Road White Bear Lake Township, Ramsey County, Minnesota. Additional addresses of the Site include: 0, 1596 and 1610 Whitaker Street; 4316, 4336, 4350 and 4370 Otter Lake Road. The Site is located in the East ½ of the Southwest ¼ of the Northeast ¼ of Section 22, Township 30 North, Range 22 West.

The Site consists of seven parcels occupied by two manufacturing buildings (the North Campus building and the South Campus building) with paved parking lots and drive areas, support structures, storage areas and landscaped areas along the western portion of the property. The eastern half of the Site primarily consists of undeveloped wetlands. County Ditch 14 (Lambert Creek) bisects the center of the Site in an approximate east-west configuration. A pedestrian bridge is located along Otter Lake Road providing access to the two buildings. The site is approximately 61.44-acres in size and is associated with the following parcel numbers:

- 1596 Whitaker Street: 22-30-22-13-0024 (2.77-acres)
- 1596 Whitaker Street: 22-30-22-14-0009 (0.69-acres)
- 4400 Otter Lake Road: 22-30-22-13-0022 (10.77-acres)
- 4316 Otter Lake Road: 22-30-22-22-42-0013 (6.9-acres)
- 4336 Otter Lake Road: 22-30-22-13-0007 (0.64-acres)
- 4370 Otter Lake Road: 22-30-22-13-0023 (4.62-acres)
- 0 Whitaker Street: 22-30-22-14-0008 (35.05-acres)

Areas investigated as part of the MPCA-approved RI Work Plan included the North Campus building and approximately 13-acres of the northeastern portion of the Site (portions of the 1596, 4400 and 4370 parcels).

The Site location, with parcel boundaries, is shown in **Figure 1**. A Site Detail Map showing the exterior RI details is included as **Figure 2**.

2.2 CURRENT SITE CONDITIONS AND USE

The Site currently consists of a North Campus and a South Campus. The North Campus is the primary manufacturing operation at 4400 Otter Lake Road. The existing North Campus building is approximately 90,000 square feet in size with the original building constructed in 1949. Building additions were made in approximately 1952, 1954, 1959, 1962, 1964, 1965, 1968, 1969, 1971, 1973, 1974, 1976, 1978, 1987, 1994, 1995, 1997 and 1998, with interior renovations in 2013 and 2018.

Manufacturing operations in the North Campus building include die casting, hot melt molding, hot melt extrusion, cold forming, coining, gravity casting and coating. Lead bars are melted into liquid via hot melt pots located on die cast machines. The molten lead is injected into a die (mold) forming custom lead parts. Scrap material is dropped into a conveyor that brings the scrap back to the lead melting pot for reclamation.

The coating operations consist of mixing a solvent with solid coating materials (Oppanol and wood resin) to produce a liquid material for application on lead parts. Coating operations are conducted within plexiglass enclosures, which are vented to a common duct and vented to air pollution control equipment consisting of a solvent recovery absorption/desorption treatment system. Prior to January 2019, trichloroethylene (TCE) was used as the primary carrier in the coating process. Water Gremlin resumed coating operations in March 2019 using FluoSolv®, a proprietary blend of non-flammable hydrofluoroethers (HFEs) and trans-1,2-dichloroethylene (t-DCE).

The South Campus is currently improved with one approximately 84,000 square foot building at 4316 Otter Lake Road. The building was constructed between 2013 and 2014. Operations in the South Campus building primarily consist of warehousing, light assembly, research and development and shipping and receiving. The majority of the building consists of warehouse space. Light assembling and product packaging activities are conducted in the southeastern portion of the building and research and development (R&D) laboratories are located along the southwestern portion of the building. Very small quantities of solvents are used in the R&D laboratories. Minor amounts of lead are used in the R&D lab are also used in the R&D lab. All waste streams generated in the R&D lab are properly disposed off-site and proper authorization. All waste documentation is kept on site per all state and federal requirements. Loading docks and shipping/receiving are located on the east side of the building.

2.3 PAST SITE USE

According to reviewed sources of information, the Site was originally purchased by the Ratte family in 1918 for agricultural use. Small scale manufacturing operations of Rubbercor fishing sinkers began in a garage at the Site in approximately 1949. Operations increased over subsequent years and multiple building additions were completed. By approximately 1964 Water Gremlin began coining operations and expanded their facility to 12,000-square feet. By the early 1970s Water Gremlin was a leading manufacturer of fishing sinkers and the facility had expanded to approximately 24,000-square feet. Water Gremlin expanded operations to include custom lead parts in the mid to late 1970s and in approximately 1977 the facility was expanded to approximately 32,000-square feet to include custom parts manufacturing equipment. Between 1997 and 1998, additions totaling roughly 24,000-square foot were completed to the south and eastern portions of the North Campus building. Interior and exterior renovations were completed at the North Campus building in 2013, and in 2016 the west parking lot and stormwater ponds were completed. In 2018 an interior portion of the North Campus building floor was replaced.

Former dwellings on the northern portion of the Site were addressed as 1596 Whitaker Street, 4350 Otter Lake Road & 4370 Otter Lake Road. The residential structures were located adjacent to the west and northwest of the North Campus building from at least 1940 until 2015 when the structures were razed.

Residential structures were located on the southern portion of the Site in the vicinity of the current south building from at least 1940 until the early 1990s. The South Campus building was constructed at 4316 Otter Lake Road in 2013. A residential structure was located at 4336 Otter Lake Road, adjacent to the north of the South building, from 1924 until 2017 when the residence was razed.

The central and eastern portions of the Site have remained vacant wetlands, bisected by County Ditch 14 (Lambert Creek) from at least 1940 to the present. A pedestrian bridge was constructed over the county ditch and wetlands, along Otter Lake Road in 2017.

2.4 PHYSICAL SETTING

2.4.1 Topography

The Site has a general slope to the east toward Goose Lake and White Bear Lake with the approximate elevation ranging from 920 to 910 feet above mean sea level. Site surface drainage is sheet flow toward the municipal stormwater sewer system associated with adjacent public streets and via infiltration in the wetland areas on the eastern portion of the Site. Historic development may have included grading or filling of the Site to improve the location for construction and drainage.

County Ditch 14 (Lambert Creek) is in an east-west configuration and bisects through the approximate center of the Site. County Ditch 14 receives drainage from the adjacent wetlands, residential developments and Goose Lake and flows southwest through Rice Lake and eventually drains into East Vadnais Lake, located approximately 3.5-miles southwest of the Site.

A stormwater retention pond is located directly east of the main manufacturing building and receives stormwater runoff from the parking lot areas located on the east, north and southeast sides of the building as well as roof drain runoff. The eastern stormwater pond overflows to the surrounding wetlands and then to County Ditch 14 (Lambert Creek), which runs along the south side of the Facility.

A stormwater pond is located southwest of the loading docks of the North Campus building. The stormwater pond receives runoff from the southwest portion of the facility, which includes the shipping and receiving docks, covered dumpsters, and diesel generator. The stormwater pond has an outlet on the south side and water flows under the drive via a culvert and then flows overland to County Ditch 14 (Lambert Creek).

2.4.2 Geology

Published references describe the surficial geology at the Site as organic sediment comprised of peat, shallow lakes and/or marshes. The Ramsey County Atlas indicates some areas have been excavated and/or artificially filled (Minnesota Geological Survey, 1992).

Previous subsurface investigations completed at the Site have identified shallow fill soils underlain by fine-grained, poorly graded sandy soils ranging in thickness from five (south end of the Site) to approximately 30 feet (north end of the Site). This sandy unit overlies a silty clay semi-confining layer with silt and sand lenses. The semi-confining layer is estimated to be approximately 45 to 65 feet thick. Beneath this semi-confining layer is a clayey to silty sand unit. Based on geologic references the unconsolidated sediments in the area of the Site are approximately 200 feet thick.

Published references describe the first-encountered bedrock unit beneath the northern portion of the property as the Ordovician-aged St. Peter Sandstone. The St. Peter Sandstone units ranges in thickness from approximately 155 to 165 feet in Ramsey County. The upper portion of the St. Peter Sandstone consists of fine- to medium-grained sandstone. The lower portion of this unit is composed of fine-grained units of mudstone,

siltstone and shale interbedded with coarse-grained sandstone. The first encountered bedrock unit in the southeastern portion of the property is the Prairie du Chien Group consists of thinly to thickly-bedded dolostone. (Minnesota Geological Survey, 1992). Depth to bedrock is anticipated to be approximately 200 feet bg (Minnesota Geological Survey, 1992).

2.4.3 Hydrogeology

According to available hydrogeologic references, the general direction of shallow groundwater flow in the area of the Site is to the west (Minnesota Geological Survey, 1992). Local conditions may vary due to surface water features, perched groundwater conditions or artificially created drainage systems. Depth to regional groundwater is noted to be between approximately 10 to 20 feet below ground surface (Minnesota Geological Survey, 1992).

Previous monitoring wells completed at the Site identified shallow groundwater between 7 and 12-feet bg with a southerly flow direction, towards the wetland and County Ditch 14 (Lambert Creek). The previous subsurface investigations completed at the Site indicate two distinct aquifers are present in the vicinity of the Site. Groundwater has historically been identified within the upper 10-feet bg of the shallow unconsolidated aquifer and at approximately 25-feet bg within a deeper buried glacial aquifer.

2.4.4 Surface Water

Based on a review of the digital United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (http://www.fws.gov/wetlands/data/Mapper.html), the Site has designated wetland areas onsite. The Site consists of a mix of permeable and impermeable surfaces including buildings, paved areas, retention ponds, wetlands, and landscaped areas. Runoff from impermeable surfaces generally flows to two main retention ponds located southwest and east of the building. Discharge from both on-Site retention ponds flows through designated wetlands before discharging to County Ditch 14 (Lambert Creek).

3.0 Previous Investigations

Below provides a list of previous environmental reports that have been prepared for the Site:

- *Environmental Soils Evaluation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; November 28, 1994 (1994 Soil Investigation Report)
- *Phase I Environmental Site Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. Braun Intertec Corporation; April 10, 1995. (1995 Braun Phase I Report)
- *Soil Excavation Observations and Documentation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. Braun Intertec Corporation; September 26, 1995. (1995 Soil Excavation Report)
- *Phase II Environmental Site Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. Braun Intertec Corporation; March 26, 1996. (1996 Braun Phase II Report)
- *Response Action Plan, Water Gremlin Company, 1610 Whitaker, White Bear Lake, Minnesota*. Prepared For Minnesota Pollution Control Agency. Braun Intertec Corporation; September 12, 1996. (1996 Response Action Plan)
- *APPRAISAL OF 4326 OTTERTAIL ROAD, WHITE BEAR TOWNSHIP, MN 55110.* Prepared for David Zinschlag, Water Gremlin Company. The Search Co. Appraisal Division. (1997 Appraisal)
- *Response Action Plan Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; April 8, 1997. (1997 RAP Implementation)
- *Environmental Soil and Groundwater Evaluation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; August 4, 1997. (1997 Soil and Groundwater Evaluation 1)
- *Environmental Soil and Groundwater Evaluation Report 2, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 6, 1998. (1998 Soil and Groundwater Evaluation 2)
- *Environmental Soil and Groundwater Evaluation Report 3, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 15, 1999. (1999 Soil and Groundwater Evaluation 3)
- *Environmental Groundwater Evaluation Report 4, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; November 5, 1999. (1999 Soil and Groundwater Evaluation 4)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; February 25, 2000. (1999 Annual Monitoring Report)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 3, 2001. (2000 Annual Monitoring Report)

- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; April 30, 2002. (2001 Annual Monitoring Report)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 13, 2003. (2002 Annual Monitoring Report)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; February 19, 2004. (2003 Annual Monitoring Report)
- Letter Report to Mr. David Zinschlag, Water Gremlin Company*, RE: Additional Groundwater Monitoring Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. May 6, 2004. (2004 Groundwater Monitoring Report)
- Letter Report to Mr. David Zinschlag, Water Gremlin Company*, RE: Water Gremlin Site, 1610 Whitaker Avenue, White Bear Lake, Minnesota, MPCA Project Number VP5540, No Further Action Determination.* Prepared for Water Gremlin Company. May 14, 2004. (2004 NFA)
- Facsimile message from Dave Zinschlag, Water Gremlin Co. to JoAnn Henry, MPCA Tanks Division regarding Water Gremlin Tank Inventory, October 5, 1999 & May 13, 2004 (1999-2004 Tank Inventory)
- Mi*nnesota Pollution Control Agency AST Notification of Installation or Change in Status Form*. October 10, 2012. (2012 MPCA Tanks – Change In Status)
- Minnesota Department of Health Well and Boring Sealing Record, Minnesota Well and Boring Sealing No. H355975. American Engineering Testing.4-25-2018. (MWD Well Sealing)
- Report of Geotechnical Exploration, Die Cast Machine Foundation, Water Gremlin Company, 4400 Otter Lake Road, White Bear Township, Minnesota. Prepared for Water Gremlin Company. American Engineering and Testing; May 16, 2018.
- *Phase I Environmental Site Assessment, Water Gremlin Company, 4400 Otter Lake Road, White Bear Lake Township, Minnesota.* Prepared for Water Gremlin Company. Wenck Associates; April 2019. (2019 Wenck Phase I Report)

A detailed summary of the findings associated with the above-referenced reports is provided in Section 3.0 of the RI Work Plan (**Appendix A**).

4.0 Site Investigation Methods and Procedures

4.1 AREAS OF CONCERN

Based on the review of past investigation documentation and the completion of the April 2019 Phase I ESA and multiple Site visits, Wenck identified several AOCs that warranted additional evaluation. The following AOCs were identified in the MPCA-approved RI Work Plan:

- AOC #1 Coating Rooms #1 and #3
- AOC #2 Coating Room #2
- AOC #3 Chemical Storage Room
- AOC #4 Tool Room Crawl Space
- AOC #5 Location of the 1982 oil discharge area
- AOC #6 Former septic system
- AOC #7 Smog Hog unit located on the east side of the North Campus building potentially discharged oil to the exterior surfaces of the building
- AOC #8 Smog Hog units located on the northwest corner of the North Campus Building potentially discharged oil to the exterior surfaces of the building
- AOC #9 Utility trenches in the Main Die Cast Area
- AOC #10 North Campus building rooftop oil and particulate discharges near several rooftop heat extraction blower bed units

Based on past site assessment activities a list of potential contaminants of concern (COCs) were identified in the MPCA-approved RI Work Plan. Soil, groundwater and soil vapor samples collected at the Site were analyzed for lead by EPA method 6020 and/or VOCs – modified list by EPA method 8260B. The following VOCs were included in the modified list and analyzed for during this Remedial Investigation:

- Volatile organic compounds (VOCs): Chloroethane; 1,1-Dichloroethane (1,1-DCA); 1,2-Dichloroethane (1,2-DCA); 1,1-Dichloroethene (1,1-DCE); cis-1,2-Dichloroethene (cis-1,2-DCE);, trans-1,2-Dichloroethene (trans-1,2-DCE); Tetrachloroethene (PCE); 1,1,1-Trichloroethane (1,1,1-TCA); 1,1,2-Trichloroethene (TCE); and Vinyl Chloride (VC).

A copy of the 2019 RI Work Plan is included as **Appendix A.**

4.2 RATIONALE AND OBJECTIVE

The objective of the RI at the Site was to evaluate and ensure adequate protection of public health, welfare, and the environment based on the identified AOCs. The scope of services associated with this RI included the following tasks:

- Preparation of the RI Work Plan and submittal to the MPCA for approval.
- Preparation of the Site Safety and Health Plan (SSHP). The SSHP was prepared to cover all field work under the MPCA-approved RI Work Plan. The SSHP included emergency phone numbers and directions to the local hospital. The SSHP also addressed safety and health requirements based on site-specific conditions encountered during the field activities.

- Advancement of 18 push-probe soil cores for the purpose of field-screening Site soils and for the collection of grab soil samples for laboratory analysis for VOCs by EPA method 8260B and lead by EPA method 6020.
- Advancement of 16 push-probes using a Geoprobe Screen Point 15 screen for the purpose of obtaining several vertical groundwater samples for analysis of VOCs by EPA method 8260B and vertical profiling of the groundwater column above the semi-confining clay layer. Multiple groundwater samples were collected from each boring location between 5 to 40 feet below grade (bg).
- Completion of seven (7) hand auger soil borings; five (5) within the wetland area southeast of the building to assess soil conditions in the vicinity of cooling water discharge and two (2) within landscaped areas west of the building to assess soil conditions in the vicinity of smog-hog discharge.
- Installed 25 permanent sub-slab vapor pins inside the North Campus building and collected 25 sub-slab vapor samples, six (6) air samples within the crawl space below the tool room and two (2) background exterior ambient air samples for VOC analysis by EPA Method TO-15.
- Collected six (6) surface water samples from County 14 Ditch for laboratory analysis of VOCs and lead.
- Collected eight (8) sediment samples, five (5) from the County 14 Ditch and three (3) from the eastern stormwater pond for laboratory analysis of VOCs and lead.
- Prepared this RI report documenting the results of the investigation and providing recommendations for additional investigation.

Procedures for soil, soil vapor, sediment, surface water and groundwater sampling activities are detailed in the MPCA-approved RI Work Plan.

4.3 FIELD INVESTIGATION OVERVIEW

The investigation focused on evaluation of chlorinated solvents in soil, groundwater, soil vapor and lead in soil, sediment and surface water. The subsurface investigation activities discussed in this report were conducted during multiple mobilizations to the Site between the dates of June 4, 2019 and June 26, 2019.

Procedures for soil, groundwater and vapor sampling activities followed Wenck's Standard Operating Procedures (SOP) dated June 2016 and the MPCA QAPP dated September 2014. Standard operating procedures were adhered to and methods and procedures are described below. Deviations from the approved RI Work Plan during the implementation of the work are described below in **Section 4.4.**

4.4 DEVIATIONS FROM APPROVED RI WORK PLAN

Deviations from the approved RI activities (as discussed in the "*Remedial Action Work Plan*" dated May 2019) included the following:

1) Soil boring adjacent to Coating Room #1 (AOC #1) was not completed due to the inability to get appropriate equipment inside the building.
2) Soil boring adjacent to the chemical storage room (AOC #3) was not completed due to the inability to get appropriate equipment inside the building.
3) Hand auger borings were conducted in AOC #5 instead of push-probe borings due to the soft ground conditions within the area.
4) Shallow (3') hand auger borings were conducted in AOC #8 instead of push-probe borings due to the inability to get the push-probe rig to the boring location.

5) Soil samples were not collected from the utility trenches in the Main Die Cast Area (AOC#9) due to the inaccessibility of the soil in adjacent to and beneath the utilities. Sampling in this was deemed to be unsafe.
6) Soil boring due south and exterior to AOC #10 was not completed due the inability to get the drilling rig to the boring location.
7) Soil samples were not collected behind Die Cast machines due to the inability to safely collect samples within the live utility trenches.

The above activities will be completed as part of a future investigation phase(es).

4.5 SOIL SCREENING INVESTIGATION

The soil investigation activities were conducted between June 14 and 26, 2019. Investigation activities included the advancement of 18 push-probe soil borings (GP-1 through GP-18) and seven (7) hand auger borings (HA-1 through HA-7) by Bergerson-Caswell (Bergerson). Field boring locations were placed based on the MPCA-approved RI Work Plan. The borings were generally placed around buildings and on the perimeter of the property. The locations of the public and private underground utilities were verified prior to drilling to ensure the safe advancement of each boring. The locations of the borings are shown on **Figure 3**.

Soil borings were advanced to depths ranging from approximately 24 feet to 44 feet below grade. Soil was collected continuously in four-foot drives using a push-probe with a solid-barrel Macro-Core™ sampler. A new acetate liner was used for each four-foot sampling interval. Upon reaching each interval, the nature of the recovered soil was assessed to conduct soil classification and observe for evidence of potential contamination (i.e., odors, visible staining, etc.). The soil borings were terminated once the semi-confining clay layer was reached, which was encountered between 24 and 44 feet bg throughout the Site.

Soil samples were collected from the acetate sleeve by hand using clean dedicated nitrile gloves. A portion of the sample was placed into dedicated sealable polyethylene storage bags for headspace screening. Vapor headspace readings were collected from the first plastic storage bag using a photoionization detector (PID) equipped with a 10.6 eV source lamp calibrated to an isobutylene gas standard. Soil samples from each boring were collected in dedicated glassware, placed in a cooler with ice and submitted under chain-of-custody control to Eurofins TestAmerica Laboratories for laboratory analysis. Samples sent to the laboratory were analyzed for lead by EPA Method 6010D and VOC by EPA Method 8260B.

Upon completion of all sampling activities, each environmental borehole was appropriately abandoned in accordance with MDH sealing requirements. A boring log was created for each soil boring showing stratigraphic sequence and associated field screening notes and observations (**Appendix B**). Geographic coordinates for each sampling location are summarized in **Table 1**.

The boring location rationale and analytical parameters sampled for soil are as follows, sample depths were selected based on field observations and the depth of the water table:

Boring ID	Rationale	Sample Depth	Laboratory Analysis
GP-1	Sample soil west of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 2-4′ 8-10′ 30-32′	Pb Pb VOCs VOCs
GP-2	Sample soil west of the North Campus building near the building offices to assess potential impacts associated with historic TCE use/storage.	0-1′ 5-7′	Pb VOCs
GP-3	Sample soil west of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 0-2′ 26-28′	Pb VOCs VOCs
GP-4	Sample soil north-northeast of the North Campus building in the vicinity of the chemical storage room (AOC #3).	0-1′ 4-6′	Pb VOCs
GP-5	Sample soil east of the North Campus building to assess potential impacts associated with surficial staining associated with a smog hog unit (AOC #7).	0-1′ 2-4′	Pb VOCs
GP-6	Sample soil east of the North Campus building to assess potential impacts associated with surficial staining associated with a smog hog unit (AOC #7).	0-1′ 2-4′ 4-6′	Pb VOCs VOCs
GP-7	Sample soil southwest of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 2-4′ 10-12′	Pb VOCs VOCs
GP-8	Sample soil west-southwest of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 6-8′	Pb VOCs
GP-9	Sample soil west of the North Campus building, near the loading docks to assess potential impacts associated with historic TCE use/storage.	0-1′ 5-7′ 6-8′	Pb Pb VOCs
GP-10	Sample soil west of the North Campus building, near the loading docks to assess potential impacts associated with historic TCE use/storage.	0-1′ 1-3′	Pb VOCs
GP-11	Sample soil southwest of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 6-8′	Pb VOCs
GP-12	Sample soil south of the North Campus building to assess potential impacts associated with historic TCE use/storage and staining below the tool room (AOC #4).	0-1′ 4-6′ 6-8′ 8-9.5′	Pb VOCs Pb VOCs

Boring ID	Rationale	Sample Depth	Laboratory Analysis
GP-13	Sample soil south of the North Campus building to assess potential impacts associated with historic TCE use/storage and staining below the tool room (AOC #4).	0-1′ 8-10′	Pb VOCs
GP-14	Sample soil southeast of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 10-12′	Pb VOCs
GP-15	Sample soil southeast of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 2-4′	Pb VOCs
GP-16	Sample soil southeast of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 2-4′	Pb VOCs
GP-17	Sample soil southeast of the North Campus building to assess potential impacts associated with historic TCE use/storage.	0-1′ 8-10′ 28-30′	Pb VOCs VOCs
GP-18	Sample soil south of the North Campus building to assess potential impacts associated with historic TCE use/storage and Coating room 2 (AOC #2).	0-1′ 4-6′ 6-8′ 41-43′	Pb VOCs Pb VOCs
HA-1	Sample soil southeast of the North Campus building to assess potential impacts associated with the identified historical release of oily cooling water (AOC #5).	0-1′	Pb & VOCs
HA-2	Sample soil southeast of the North Campus building to assess potential impacts associated with the identified historical release of oily cooling water (AOC #5).	0-1′	Pb & VOCs
HA-3	Sample soil southeast of the North Campus building to assess potential impacts associated with the identified historical release of oily cooling water (AOC #5).	0-1′	Pb & VOCs
HA-4	Sample soil southeast of the North Campus building to assess potential impacts associated with the identified historical release of oily cooling water (AOC #5).	0-1′	Pb & VOCs
HA-5	Sample soil southeast of the North Campus building to assess potential impacts associated with the identified historical release of oily cooling water (AOC #5).	0-1′	Pb & VOCs
HA-6	Sample soil west-northwest of the North Campus building to assess potential impacts associated with surficial staining associated with a smog hog unit (AOC #8).	0-0.5′	Pb & VOCs

Boring ID	Rationale	Sample Depth	Laboratory Analysis
HA-7	Sample soil west-northwest of the North Campus building to assess potential impacts associated with surficial staining associated with a smog hog unit (AOC #8).	0-0.5′	Pb & VOCs

Per the approved RI work plan, soil samples for VOC analysis were collected at the interval(s) revealing the highest PID response or at intervals revealing visual evidence of potential contamination. If there was evidence of potential contamination in a soil boring, Wenck attempted to collect a second sample at a deeper interval from the soil boring if evidence of potential contamination terminated before water was encountered. In the absence of obvious soil impacts (i.e., elevated PID readings) a soil sample was collected just above the observed unconfined water table. Field observations and PID observations are included in the boring logs included in **Appendix B**.

Per the approved RI work plan, a minimum of one soil sample was collected from each boring location for total lead analysis by EPA Method 6010D. Total lead samples were collected from the zero to one-foot zone at each boring location. Deeper samples for total lead analysis were collected if field-evidence of contamination are observed. Field observations are included in the boring logs included in **Appendix B**.

4.6 GROUNDWATER SCREENING INVESTIGATION

Groundwater sampling was completed between June 14 and 26, 2019. A total of 54 groundwater samples were collected during this phase of investigation. Groundwater depths varied between approximately 3.88 feet below grade to approximately 10.7 feet below grade across the Site. The height of the water column varied from approximately 9 to 27 feet below grade. Groundwater sample locations are shown on **Figure 3**. Geographic coordinates for each sampling location are summarized in **Table 1**.

Discrete groundwater samples were collected in a separate hole location (from soil probe) within approximately five feet of the soil boring hole using a Geoprobe™ Screen Point 15 (SP-15) stainless-steel screen and drive rods. Teflon® tape was used at each of the drive rod threaded joints to prevent water infiltration from shallower groundwater. To facilitate groundwater sample collection, the SP-15 screen-point sampler was used for sampling groundwater at all locations with the exception of HA-1 (0-5), GP-10 (0-5), GP-11 (5-10), GP-14 (9-14) GP-15 (8-13), GP-16 (10-15) and GP-18 (10-15) where temporary wells were constructed using 1-inch PVC riser 5-foot slotted PVC screens. The SP-15 sampler was driven to the shallowest desired sampling depth, based on lithology and PID readings. The screen was generally placed such that bottom of the screen was approximately three feet below the initial water table and then every five feet thereafter. The rods and screen sheath were then retracted to expose two feet of stainless steel sampling screen.

At each well screen sampling depth, a minimum of three sample tube volumes were purged prior to sample collection using a check ball and dedicated polyethylene tubing. After purging, groundwater samples were collected from each well screen directly into laboratory-provided dedicated glassware, placed in a cooler with ice and submitted under chain-of-custody control to for laboratory analysis for VOCs using EPA Method 8260. Blind duplicate and trip blank samples were submitted with the groundwater samples for QA/QC purposes. After each screened interval was sampled, the groundwater sampler was retracted, and the

screen and all rod equipment were decontaminated. A new drive point was then installed to allow the screen to be re-driven through the borehole to the next deeper progressive depth for sampling.

All reusable sampling equipment was cleaned with Alconox® solution and triple-rinsed with deionized water between temporary well screen intervals. The boreholes were sealed by the drilling contractor as the drive rods were retracted from the final well interval depth in accordance with MDH regulations.

A general groundwater sampling summary is provided below:

Boring ID	Boring Depth	Screen Depth	Groundwater Laboratory Analysis
GP-1	36′	7-11′ 16-18′ 23-25′	VOCs
GP-2	28′	7-10′ 15-17′ 22-24′	VOCs
GP-3	28′	8-11′ 16-18′ 23-25′	VOCs
GP-4	32′	5-7′ 12-14′ 19-21′ 26-28′	VOCs
GP-5	32′	NA*	NA*
GP-6	36′	7-10′ 15-17′ 22-24′	VOCs
GP-7	24′	6-9′ 14-16′ 21-23′	VOCs 061819-A (6-9′ duplicate)
GP-8	28′	5-7′ 12-14′ 19-21′	VOCs
GP-9	24′	6-8′ 13-15′ 20-22′	VOCs 061819-B (20-22′ duplicate)
GP-10	24′	0-5′ 10-12′ 17-19′	VOCs
GP-11	24′	5-10′ 15-17′	VOCs
GP-12	28′	7-10′ 15-17′ 22-24′	VOCs

Boring ID	Boring Depth	Screen Depth	Groundwater Laboratory Analysis
GP-13	28′	7-10′ 15-17′ 22-24′	VOCs
GP-14	36′	9-14′ 19-21′ 26-28′	VOCs
GP-15	40′	8-13′ 18-20′ 25-27′ 32-34′	VOCs
GP-16	44′	10-15′ 20-22′ 27-29′ 34-36′	VOCs 062619-A (34-36′ duplicate)
GP-17	36′	7-12′ 17-19′ 24-26′	VOCs
GP-18	44′	10-15′ 20-22′ 34-38′	VOCs 062619-B (10-15′ duplicate)
HA-1	6.5′	0-5′	VOCs

* Per the work plan, soil boring GP-5 was only drilled for classification and soil sampling purposes only, no groundwater sample was planned for this location.

4.7 SOIL VAPOR SCREENING INVESTIGATION

4.7.1 Sub-Slab Vapor Sampling

Twenty-five interior sub-slab vapor samples were collected using the Vapor-Pin™ kit methodology for permanent sub-slab vapor sampling ports. To gain access beneath the floor slab, a drill bit was used to cut a 5/8” hole through the slab. After the 5/8” hole was drilled, a larger diameter drill bit was used to countersink the permanent sample pin beneath the floor surface. After the holes were drilled a brass vapor pin was equipped with the silicone sleeve and placed in the 5/8” hole. The silicone sleeve provides an airtight contact between the pin and the concrete borehole. After the pin was installed, a small piece of dedicated polyethylene tubing was placed on the pin tip. The sampling pin installation was allowed to equilibrate for approximately one-half hour prior to sample collection. A water leak test was performed on approximately 50% of the sample pin locations.

Prior to sampling, approximately 180 ml of air were purged out of the sample line with a syringe prior to collecting the sample. The samples were collected in one-liter Summa canisters (batch-certified) equipped with 200 ml/min regulator and a dedicated in-line moisture filter. A PID equipped with a 10.6 eV source lamp was connected to the tubing for field screening purposes upon the completion of the Summa can sample collection. The sub-slab soil vapor samples were submitted under chain-of-custody control to Eurofins TestAmerica Laboratories for analysis by EPA Method TO-15 VOCs. Sub-slab soil vapor

locations are shown on **Figure 4.** Soil Vapor Field Sampling forms are included in **Appendix C**.

A general soil vapor sampling summary is provided below:

Sub-Slab Sample ID	Sample Depth	Building Location	Laboratory Analysis	Field PID Reading (ppm)
SS-1	Sub-slab	North Conference Room (Offices)	TO-15	50*
SS-2	Sub-slab	Office Lunchroom	TO-15	2.3
061119-A (SS-2 Duplicate)	Sub-slab	Office Lunchroom	TO-15	3.7
SS-3	Sub-slab	Offices	TO-15	24.3
SS-4	Sub-slab	Offices	TO-15	38.8
SS-5	Sub-slab	Offices	TO-15	15.4
SS-6	Sub-slab	Offices	TO-15	33.6
SS-7	Sub-slab	Offices	TO-15	34.2
SS-8	Sub-slab	Quality Control Office	TO-15	142*
SS-9	Sub-slab	Quality Control Office	TO-15	320*
SS-10	Sub-slab	Coating 3	TO-15	400*
061219 (SS-10 Duplicate)	Sub-slab	Coating 3	TO-15	400*
SS-11	Sub-slab	Main Coating	TO-15	84*
SS-12	Sub-slab	Main Coating	TO-15	780*
SS-13	Sub-slab	Main Coating	TO-15	58.3*
SS-14	Sub-slab	Main Coating	TO-15	35.1*
SS-15	Sub-slab	Main Coating	TO-15	210*
SS-16	Sub-slab	Main Die Cast	TO-15	6.3
SS-17	Sub-slab	Shipping and Receiving	TO-15	4.7
SS-18	Sub-slab	Shipping and Receiving	TO-15	4.7
061119-B (SS-18 Duplicate)	Sub-slab	Shipping and Receiving	TO-15	5.4
SS-19	Sub-slab	Coating 2	TO-15	39.6*
SS-20	Sub-slab	Coating 2	TO-15	9.5*
SS-21	Sub-slab	Cold Forming	TO-15	2.7
SS-22	Sub-slab	Cold Forming	TO-15	3
SS-23	Sub-slab	Cold Forming	TO-15	72.3
SS-24	Sub-slab	Chemical Storage	TO-15	100*
SS-25	Sub-slab	Chemical Storage	TO-15	24.5

* indicates PID response fluctuated during sampling. PID reading listed was the approximate average PID reading.

4.7.2 Crawl Space and Outdoor Ambient Air

Indoor and outdoor/ambient air sampling activities were completed June 11 through June 12, 2019. Wenck collected a total of six crawl space air samples (AA-3 through AA-8) in the crawl space below the tool room of the North Campus building. Samples were collected using laboratory-provided and individually certified 6-L Summa canisters, each equipped with a 24-hour flow controller. The sample intake (end of tubing) was placed approximately 1 to 1.5 feet above the floor. After opening the valve on the Summa canister, Wenck revisited the sampling canisters 23 hours later to ensure the canisters did not completely lose their vacuum.

Wenck collected two ambient background outdoor air samples (AA-1 and AA-2) from the exterior of the building to evaluate background air conditions. The outdoor air samples were collected using a laboratory-provided and individually certified 6-L Summa canister equipped with a 24-hour flow controller and dedicated in-line moisture filter. The sample intake (end of tubing) was placed approximately 1 to 2 feet above the ground. After opening the valve on the Summa canister, Wenck revisited each sampling canister 23 hours later to ensure the canister had not completely lose its vacuum prior to 24 hours elapsing.

The crawl space and outdoor/ambient air samples were submitted under chain-of-custody control to Eurofins TestAmerica and analyzed for VOCs by EPA method TO-15. Indoor and outdoor/ambient air sampling forms are included for reference in **Appendix C**. Indoor and outdoor/ambient air sampling locations are provided on **Figure 4**.

The crawl space and outdoor/ambient air sample locations were selected based on the MPCA-approved RI Work Plan. The rationale and analytical parameters sampled for indoor and outdoor/ambient air are as follows:

Air Sample ID	Sample Location	Sample Intake Height (feet)	Laboratory Analysis
AA-1	Northeast exterior of North Campus building	1’	TO-15 VOCs
AA-2	Southwest exterior of North Campus building	1’	TO-15 VOCs
AA-3	Crawl Space below Tool Room of North Campus building	1.5-2’	TO-15 VOCs
AA-4	Crawl Space below Tool Room of North Campus building	1.5-2’	TO-15 VOCs
AA-5	Crawl Space below Tool Room of North Campus building	1.5-2’	TO-15 VOCs
AA-6	Crawl Space below Tool Room of North Campus building	1.5-2’	TO-15 VOCs

Air Sample ID	Sample Location	Sample Intake Height (feet)	Laboratory Analysis
AA-7	Crawl Space below Tool Room of North Campus building	1.5-2'	TO-15 VOCs
AA-8	Crawl Space below Tool Room of North Campus building	1.5-2'	TO-15 VOCs

4.8 SEDIMENT SAMPLING

On June 20, 2019 Wenck collected eight (8) sediment samples using a hand push-probe sampling device to identify if impacts are present in sediment within the investigation area at concentrations of concern in the context of ecological risk. Wenck collected five samples from the upper 0.5' to 1' of sediment along the north bank of County 14 Ditch (Lambert Creek). Additionally, three sediment samples were collected from the eastern stormwater pond; two (2) at the pond inlets and one (1) at the pond outlet. The sediment sample locations are shown on **Figure 3** and geographic coordinates for each sampling location are summarized in **Table 1**. The sediment samples were collected directly in dedicated glassware, placed in a cooler with ice and submitted under chain-of-custody control to Eurofins TestAmerica for laboratory analysis. The samples were analyzed for VOCs using EPA Method 8260 and lead by EPA Method 6020. Blind duplicate and trip blank samples were submitted with the sediment samples for QA/QC purposes.

A general sediment summary is provided below:

Sample ID	Sample Location	Field PID Reading (ppm)	Laboratory Analysis
SED-1	North bank of County Ditch 14 (Lambert Creek)	0.6	Pb & VOCs
SED-2	North bank of County Ditch 14 (Lambert Creek)	0.6	Pb & VOCs
SED-3	North bank of County Ditch 14 (Lambert Creek)	0.4	Pb & VOCs
062019-13 SED-3 Duplicate	North bank of County Ditch 14 (Lambert Creek)	0.4	Pb & VOCs
SED-4	North bank of County Ditch 14 (Lambert Creek)	0.4	Pb & VOCs
SED-5	North bank of County Ditch 14 (Lambert Creek)	0.0	Pb & VOCs
SED-6	Stormwater Pond Inlet	1.3	Pb & VOCs
SED-7	Stormwater Pond Inlet	0.4	Pb & VOCs
SED-8	Stormwater Pond Outlet	0.5	Pb & VOCs

4.9 SURFACE WATER SAMPLING

Wenck collected six surface water samples from the County 14 Ditch (Lambert Creek) on June 20, 2019. The water samples were collected from the north bank of the creek using a dedicated disposable polyethylene bailer. Locations of surface water samples are depicted on **Figure 3** and geographic coordinates for each sampling location are summarized in **Table 1**. The surface water samples were collected directly into dedicated glassware, placed in a cooler with ice and submitted under chain-of-custody control to Eurofins TestAmerica for laboratory analysis. The samples were analyzed for VOCs using EPA Method 8260 and lead by EPA Method 6020. Blind duplicate and trip blank samples were submitted with the surface water samples for QA/QC purposes.

A general surface water soil sampling summary is provided below:

Sample ID	Sample Location	Laboratory Analysis
SW-1	County Ditch 14 (Lambert Creek)	Pb & VOCs
SW-2	County Ditch 14 (Lambert Creek)	Pb & VOCs
SW-3	County Ditch 14 (Lambert Creek)	Pb & VOCs
SW-4	County Ditch 14 (Lambert Creek)	Pb & VOCs
062019-A (SW-4 duplicate)	County Ditch 14 (Lambert Creek)	Pb & VOCs
SW-5	County Ditch 14 (Lambert Creek)	Pb & VOCs
SW-6	County Ditch 14 (Lambert Creek)	Pb & VOCs

5.0 Investigation Results

5.1 RECEPTOR SURVEY RESULTS

5.1.1 Surface Water Survey Results

A surface water receptor survey was conducted to identify potential surface waters within 500-foot, ½-mile and 1-mile radii of the Site. The locations of identified surface waters are shown on **Figure 6.** The surface water receptor survey identified wetlands on the southern portion of the Site and adjoining the Site to the southeast and southwest. According to the Vadnais Lake Area Water Management Organization (VLAWMO) the wetlands on and adjacent to the southeast of the Site are described as the Subota Slough freshwater emergent wetland complex. The wetlands to the southwest of the Site are described as the Rice Lake freshwater emergent wetland complex.

County Ditch 14 (Lambert Creek) was identified bisecting the southern portion of the Site. The headwater of County Ditch 14 (Lambert Creek) are Whitaker Pond to the north and West Goose Lake via an unnamed ditch to the southeast. County Ditch 14 (Lambert Creek) flows approximately 4-miles to the southwest towards its outlet at Vadnais Lake and receives water from multiple side streams and storm drains.

Water bodies identified within a one-mile radius of the Site include Birch Lake to the northwest, White Bear Lake to the east, Goose Lake to the southeast and Rice Lake to the west.

5.1.2 Drinking Water Well Survey Results

A water well receptor survey was conducted to identify the existence and location of drinking water wells within a 500-foot, ½-mile and a 1-mile radius of the Site. Verification of the presence and use of wells was conducting by reviewing well logs on the Minnesota Well Index website (https://mnwellindex.web.health.state.mn.us). The locations of identified wells within ½ mile of the Site are shown on **Figure 7.**

The water well receptor survey identified one municipal well within 500 feet of the Site. The White Bear Township Municipal Well No. 5 was identified approximately 500 feet south-southwest of the Site. The well was completed to 412 feet bg within the Prairie Du Chien-Jordan bedrock aquifer. Private wells, monitoring wells and piezometers were identified within ½-mile and 1-mile of the Site. The wells are screened within the quaternary buried artesian aquifer, quaternary water table aquifer, quaternary deposit aquifer and /or Prairie Du Chien group and not the shallow groundwater table. The well depths range from 53 to 436 feet bg.

The hydrogeological unit encountered during this investigation is believed to be bound by a confining layer, the top of which is located between 20 and 40 feet bg. Based on the groundwater sampling results at the Site during this RI and previous subsurface investigations, the groundwater impacts appear to be confined to the shallow unconsolidated aquifer. Site-specific geologic data collected during this and previous investigations, indicate there is sufficient separation between the deepest groundwater contamination and the deeper, buried quaternary aquifer; therefore, it is unlikely the

aquifers used by nearby wells identified by the water well receptor survey have been impacted.

Additionally, analytical sampling of 13 private wells in the vicinity of the Site was completed by the Minnesota Department of Health MDH in April 2019. No VOCs were identified in the sampled wells. This information can be found at the following link: https://www.health.state.mn.us/communities/environment/hazardous/docs/sites/ramsey/wgprivatewell.pdf

5.1.3 On-Site Stormwater Collection Systems

Site surface drainage is sheet flow toward the municipal stormwater sewer system associated with adjacent public streets and via infiltration in the wetland areas on the eastern portion of the Site. Historic development may have included grading or filling of the Site to improve the location for construction and drainage.

County Ditch 14 (Lambert Creek) is in an east-west configuration and bisects through the approximate center of the Site. County Ditch 14 receives drainage from the adjacent wetlands, residential developments and Goose Lake, and flows southwest and eventually drains into East Vadnais Lake, located approximately 3.5 miles southwest of the Site.

A stormwater retention pond is located directly east of the main manufacturing building and receives stormwater runoff from the parking lot areas located on the east, north and southeast sides of the building as well as roof drain runoff. The eastern stormwater pond overflows to the surrounding wetlands and then to County Ditch 14 (Lambert Creek), which runs along the south side of the Facility.

A stormwater pond is located southwest of the loading docks of the North Campus building. The stormwater pond receives runoff from the southwest portion of the facility, which includes the shipping and receiving docks, covered dumpsters, and diesel generator. The stormwater pond has an outlet on the south side and water flows under the drive via a culvert and then flows overland to County Ditch 14 (Lambert Creek).

5.2 SOIL

5.2.1 Surficial Geology

During the investigation activities, 18 soil borings and seven (7) hand auger borings were advanced across the property to obtain geologic information. Soil boring locations are shown in **Figure 3.** Soil boring logs were prepared for each boring and are included in **Appendix B**. A cross-section location map is depicted in **Figure 5**, and geologic cross-sections of the Site are provided in **Figures 8 through 11**.

Soil profiles across the Site generally consisted of approximately 3 to 11 feet of fill soils consisting primarily of dark brown silty and clayey sand with gravel. Fill with varying amounts of debris including concrete, slag and brick was observed in the upper 6’ of GP-6, 1.5 feet at GP-8, 7 feet at GP-9, 4 feet at GP-10, 6 feet at GP-11, 8 feet at GP-12, 4 feet at GP-13, 12 feet at GP-14, 10.5 feet at GP-15, 11 feet at GP-16, 4 feet at GP-17 and 9 feet at GP-18. The fill soils were observed to be deepest in the borings completed south and southeast of the North Campus building (GP-11 through GP-18).

The native sediments below the fill generally consist of water bearing unconsolidated sediments primarily consisting of fine to medium grained sand, silty sand and clayey sand. These unconsolidated sediments were encountered below the fill to approximately 20 feet bg and general the thickness of the material varied from 15 to 27 feet thick on the western and northeastern portions of the Site and from 5 to 10 feet thick on the southern portion of the Site. Organic sediments and peat were encountered below the fill material from approximately 10 to 13 feet in the soil borings GP-14, 15, 16 and 17, completed along the southeast corner of the North Campus building.

The material encountered below the sandy materials discussed above was primarily of well sorted, very fine-grained sediments which included both silt- and clay-grade materials indicative of lacustrine deposits. These lacustrine deposits included highly laminated beds of silts, clays and very fine sands. Traces of organics were observed within the clayey soils at several locations along the south side of the North Campus building. Alternating layers of silt, silty sand, clayey sand, fat clay and lean clay were encountered below the granular soils at depths ranging from approximately 11 feet bg to 30 feet bg and continuing to the boring terminus at each boring location. The upper layers of these fine silty and clayey sediments included numerous lenses of very fine sand and silty sand with high moisture content. The clay content generally increased with depth becoming denser with fewer lenses of granular sediments, and borings were terminated when the non-water bearing impermeable clay layer was encountered. Groundwater was encountered between approximately 3.88 feet below grade to approximately 10.7 feet below grade across the Site. The height of the water column was observed from approximately 9 to 27 feet above the top of the semi-confining clay layer.

5.2.2 Field Screening Results

Soil headspace readings and field observations are included on the soil boring logs in **Appendix B**. Total organic vapor screening results ranged from non-detect to 248.7 parts-per-million (ppm) in the soil borings GP-1 through GP-18 completed throughout the Site. The highest PID readings were observed in the borings completed along the western portion of the building and along the northeast corner of the building.

In GP-1 slightly elevated PID readings ranging from 6.4 to 21.2 were identified in the upper 12-feet and PID readings ranging from 33.8 to 59.2 ppm were identified between 28 to 36 feet bg.

In GP-2 slightly elevated PID readings of 17.3 ppm from 22-24 feet bg, 11.8 ppm from 24-26 feet bg and 11.2 ppm from 26-38 feet bg were noted.

In GP-3 PID readings ranged from 95.7 to 248.7 ppm in the upper 8 feet, from 35.6 to 101.5 ppm from 12 to 20 feet bg and from 9.8 to 56.8 ppm from 20 to 28 feet bg.

In GP-4 slightly elevated PID readings of 16.3 to 30.7 ppm were noted in the upper 8 feet.

In GP-6 PID readings ranged from 11.2 to 111.6 ppm in the upper 8 feet and from 25.6 to 117.8 ppm from 12 to 20 feet bg.

In GP-7 slightly elevated PID readings of 19.5 ppm from 10-12 feet bg and 22.5 ppm from 14-16 feet bg were noted.

In GP-9 slightly elevated PID readings of 15.4 ppm, 29.2 ppm, 24 ppm and 17.5 ppm were noted between 2- and 16-feet bg.

Per the approved work plan, soil samples for VOC analysis were collected at the interval(s) revealing the highest PID response or at intervals revealing visual evidence of potential contamination. If there was evidence of potential contamination in a soil boring, Wenck attempted to collect a second sample at a deeper interval from the soil boring if potential contamination terminated before water was encountered. In the absence of obvious soil impacts (i.e., elevated PID readings) a soil sample was collected just above the observed unconfined water table.

5.2.3 Soil Analytical Results

Soil lead and VOC data were compared to the Minnesota Pollution Control Agency's Tier 2 Industrial Soil Reference Values (SRVs) and Soil Leaching Values (SLVs) for evaluation of potential risk to groundwater at the Site from the soil-to-groundwater leaching pathway.

Lead
Lead was detected above laboratory reporting limits in all 31 of the samples collected and analyzed for lead. Concentrations of lead exceeded the Industrial SRV of 700 mg/kg at GP-16 (0-1') at 719 mg/kg, GP-18 (0-1') at 776 mg/kg, HA-1 (0-1') at 982 mg/kg and HA-5 (0-1') at 979 mg/kg. None of the detected total lead values exceeded the Tier 1 SLV of 2,700 mg/kg.

VOCs
VOCs were not detected above their respective laboratory reporting limits in any of the soil samples collected at the Site with the exception of GP-16. In the sample collected at GP-16 (2-4') PCE was detected at a concentration of 0.269 mg/kg above the SLV of 0.042 mg/kg, and TCE was detected at a concentration of 0.826 mg/kg, above the SLV of 0.0023 mg/kg. GP-16 was located adjacent to and east of the pollution control equipment building. During the investigation activities no evidence of storage or use of any solvents was observed in this location.

Soil sample results are summarized in **Table 2** and depicted on **Figure 12**. Laboratory reports and supporting chain-of-custody documentation are included in **Appendix D.**

5.3 GROUNDWATER

5.3.1 Hydrogeology

Groundwater levels at the time of drilling varied between approximately 3.88 feet below grade to approximately 10.7 feet below grade across the Site. The height of the water column was observed from approximately 9 to 27 feet above the top of the semi-confining clay layer. Water levels are noted in the boring logs included as **Appendix B** and shown on cross-sections **Figures 8 through 11**.

5.3.2 Groundwater Analytical Results

Groundwater investigation data analysis compared detected concentrations of VOCs to the MPCA's Health Risk Limits (HRLs) and Minnesota Department of Health's (MDH) Health Based Values (HBVs) to assess potential human health risks from exposures to chemicals in groundwater.

VOCs

A total of 58 groundwater samples collected from the soil borings were analyzed for VOCs. VOC compounds including 1,1-DCA; chloroethane; cis-1,2-DCE; trans-1,2-DCE; TCE and VC were detected above their laboratory reporting limits during this investigation. However, TCE and VC were the only compounds identified at concentrations exceeding their respective HRLs.

1,1-DCA was detected above laboratory limits but below the HRL at various sample intervals in the borings GP-11, GP-12, GP-13, GP-14, GP-15, GP-16, GP-17 and GP-18.

Chloroethane was detected above laboratory reporting limits but below the respective HRL in GP-13 (7-10') at 4.91 ug/L and GP-13 (15-17') at 6.58 ug/L.

The VOC cis-1,2-DCE was detected above laboratory reporting limits in GP-7 (14-16') at 2.45 ug/L, GP-11 (15-17') at 1.27 ug/L, GP-15 (8-13') at 1.51 ug/L, GP-15 (18-20') at 1.59 ug/L and GP-16 at 2.24 ug/L. The detected concentrations of cis-1,2-DCE did not exceed their respective HRL.

Trans-1,2-DCE was detected above laboratory limits but below the HRL in GP-10 (0-5') at 1.91 ug/L, in GP-16 (34-36') at 3.01 ug/L and the GP-16 (34-36) duplicate sample 062619-A at 2.11 ug/L.

TCE was detected above the MDH HRL of 0.4 ug/L at the following concentrations: 3.08 ug/L at GP-1 (16-18'), 4.47 ug/L at GP-2 (15-17'), 1.09 ug/L at GP-3 (16-18'), 5.53 ug/L at GP-6 (7-10), 3.60 ug/L at GP-6 (15-17'), 1.30 ug/L at GP-7 (14-16'), 1.08 ug/L at GP-8 (5-7'), 1.42 ug/L at GP-8 (12-14'), 4.89 ug/L at GP-9 (13-15'), 23.9 ug/L at GP-10 (0-5'), 5.06 ug/L at GP-10 (10-12'), 1.31 ug/L at GP-11 (15-17'), 1.05 ug/L at GP-12 (22-24'), 11.7 ug/L at GP-14 (9-14'), 2.44 ug/L at GP-15 (8-13'), 4.03 ug/L at GP-15 (18-20'), 8.03 ug/L at GP-15 (32-34'), 3.25 ug/L at GP-16 (10-15'), 5.45 ug/L at GP-16 (20-22'), 10.7 ug/L at GP-16 (34-36'), 4.40 ug/L at GP-17 (17-19'), 1.08 ug/L at GP-17 (24-26'), and 1.58 ug/L at GP-18 (20-22').

VC was detected above the MDH HRL of 0.2 ug/L in GP-14 (9-14') at 20.1 ug/L, GP-15 (8-13') at 4.27 ug/L, GP-15 (18-20') at 7.24 ug/L, GP-16 (10-15') at 1.21 ug/L, GP-16 (20-22') at 5.53 ug/L, GP-18 (10-15') at 11.1 ug/L and the GP-18 (10-15') duplicate sample 062619-B at 12.2 ug/L.

The groundwater analytical results show the highest concentrations of VOCs were identified at GP-10, GP-15, GP-16, GP-17 and GP-18 located near the south of the North Campus building coating rooms.

Groundwater laboratory analytical results are summarized in **Table 3**. VOC data are also presented in plan view in **Figure 13** and in cross-sectional view in **Figures 8 through 11**. Laboratory reports and supporting chain-of-custody documentation are included in **Appendix D.**

5.4 SOIL VAPOR

The soil vapor data were compared to the MPCA's Intrusion Screening Values (ISVs) and Expedited Intrusion Screening Values (EISVs) for vapor intrusion risk appropriate for an industrial setting. MPCA guidance specifies that if soil vapor concentrations are equal to or

greater than 33x the applicable ISVs, more thorough soil vapor investigation and/or considerations for vapor mitigation may be required. If soil gas values are above the Expedited Intrusion Screening Values (EISVs) then expedited active mitigation is necessary.

5.4.1 Sub-Slab Vapor Sampling

A total of 25 sub-slab soil vapor samples (SS-1 through SS-25) were analyzed for a modified list of VOCs by the EPA Method TO-15. Five individual VOCs (1,1,1-TCA; 1,1-DCA; PCE; trans-1,2,DCE and TCE) were detected above the laboratory method reporting limits in the sub-slab soil vapor samples collected from beneath the building.

The following results are above 33X the Industrial ISVs:

- TCE in the samples collected from: SS-1 through SS-4, SS-6, SS-8 through SS-15, SS-18 through SS-20 and SS-22 through SS-25.

The following results are above 33X the Industrial EISVs:

- TCE in the samples collected from: SS-2, SS-6, SS-8 through SS-15, SS-18 through SS-20 and SS-22 through SS-24.

The most-recent MPCA BMP document states "active" mitigation is necessary when sub-slab vapor sampling results are above 33X EISVs." For this Site, Wenck has conducted a vapor intrusion evaluation and found that TCE soil vapor concentrations are above 33X EISVs the EISVs beneath the north manufacturing building, thus requiring interim response action.

Soil gas laboratory analytical results are summarized in **Table 4.** Complete laboratory reports and supporting chain-of-custody documentation are included in **Appendix D**. Sub-slab soil and crawl space gas VOC exceedances are presented in **Figure 14**.

5.4.2 Crawl Space and Outdoor Ambient Air

The outdoor ambient air data was used to evaluate background concentrations and crawl space data was compared to the MPCA's Vapor Intrusion Risk standards. A total of eight air samples (six crawl space samples beneath the Tool Room and two background samples exterior to the building) were collected during the RI activities and analyzed for a modified list of VOCS by EPA Method TO-15. Various VOCs were detected above laboratory reporting limits at each sample location.

The VOC TCE was detected above the Industrial ISV of 7 ug/m^3 in five of the six samples collected from the crawl space. TCE was detected at a concentration of 11 ug/m^3 at AA-3, at a concentration of 17 ug/m^3 at AA-4, at a concentration of 23 ug/m^3 at AA-5, at a concentration of 17 ug/m^3 at AA-7 and at a concentration of 16 ug/m^3 at AA-8. VOCs were not detected above the ISVs in the outdoor/ambient air samples.

The crawlspace consists of a 3- to 5-foot unoccupied space located beneath the structural floor of the Tool Room above. The ground floor of the crawl space is dirt. However, because of the presence of the structural slab between the crawlspace and the occupied Tool Room, crawl space air data was compared to 33x the ISV. During the next phase of investigation Wenck will complete a full building survey for this portion of the building to determine if the

33x attenuation factor is valid. If the 33X attenuation factor is found to be valid, no additional testing will be completed.

Crawl space and outdoor/ambient air sample results are summarized in **Table 5.** Laboratory reports and supporting chain-of-custody documentation are included in **Appendix D.** Crawl space and background air results are presented in **Figure 15**.

5.5 SEDIMENT SAMPLES

5.5.1 Sediment Description

A total of eight (8) sediment samples were collected at the Site; the sediment samples SED-1 through SED-5 were collected along the north bank of County Ditch 14 and samples SED-6 through 8 were collected from the eastern stormwater pond at the Site.

Sediments encountered along the north bank of County Ditch 14 (Lambert Creek) generally consisted of saturated, dark brown to black organic rich clays containing organics (roots, pieces of wood and decomposing plant parts) with organics odors. Dark gray silt with clay and organics was encountered in a several samples along the eastern portion of the creek (samples SED-4 and SED-5). These sediments also contained decomposing plant parts and other materials described above.

The sediment samples collected from the eastern stormwater pond, primarily consisted of dark brown silty sand and sandy clays with organics and traces of gravel. The sample SED-7 collected from the northern pond inlet contained more coarse silty sand with gravel and fewer organics.

5.5.2 Sediment Analytical Results

Sediment sample analytical results were compared to Sediment Quality Target (SQTs) criteria established by the MPCA and its collaborators as sediment assessment tools. MPCA guidance for the development of the SQTs is used to characterize the toxicity of the sediment based on the data collected at the site. For VOCs, which do not have Level II SQTs, the MPCA Residential SRVs are used as a surrogate SQT for the purposes of this evaluation.

Level I SQTs are intended to identify contaminant concentrations below which harmful effects on sediment-dwelling organisms (i.e., benthic invertebrates) are unlikely to be observed. Chemical concentrations at SQT Level 1 concentrations or lower are unlikely to have an adverse effect on benthic invertebrates.

Level II SQTs are intended to identify contaminant concentrations above which some harmful effects on sediment-dwelling organisms are likely to be observed.

<u>VOCs</u>
VOCs were not detected above laboratory reporting limits in any of the sediment samples collected during this investigation.

<u>Lead</u>
Low levels of lead were detected in all eight of the sediment samples collected at the Site. Lead was identified at concentrations exceeding the MPCA Level I SQT of 36 mg/kg in SED-1 at 113 mg/kg, SED-2 at 66.2 mg/kg, SED-3 at 77.7 mg/kg, SED-4 at 81.7 mg/kg and SED-

8 at 71.2 mg/kg. In the two sediment samples collected from the eastern stormwater pond inlets, concentrations of lead were identified above the MPCA Level II SQT of 130 mg/kg at 215 mg/kg in SED-6 and at 1,060 mg/kg in SED-7.

Sediment sample results are summarized on **Table 6** and depicted on **Figure 12.** Complete laboratory reports and supporting chain-of-custody documentation are included in **Appendix D.**

5.6 SURFACE WATER

Surface water sample analytical results were compared to the MPCA Tier I Surface Water Screening Criteria for non-Outstanding International Resource Waters (ORVW) and Outstanding Resource Value Waters (OIRW) waters. County Ditch 14 is identified within the Mississippi River Basin – Twin Cities watershed as "Unnamed Creek (Lambert Creek); Highway 96 to Vadnais Lk: #07010206-801." The MPCA Beneficial Use Classification for County Ditch 14 is classified a 2B, 3C, 4A, 4B, 5 and 6 water body.

VOCs

VOCs were not detected above laboratory reporting limits in any of the 6 surface water samples collected from County Ditch 14 (Lambert Creek).

Lead

Concentrations of lead in the six (6) surface water samples collected from County Ditch 14 (Lambert Creek) ranged from non-detect to 12.5 ug/L. Lead was not detected above laboratory reporting limits in the samples SW-1, SW-2 or SW-3. The detected concentration of 3.74 ug/L in SW-6 did not exceed the hardness adjusted Tier I Surface Water Criteria. Lead was detected above the hardness adjusted Tier I Surface Water Criteria of 6.72 ug/L in SW-4 at 11.6 ug/L, at 12.5 ug/L in the duplicate sample 062019-A and in SW-5 at 12.2 ug/L.

Surface water analytical results are summarized on **Table 7**. Complete laboratory reports and supporting chain-of-custody documentation are included in **Appendix D**.

5.7 ANALYTICAL RESULTS QUALITY ASSURANCE/QUALITY CONTROL

During the RI field activities Wenck collected numerous QA/QC samples that were submitted to the lab for analysis. Wenck collected matrix spike (MS) and matrix spike duplicate (MSD) samples, blind duplicate samples, trip blanks and rinsate samples. Samples QA/QC samples for this project are identified in the sections below

5.7.1 Blind Duplicate Sample Summary

Sample ID	Parent Sample ID	Date	Lab ID	Sample Type
061109A	SS-2	June 11, 2019	200-49156-20	Sub-slab vapor
061109B	SS-18	June 11, 2019	200-49156-21	Sub-slab vapor
061219	SS-12	June 12, 2019	200-49181-10	Sub-slab vapor
061819-A	GP-7 (6-9)	June 18, 2019	240-114745-28	Groundwater

Sample ID	Parent Sample ID	Date	Lab ID	Sample Type
061819-B	GP-9 (20-22)	June 18, 2019	240-114745-47	Groundwater
062019-A	SW-4	June 20, 2019	240-114842-7	Surface water
062019-13	SED-1	June 20, 2019	240-114843-16	Sediment
062619-A	GP-16 (34-36)	June 26, 2019	310-158924-9	Groundwater
062619-B	GP-18 (10-15)	June 26, 2019	310-158924-20	Groundwater

5.7.2 Matrix Spike/Matrix Spike Duplicate Sample Summary

Sample ID	Date	Lab ID
GP-4 (4-6)	June 17, 2019	240-114745-14 MS/MSD
GP-4 (5-7)	June 17, 2019	240-114745-15 MS/MSD
GP-6 (7-10)	June 18, 2019	240-114745-24 MS/MSD
GP-8 (0-1)	June 18, 2019	240-114745-34 MS/MSD
SW-1	June 20, 2019	240-11843-1 MS/MSD
SED-1	June 20, 2019	240-11843-8 MS/MSD
GP-11 (0-1)	June 21, 2019	240-114912-1 MS/MSD
GP-14 (0-1)	June 24, 2019	310-158749-1 MS/MSD
GP-15 (2-4)	June 24, 2019	310-158749-7 MS/MSD
GP-15 (18-20)	June 24, 2019	310-158749-9 MS/MSD
GP-17 (0-1)	June 26, 2019	310-158924-5 MS/MSD
GP-18 (20-22)	June 26, 2019	310-158924-21 MS/MSD

5.7.3 Trip Blank Summary

Sample ID	Sampling Event Date	Lab ID	Organic Detections
MEOH Trip Blank	June 14, 2019	240-114472-8	None
HCL Trip Blank	June 14, 2019	240-114472-9	None
Trip Blank Water	June 18, 2019	240-114745-48	None
Trip Blank Soil	June 18, 2019	240-114745-49	None
Trip Blank (Water)	June 19, 2019	240-114766-14	None

Sample ID	Sampling Event Date	Lab ID	Organic Detections
Trip Blank (MeOH)	June 19, 2019	240-114766-15	None
Trip Blank	June 20, 2019	240-114843-18	None
Trip Blank	June 20, 2019	240-114843-19	None
HCL Trip Blank	June 21, 2019	240-114912-17	None
HCL Trip Blank	June 24, 2019	310-158749-16	None
MEOH Trip Blank	June 24, 2019	310-158749-17	None
Trip Blank	June 26, 2019	310-158924-23	None
Trip Blank	June 26, 2019	310-158924-24	None
Trip Blank	June 26, 2019	310-158924-23	None

Note: The laboratory provided all trip blanks.

5.7.4 Rinsate Sample Summary

Rinsate Summary			
Sample ID	**Sampling Event**	**Lab ID**	**Detections**
Rinsate #1	June 18, 2019	240-114745-37	None
Rinsate #2	June 18, 2019	240-114745-44	None
Rinsate #3	June 20, 2019	240-114843-17	None
Rinsate #4	June 26, 2019	310-158924-4	None
Rinsate #5	June 26, 2019	310-158924-10	No VOCs, Lead = 0.00285 mg/l
Rinsate #6	June 26, 2019	310-158924-18	No VOCs
Rinsate #7	June 26, 2019	310-158924-19	Lead = 0.00285 mg/l

5.7.5 QA/QC Summary

The data quality objectives outlined in the RI Work Plan were followed throughout the investigation. Wenck contracted Diane Short & Associates to review the laboratory reports and QA/QC data. Upon review of the laboratory data qualifiers applicable to this investigation, with any exceptions noted on the validation forms and the text below, it is Wenck's opinion that the qualified data does not affect the outcome of the RI activities discussed in this report. The validation forms and EDD reports associated with the RI sampling lab data are included in **Appendix E**.

For SDG 240-114912: The MS/MSD recoveries for lead (149%, 143%) for sample GP-11 (0-1) (250-114912-1 by Method 6010D exceeded the QC limits of 70-130%. As a result, the

detected result lead in the parent sample was qualified as JMS#, where # is the highest spike recovery outside criteria. For SDG 310-158749: The MS recovery for lead (270%) for sample GP-14 (0-1) (310-158749-1) by Method 6010D exceeded the QC limits of 70-130%. As a result, the detected result lead in the parent sample was qualified as JMS#, where # is the highest spike recovery outside criteria. This result was also qualified for the MS/MSD RPD.

For SDG 310-158749: The MS/MSD RPD for lead in sample GP-14 (0-1) (310-158749-1) exceeded the 20% criteria at 47%. Therefore, the detected result for lead was qualified. As JD#, where # is the RPD recovery outside criteria as listed in the table below. This result was also qualified for an MSD recovery outside criteria.

For Method(s) 8260B: All soil samples were properly preserved with methanol and analyzed within 14 days of the collection date. Water samples were properly preserved to pH < 2 and the applicable preservative was used, with the following exceptions. Preserved water samples must be analyzed within 14 days of the collections date. Improperly preserved water samples must be analyzed within 7 days of the collection dates.

For SDG 240-114472: According to the Case Narrative, the pH of the sample GP-1 (7-11') (240-114472-5) was greater than 2. This sample was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably, benzene, toluene, and ethylbenzene are susceptible to biological degradation if sample is not preserved to a pH of 2. This sample was analyzed 5 days outside the 7-day HT for an unpreserved sample. Therefore, the non-detected results for sample GP-1 (7-11') (240-114472-5) were qualified as estimated with a "UJP" preservation qualifiers with a potential low bias.

For SDG 240-114745: According to the Case Narrative, samples GP-2 (22-24) (240-114745-6), GP-3 (23-25) (240-114745-12), GP-7 (14-16) (240-114745-32), GP-8 (5-7) (240-114745-36), GP-8 (12-14) (240-114745-38), GP-8 (19-21) (240-114745-39), GP-9 (6-8) (240-114745-43), GP-9 (13-15) (240-114745-45), and GP-6 (7-10) (240-114745-24) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 240-114766: According to the Case Narrative, samples GP-10 (10-12) (240-114766-4), GP-10 (17-19) (240-114766-5) and HA-1 (240-114766-7) were collected in properly preserved vials for analysis of VOC). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 240-114843: The COC did not indicate the water samples were properly preserved with HCl. However, the Login Sample Receipt Checklists indicate the sample preservation was verified. Additionally, the Case Narrative did not indicate there was any preservation problems. Therefore, no action was taken.

For SDG 240-114912: According to the Case Narrative, samples GP-11 (5-10) (240-114912-2), GP-11 (15-17) (240-114912-4), GP-12 (7-10) (240-114912-9), GP-12 (15-17) (240-114912-10), GP-12 (22-24) (240-114912-11), GP-13 (7-10) (240-114912-14), GP-13

(15-17) (240-114912-15) and GP-13 (22-24) (240-114912-16) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 310-158749: According to the Case Narrative, samples GP-14 (9-14) (310-158749-3), GP-15 (8-13) (310-158749-8), GP-15 (25-27) (310-158749-11) and GP-16 (10-15) (310-158749-15) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 310-158924: According to the Case Narrative, samples GP-16 (27-29) (310-158924-2), GP-16 (34-36) (310-158924-3), GP-17 (7-12) (310-158924-7), 062619-A (310-158924-9), GP-18 (10-15) (310-158924-17), 062619-B (310-158924-20), GP-18 (20-22) (310-158924-21) and GP-18 (34-38) (310-158924-22) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

Validation qualifiers have been added to the appropriate data tables.

6.0 Risk Evaluation

6.1 SITE CONCEPTUAL MODEL

A Conceptual Site Model (CSM) was developed for this scope of work that provides the basis for identifying and evaluating potential contaminant sources and transport mechanisms for contaminant migration through the environment as well as evaluation of risk to receptors. The CSM includes all potential sources, release and transport pathways, and potential exposure media. The components of the CSM include:

- Physical Setting
- Contaminants of Concern
- Contamination Mechanisms
- Source Media
- Transport Mechanisms
- Exposure Media
- Exposure Pathways

Environmental site conditions described by the CSM included the review of existing contaminant sources, site conditions, surrounding geology and hydrogeology, and hydrologic information. This information was used to identify potential contaminant migration pathways.

6.2 PHYSICAL SETTING

6.2.1 Topography

The Site has a general slope to the east toward Goose Lake and White Bear Lake with elevations ranging from approximately 920 to 910 feet above mean sea level. Site surface drainage is sheet flow into the municipal stormwater sewer system associated with adjacent public streets and via infiltration in the wetland areas on the eastern portion of the Site. Historic development may have included grading or filling of the Site to improve the location for construction and drainage.

County Ditch 14 (Lambert Creek) is in an east-west configuration and bisects through the approximate center of the Site. County Ditch 14 receives drainage from the adjacent wetlands, residential developments and Goose Lake and flows southwest and eventually drains into East Vadnais Lake, located approximately 3.5 miles southwest of the Site.

A stormwater retention pond is located directly east of the main manufacturing building and receives stormwater runoff from the parking lot areas located on the east, north and southeast sides of the building as well as roof drain runoff. The eastern stormwater pond overflows to the surrounding wetlands and then to County Ditch 14 (Lambert Creek), which runs along the south side of the Facility.

A stormwater pond is located southwest of the loading docks of the North Campus building and receives runoff from the southwest portion of the facility, which includes the shipping and receiving docks, covered dumpsters, and diesel generator. The retention pond has an outlet on the south side and water flows under the drive via a culvert and then flows overland to County Ditch 14 (Lambert Creek).

6.2.2 Geology

Previous subsurface investigations completed at the Site have identified shallow fill soils underlain by fine-grained, poorly graded sandy soils ranging in thickness from five (south end of the Site) to approximately 30 feet (north end of the Site). This sandy unit overlies a silty clay semi-confining layer with silt and sand lenses. The semi-confining layer is estimated to be approximately 45 to 65 feet thick. Beneath this semi-confining layer is a clayey to silty sand unit. Based on geologic references the thickness of the unconsolidated sediments in the area of the Site are approximately 200 feet thick.

The 2019 Wenck RI activities identified soil profiles across the Site generally consisting of approximately three to 11 feet of fill soils consisting primarily of dark brown silty and clayey sand with gravel. Fill with varying amounts of debris including concrete, slag and brick was observed in the upper 6' of GP-6, 1.5 feet at GP-8, 7 feet at GP-9, 4 feet at GP-10, 6 feet at GP-11, 8 feet at GP-12, 4 feet at GP-13, 12 feet at GP-14, 10.5 feet at GP-15, 11 feet at GP-16, 4 feet at GP-17 and 9 feet at GP-18. The fill soils were observed to be deepest in the borings completed south and southeast of the North Campus building (GP-11 through GP-18).

The native soils below the fill generally consist of water bearing unconsolidated sediments primarily consisting of fine to medium grained sand, silty sand and clayey sand. These granular soils were encountered below the fill to approximately 20 feet bg. The thickness of the granular soils varied from 15 to 27 feet thick on the western and northeastern portions of the Site and from 5 to 10 feet thick on the southern portion of the Site. Organic soils and peat were encountered below the fill soils from approximately 10 to 13 feet in soil borings GP-14, 15, 16 and 17, completed along the southeast corner of the North Campus building.

Below the unconsolidated sediments, site soils consisted primarily of well sorted, very fine-grained sediments which included both silt- and clay-grade materials indicative of lacustrine deposits. These lacustrine deposits included highly laminated beds of silts, clays and very fine sands. Traces of organics were observed within the clayey soils at several locations along the south side of the North Campus building. Alternating layers of silt, silty sand, clayey sand, fat clay and lean clay were encountered below the granular soils at depths ranging from approximately 11 feet bg to 30 feet bg and continuing to the boring terminus at each boring location. The upper layers of these fine silty and clayey sediments included numerous lenses of very fine sand and silty sand with high moisture content. The clay content generally increased with depth becoming denser with fewer lenses of granular sediments, and borings were terminated when the non-water bearing impermeable clay layer was encountered. Saturated soils were observed from approximately 9 to 27 feet above the top of the semi-confining clay layer.

Published references describe the first-encountered bedrock unit beneath the northern portion of the property as the Ordovician-aged St. Peter Sandstone. The St. Peter Sandstone units ranges in thickness from approximately 155 to 165 feet in Ramsey County. The upper portion of the St. Peter Sandstone consists of fine- to medium-grained sandstone. The lower portion of this unit is composed of fine-grained units of mudstone, siltstone and shale interbedded with coarse-grained sandstone. The first encountered bedrock unit in the southeastern portion of the property is the Prairie du Chien Group consists of thinly to thickly-bedded dolostone. (Minnesota Geological Survey, 1992). Depth to bedrock is anticipated to be approximately 200 feet bg (Minnesota Geological Survey, 1992).

6.2.3 Hydrogeology

According to available hydrogeologic references, the general direction of shallow groundwater flow in the area of the Site is to the west (Minnesota Geological Survey, 1992). Previous monitoring wells completed at the Site identified shallow groundwater at approximately seven to 12 feet bg with a southerly flow direction, towards the wetland and County Ditch 14 (Lambert Creek). The previous subsurface investigations completed at the Site indicate two distinct aquifers are present in the vicinity of the Site. Groundwater has historically been identified within the upper 10-feet bg of the shallow unconsolidated aquifer and at approximately 25-feet bg within a deeper buried glacial aquifer.

During the 2019 RI activities Wenck identified groundwater depths between approximately 3.9 feet below grade to approximately 10.7 feet below grade across the Site as observed during drill activities. The water observations made during this investigation are estimates. The height of the water column was observed from approximately 9 to 27 feet above the top of the semi-confining clay layer. Based on the estimated water depths it appears that the direction of groundwater flow is to the south which is consistent with past investigation findings. To definitively determine groundwater flow permanent groundwater monitoring wells would be required with multiple measurements made over time. This was beyond the scope of this RI.

6.2.4 Surface Water

The Site consists of a mix of permeable and impermeable surfaces including buildings, paved areas, retention ponds, wetlands, and landscaped areas. Runoff from impermeable surfaces generally flows to two main retention ponds located southwest and east of the building as described above in section 2.4.1. Discharge from both on-site retention ponds flows through designated wetlands before discharging to County Ditch 14 (Lambert Creek). Based on the elevation of the shallow groundwater table and the presumed direction of flow (south-southwest) it is likely shallow groundwater discharges into Lambert Creek. However, a more detailed investigation would be required to determine if the creek is a gaining (receiving groundwater) water body or a losing (discharging water into the groundwater system) water body.

6.3 CONTAMINANTS OF CONCERN

The facility has manufactured lead sinkers and battery terminals since the 1940s. Historical investigation has identified releases of chlorinated solvents to the shallow groundwater system, lead to the Site soils and Lambert Creek sediments. The facility, until 2019, used TCE in its battery terminal manufacturing process. A list of contaminants of concern (COCs) based on the recent RI and past site assessment activities is as follows:

- Volatile organic compounds (VOCs): Chloroethane; 1,1-Dichloroethane (1,1-DCA); 1,2-Dichloroethane (1,2-DCA); 1,1-Dichloroethene (1,1-DCE); cis-1,2-Dichloroethene (cis-1,2-DCE); trans-1,2-Dichloroethene (trans-1,2-DCE); Tetrachloroethene (PCE); 1,1,1-Trichloroethane (1,1,1-TCA); 1,1,2-Trichloroethene (TCE); Vinyl Chloride (VC); and
- Lead.

6.4 CONTAMINATION MECHANISM

Historical lead and VOC releases, with the potential to provide a mechanism for contamination, were documented as part of this RI and previous site investigations. The primary site activities identified by others were lead deposition through pollution control equipment exhaust and release of chlorinated solvent-related contamination through surface discharges to the subsurface.

Primary site activities include raw material handling, storage, processing and use of both metals (lead) and various VOCs in both liquid and vapor phase. Transport mechanisms can be specific to the type of handling, storage or processing that occurred and, in most cases, resulted in variation within relatively localized areas of the Site. Section 6.5 provides evaluation of contaminant transport mechanism for each area of concern for the Site. The primary contamination transport mechanisms include:

- Surface discharge (surficial spills, leaking and leaching through building floor)
- Mechanical failures (piping, tanks, sewer, septic failure, rupture or unintended discharge)
- Equipment exhaust (direct vapor or dust exhaust, or secondary contamination through condensation or precipitation)

6.5 TRANSPORT MECHANISMS

The following transport mechanisms were evaluated as part of this RI:

- Volatilization - VOCs
- Air Emissions – VOCs and Lead
- Leaching – VOCs and Lead
- Erosion - Lead

Volatilization: Contaminants in the subsurface may migrate via volatilization if solid materials convert into a gas and become mobile. The ability for chemicals to volatilize from soil is a function of the chemical's volatility which is represented by Henry's law coefficient. Based on the soil vapor data collected during the RI, volatilization in soil gas is present beneath the North Campus building.

Air Emissions/Fugitive Dust: Contaminants may become airborne via emission control equipment associated with the manufacturing activities and by past material handling practices. RI soil sample results detected the highest concentrations of total lead within the zero to 1-foot soil horizon indicating high likelihood lead was deposited via air emissions.

Leaching: Contaminants may migrate to the groundwater system via leaching from impacted soil. Leaching is caused by precipitation infiltrating through contaminated media and transporting the leached chemical into the groundwater. The factors that affect the leaching rate include a contaminant's solubility, partition coefficient and concentration. Insoluble compounds will precipitate out of solution in the subsurface or remain in their insoluble forms with little leaching. Another factor that affects whether a contaminant will reach groundwater via leaching is the contaminant's rate of decay. Inorganic chemicals do not decay; however, most organic chemicals decay at characteristic rates that are described by the chemical's half-life. Chemicals with long half-lives have a greater potential for contaminating groundwater than those with shorter half-lives. Based on historical groundwater data, leaching appears to be a primary transport mechanism at the site.

Shallow groundwater at the Site has been impacted by VOCs. Surface water samples collected during the RI did not detect the presence of VOCs.

Erosion/Stormwater Transport: Contaminants in surface soil/sediments/fugitive dust in paved areas may migrate to surface water via erosion due to stormwater surface flow. The ability for chemicals to migrate via erosion is dependent on the amount of exposed soils/sediments/fugitive dust. Sediment samples collected in Lambert Creek detected total lead concentrations above the laboratory's detection limit. This appears to be a viable transport mechanism.

6.6 POTENTIAL EXPOSURE MEDIA

Potential exposure media describe the individual medium where contaminants are available to human receptors. Potential exposure media include the following:

- Indoor Air – Potential contamination associated from vapor intrusion from soils beneath the North Campus building into the breathing zone within the building is likely given the high concentrations of VOCs in the soil gas beneath the building.
- Soil– Potential contamination associated with dermal contact and inhalation exposure of lead-impacted materials when disturbed or in contact with a receptor.
- Surface Water – Potential contamination from erosion of impacted soil. Lead was detected at concentrations above the Tier 1 Surface Water Screening Criteria in Lambert Creek.
- Groundwater – Known groundwater contamination exists at the Site. Past investigation has shown the unconfined water table at the Site has been impacted with chlorinated solvents at low concentrations. Past investigation has also detected a semi-confining layer beneath the unconfined groundwater table aquifer protecting the deeper potable groundwater aquifer. There is limited exposure potential because there are no drinking water wells located at the site, and sampling and analysis of off-site drinking water wells by the MDH detected no VOCs. In addition, the RI and past investigation demonstrated natural attenuation of the chlorinated solvent pollution within the shallow groundwater system.

7.0 Discussion

7.1 GENERAL

Wenck's professional opinions on the locations of known contamination and affected media are based on the field observations and laboratory analytical results during the investigation. The results for each of the sampled environmental media are presented on the attached tables and discussed in the sections below. Investigation sample locations are shown on **Figures 3** and **4**.

7.2 SOIL CONDITIONS

A total of 31 soil samples were collected and analyzed for total lead. Lead was detected above laboratory reporting limits in all 31 of these samples. The Industrial SRV of 700 mg/kg was exceeded at GP-16 (0-1') at 719 mg/kg, GP-18 (0-1') at 776 mg/kg, HA-1 (0-1') at 982 mg/kg and HA-5 (0-1') at 979 mg/kg. None of the detected total lead values exceeded the Tier 1 SLV of 2,700 mg/kg.

VOCs were not detected above their respective laboratory reporting limits in any of the soil samples collected at the Site with the exception of GP-16. In the sample collected at GP-16 (2-4') PCE was detected at a concentration of 0.269 mg/kg above the SLV of 0.042 mg/kg, and TCE was detected at a concentration of 0.826 mg/kg, above the SLV of 0.0023 mg/kg.

7.3 GROUNDWATER CONDITIONS

A total of 58 groundwater samples collected from the soil borings were analyzed for VOCs. The VOC compounds including 1,1-DCA, chloroethane, cis-1,2-DCE, trans-1,2-DCE, TCE and VC were detected above their laboratory reporting limits during this investigation. During this RI the laboratory reporting limits for TCE and VC were slightly above their respective MDH HRLs. Based on the findings of this RI and review of previous investigation data, the results appear consistent with historical investigations. At the low-level concentrations detected, 1,1-DCA, chloroethane, cis-1,2-DCE, trans-1,2-DCE and VC are commonly associated with natural attenuation of TCE. TCE and VC were the only compounds identified at concentrations exceeding their respective HRLs. Since the completion of the previous investigations, the HRL for TCE was changed by the MDH from 30 ug/L to 5.0 ug/L in 2007 and lowered again in 2015 to its current concentration of 0.4 ug/L. The HRL for VC is unchanged (0.2 ug/L).

VOCs were detected near and down-gradient (south and southeast) of the suspected historic source areas located beneath the building. Suspected VOC source areas include the coating and chemical storage areas AOC-1, AOC-2 and AOC-3. Additional push probe groundwater samples should be collected to delineate the extend of the groundwater impacted above the HRLs for TCE and VC.

7.4 SOIL VAPOR CONDITIONS

A total of 25 sub-slab soil vapor samples (SS-1 through SS-25) were analyzed for a modified list of VOCs by the EPA Method TO-15. Five individual VOCs (1,1,1-TCA, 1,1-DCA, cis-1,2 DCE, PCE, trans-1,2,DCE and TCE) were detected above the laboratory method reporting limits in the sub-slab soil vapor samples collected from beneath the building. The

VOCs 1,1,1-TCA, 1,1-DCA, cis-1,2 DCE and PCE are likely related to historic degreasing operations at the facility and are below their respective Industrial ISVs.

The following results are above 33X the Industrial ISVs:

- TCE in the samples collected from: SS-1 through SS-4, SS-6, SS-8 through SS-15, SS-18 through SS-20 and SS-22 through SS-25

The following results are above 33X the Industrial EISVs:

- TCE in the samples collected from: SS-2, SS-6, SS-8 through SS-15, SS-18 through SS-20 and SS-22 through SS-24.

The most-current MPCA BMP document states "active" mitigation is necessary when sub-slab vapor sampling results are above 33X EISVs." For this Site, Wenck has conducted a vapor intrusion evaluation and found that TCE soil vapor concentrations are above the EISVs beneath the north manufacturing building, thus requiring interim response action.

A total of eight ambient air samples (six crawl space and two background samples) were collected during the RI activities and analyzed for a modified list of VOCS by EPA Method TO-15. All eight samples reported VOCs were identified above their respective laboratory reporting limit.

The following results are above the Industrial ISVs:

- TCE in the samples collected from: AA-3, AA-4, AA-5, AA-7 and AA-8.

Trans-1,2-DCE was identified in soil vapor samples collected from many locations beneath the building. Vapor phase migration from indoor to the sub-slab may be occurring. Results of the RI suggest that the vapor phase of trans-1,2-DCE requires additional building pathway flow analysis to determine the migration pathway(s) in the building, especially during HVAC and vapor hood operation and cycling.

7.5 SEDIMENT CONDITIONS

VOCs were not detected above laboratory reporting limits in any of the sediment samples collected at the Site. Lead concentrations were identified above the MPCA Level 1 SQT in four of the five sediment samples collected from the north bank of County Ditch 14 and in one of the samples collected from the eastern stormwater pond outlet. The two sediment samples collected from the eastern stormwater pond inlets identified lead concentrations above the MPCA Level II SQT.

Metals are naturally occurring in the soils of North America and would be expected to be present in any sampled sediments. The Site is located in an urban setting which likely contributes to higher levels of metals than natural background levels even without potential contributions from the on-site lead manufacturing operations.

7.6 SURFACE WATER CONDITIONS

County Ditch 14 is identified in the 2018 Inventory of Impaired Waters published by the MPCA as "Unnamed Creek (Lambert Creek) with the Assessment United Identifier (AUID) #07010206-801. The creek is listed as impaired for aquatic recreation due to fecal coliform and has been listed on the impaired water inventory since 2008. No VOCs were detected above laboratory reporting limits in any of the surface samples collected at the Site. Lead was detected above the Tier 1 Surface Water Screening Criteria in three of the six samples collected from Lambert Creek. Additional surface water sampling and analysis for lead and hardness is recommended to determine if the lead concentrations in surface water are reproducible and better understand the risk pathway. Additional evaluation will include collecting samples upgradient and downgradient to determine if lead concentration observed during this RI are related to a release of lead to the environment or are naturally-occurring.

7.7 EXPOSURE PATHWAY ANALYSIS AND RISK ASSESSMENT

The CSM for fate and transport provided the basis for identifying and evaluating the contamination mechanism, source media, transport mechanisms, and potential exposure media. The contaminated media (soil vapor, soil, sediment, surface water and groundwater), if present, acts as potential sources of contamination for transport to other potential exposure media. Contaminants in soil vapor may migrate into the breathing air space within the on-Site building, in soil to air via fugitive dust, to sediment via erosion, surface water through migration in groundwater, and to groundwater via leaching. The exposure pathways to a human receptor from the potential source media are discussed below:

- Vapor intrusion pathway: Indoor air exposure of VOCs through vapor intrusion could occur if soil vapors migrate upward through the vadose zone into the interior spaces of the building, contaminating indoor air. Vapor may travel through the vadose zone and into the structure through the soils or through preferential pathways such as utility corridors that lead to a structure, utility connections at the structure, through the drain tile system and sump, through cracks or gaps in the building foundation, etc. At this time, it is unknown where the source(s) of VOCs may reside, therefore additional investigation in the vadose zone and shallow groundwater system is necessary to fully evaluate this risk pathway. However, known vapor risk will be immediately mitigated through sub-slab vapor depressurization and soil vapor extraction. Details pertaining to the aforementioned mitigation efforts will be submitted to the MPCA under separate cover for review and approval.
- Direct contact exposure pathway: Potential exposure of lead would likely occur from soil disturbance during any future excavation activities (e.g., building construction, utility installation, etc.) that could occur at the Site. Lead exposure may also occur during pond maintenance activities or potential creek dredging or rerouting activities.
- Drinking water exposure pathway: Potential impacted groundwater exposure would occur from the leaching of contaminated soil into the groundwater system, the migration of the contaminated groundwater to a potable water well, and the consumption or dermal contact of the withdrawn contaminated water. Groundwater quality data collected during the recent RI was consistent with past investigation findings. This exposure pathway appears unlikely due to the presence of a laterally extensive semi-confining layer that exists at the Site and the fact that nearby potable water supply wells are not drawing water from the shallow glacial aquifer. However, determining the vertical and horizontal extent of VOC contamination at the Site is necessary to fully understand the vapor intrusion risk pathway (discussed

above) and to develop a mitigation technology adequate to protect the occupants in the North Campus building.

- Groundwater to surface water risk pathway: Based on current data it is not conclusive that shallow groundwater at the Site discharges to the ditch located south of the North Campus building. Surface water samples collected during the RI did not detect the presence of VOCs. Additional assessment of the groundwater and surface water interaction is warranted during future RI activities.

8.0 Conclusions

Based on the field observations and laboratory analysis of soil, groundwater, and soil vapor samples collected and analyzed from the Site, Wenck submits the following conclusions:

1. Based on the findings of this RI no VOC impacts were identified in, Lambert Creek sediments, or surface water (Lambert Creek). No additional assessment of the Lambert Creek sediments or surface water for VOCs is warranted at this time.

2. During the RI of the Site, lead was identified in the shallow Site soils at concentrations in excess of Tier 2 Industrial SRV at several locations around the Site. Additional horizontal and vertical delineation of lead impacts in those areas is warranted.

3. During the RI of the Site, lead was identified at concentrations in excess of the Tier 1 SQT along the north bank of Lambert Creek and above the Tier 2 SQT within the east stormwater retention basin. Additional horizontal and vertical delineation of lead impacts in those areas is warranted. Assessment of the stormwater runoff from the North Campus building roof that enters the East stormwater pond is also warranted.

4. During the RI of the Site, lead was identified at concentrations in excess of Tier 1 Surface Water Screening Criteria Lambert Creek. Additional evaluation of lead impacts in the creek is warranted.

5. Additional assessment of the interaction between the shallow unconsolidated groundwater aquifer and the downgradient Lambert Creek is warranted to further evaluate the potential risk of the creek to exposure of VOCs and lead.

6. Based on the findings of this RI, sub-slab vapor TCE concentrations exceed the MPCA's EISV value. Per the MPCA BMP for vapor mitigation, immediate vapor mitigation efforts must be undertaken. Vapor mitigation detail will be provided to the MPCA for review and comment under separate cover. In addition, Wenck recommends further vapor assessment, including delineation of the sub-slab soil vapor plume(s) and a detailed evaluation of HVAC and vapor hood operation and cycling. This information will be necessary to design an effective sub-slab vapor mitigation system for the North Manufacturing building.

7. During the RI of the Site, TCE vapor was detected in the subsurface beneath the building footprint at concentrations requiring interim response actions to mitigate potential vapor intrusion to the north manufacturing building. As noted above, vapor mitigation details will be provided to the MPCA for review and comment under separate cover. Additional investigation is also warranted to fully delineate the extent of soil vapor impacts. This will also ensure an effective permanent mitigation system design.

8. Groundwater impacts by TCE and VC were observed generally consistent with the historical investigations. TCE and VC are present at concentrations exceeding their respective HRLs in shallow groundwater at the Site. The distribution of the TCE indicates a southerly to southwesterly flow direction. The lateral and vertical extents of groundwater impacts in excess of the HRLs should be delineated.

9. Vertical groundwater delineation could not be conducted within the footprint of the building due to the inability to position drilling equipment inside the building during the field activities. Further investigation is necessary beneath the building to evaluate groundwater conditions.

9.0 Standard of Care

The standard of care for all professional services performed by Wenck and presented within this report is the care, skill, and diligence used by members of the consulting services profession practicing under similar circumstances at the same time and in the same locality. Wenck makes no warranties, express or implied, with respect to this report or otherwise, in connection with Wenck's services.

Report prepared by:

Kelly Jaworski
Environmental Scientist

and

Shane Waterman, PG (MN)
Principal

Report Reviewed by:

Chris Bratsch
Senior Environmental Engineer

Aaron Benker
Principal

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Figures

Figure 1 – Site Location Map

Figure 2 – RI Investigation Area Detail Map

Figure 3 – Exterior RI Locations Map Current Site Conditions Map

Figure 4 – Sub-Slab and Crawl Space Vapor Sample Locations

Figure 5 – Cross-Section Index Map

Figure 6 – Well Receptor Survey

Figure 7 – Surface Water Receptor Survey

Figure 8 – Geologic Cross Section A-A’

Figure 9 – Geologic Cross Section B-B’

Figure 10 – Geologic Cross Section C-C’

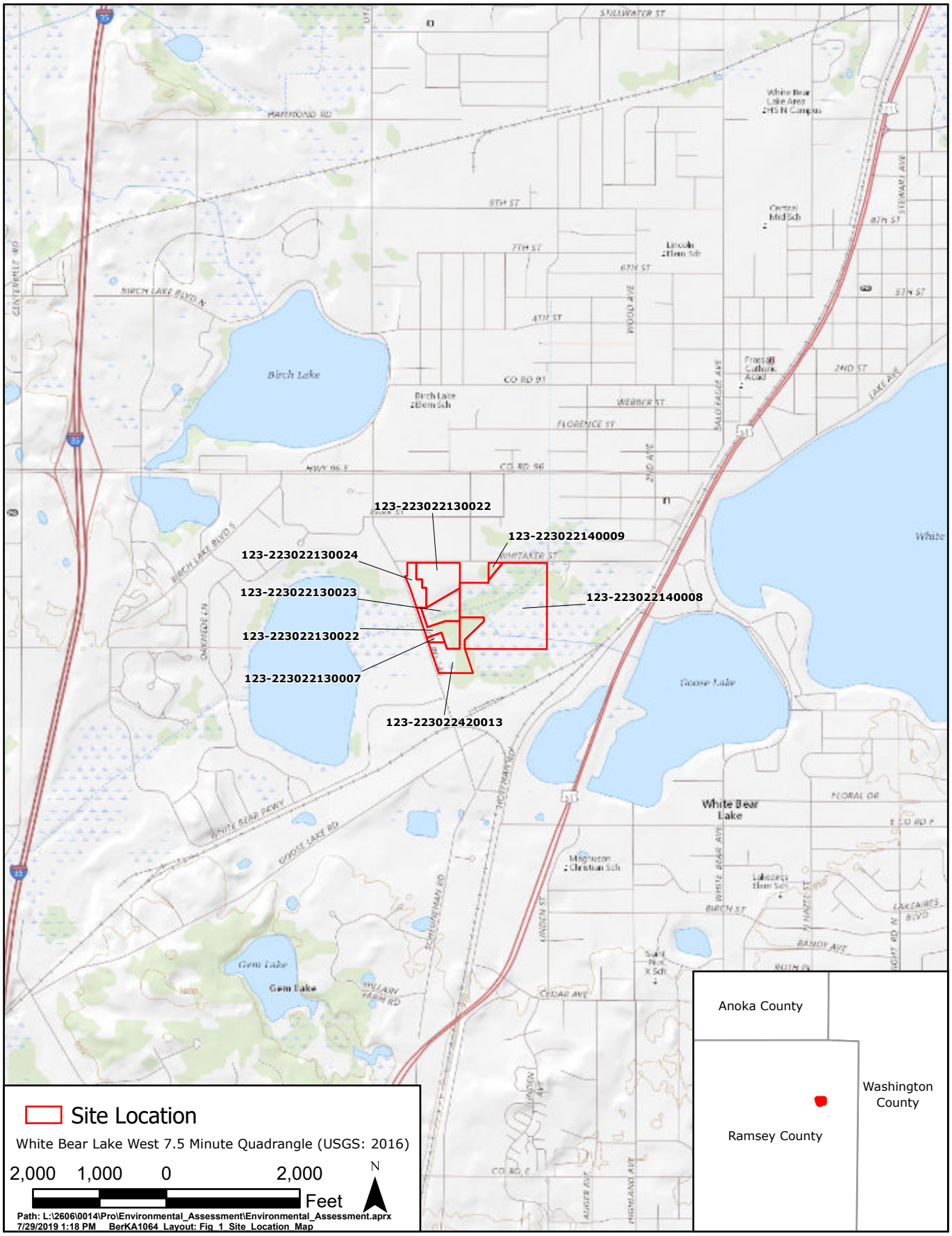
Figure 11 – Geologic Cross Section D-D’

Figure 12 – Soil and Sediment Exceedances

Figure 13 – VOC Exceedances in Groundwater

Figure 14 – Sub-Slab Vapor Detections

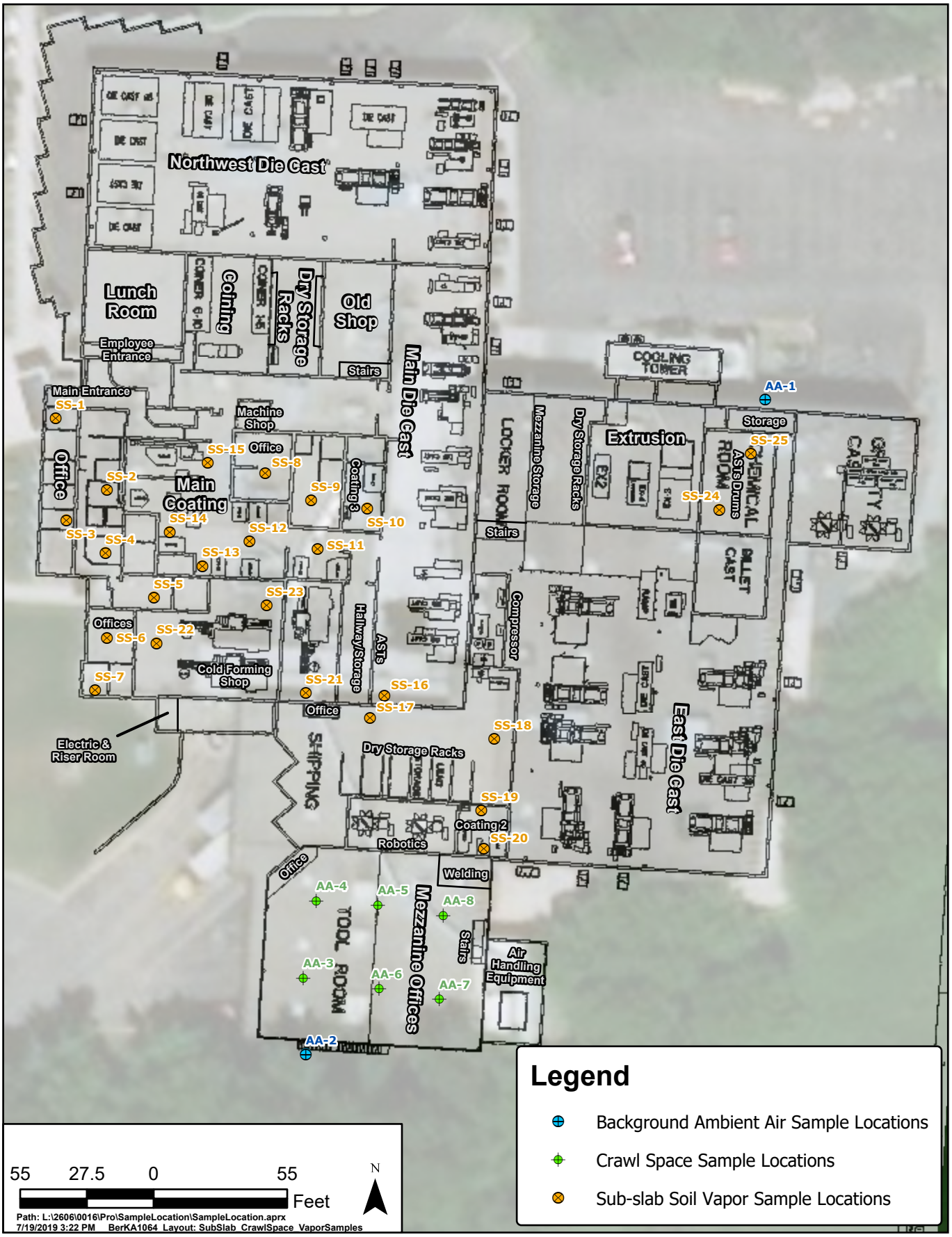
Figure 15 – Crawl Space and Background Air Detections



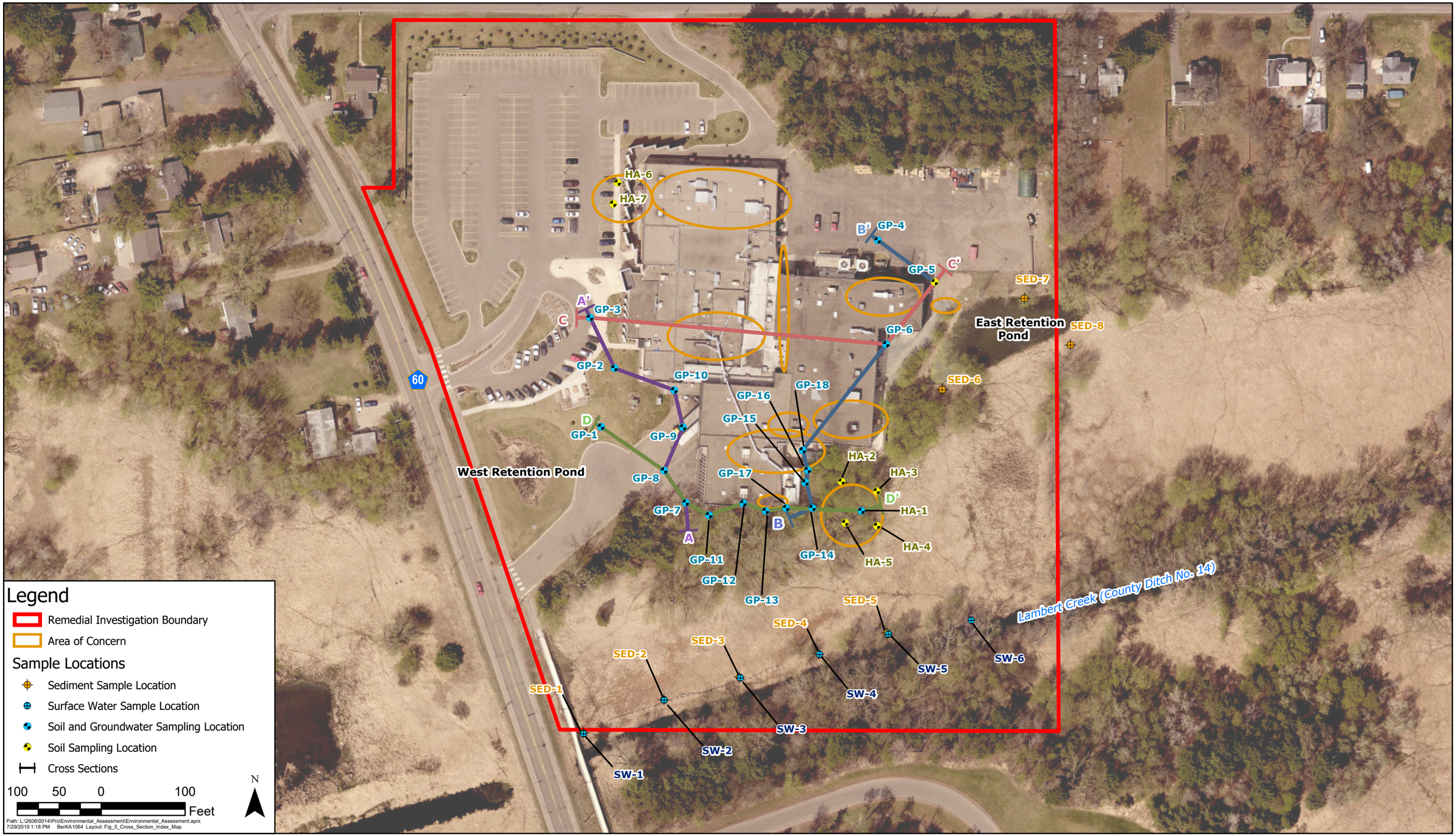
WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Site Location Map		Figure 1

WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Remedial Investigation Area Detail Map		Figure 2

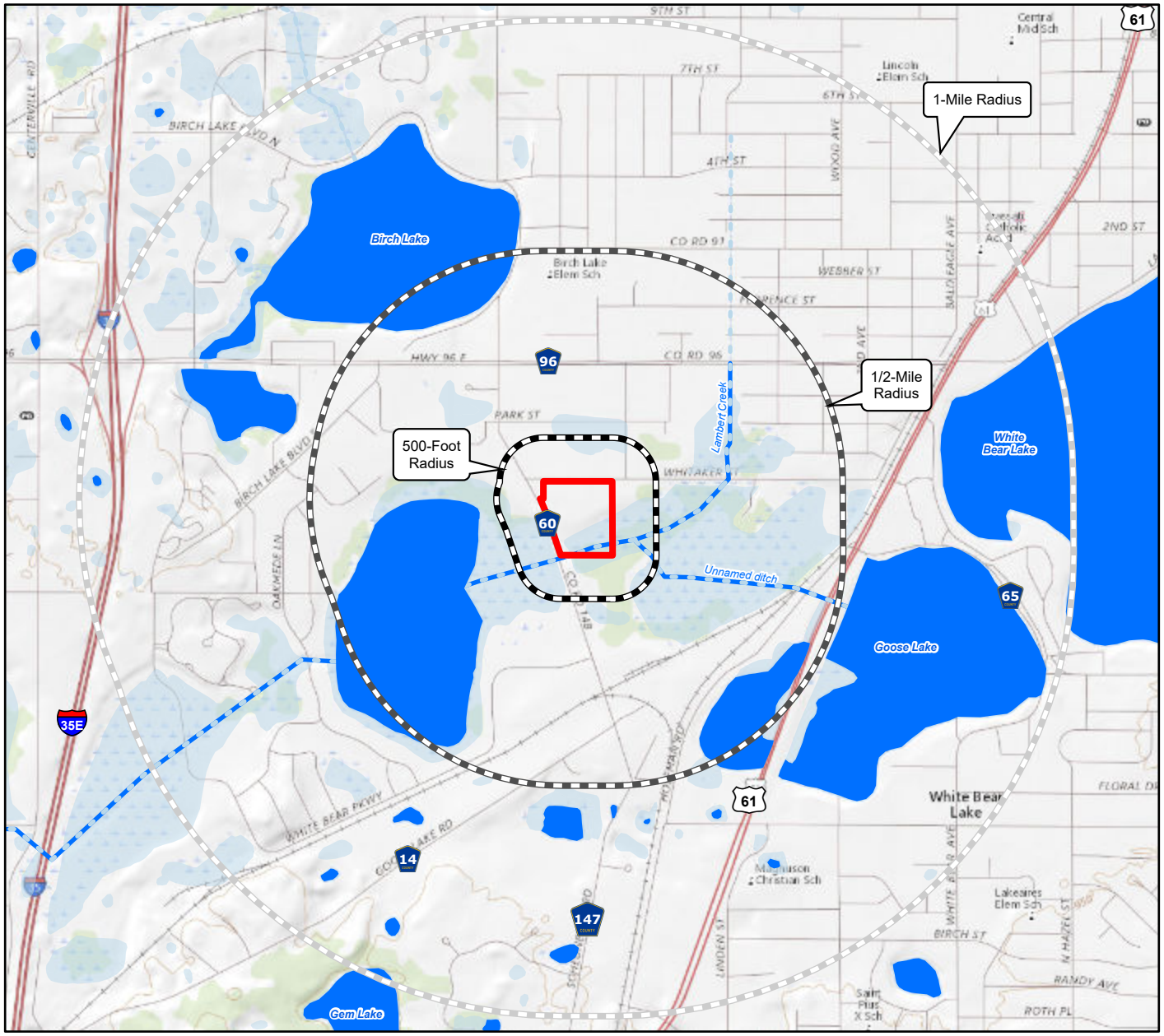
WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Exterior Remedial Investigation Locations Map		Figure 3



WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Sub-Slab & Crawl Space Vapor Samples		Figure 4



WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Cross Section Index Map		Figure 5



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WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Surface Water Survey		Figure 6

Legend

- Remedial Investigation Boundary
- 500-Foot Radius
- 1/2 Mile Radius
- 1-Mile Radius
- CWI (Location Verified Wells Only)

N

1,800 900 0 1,800 Feet

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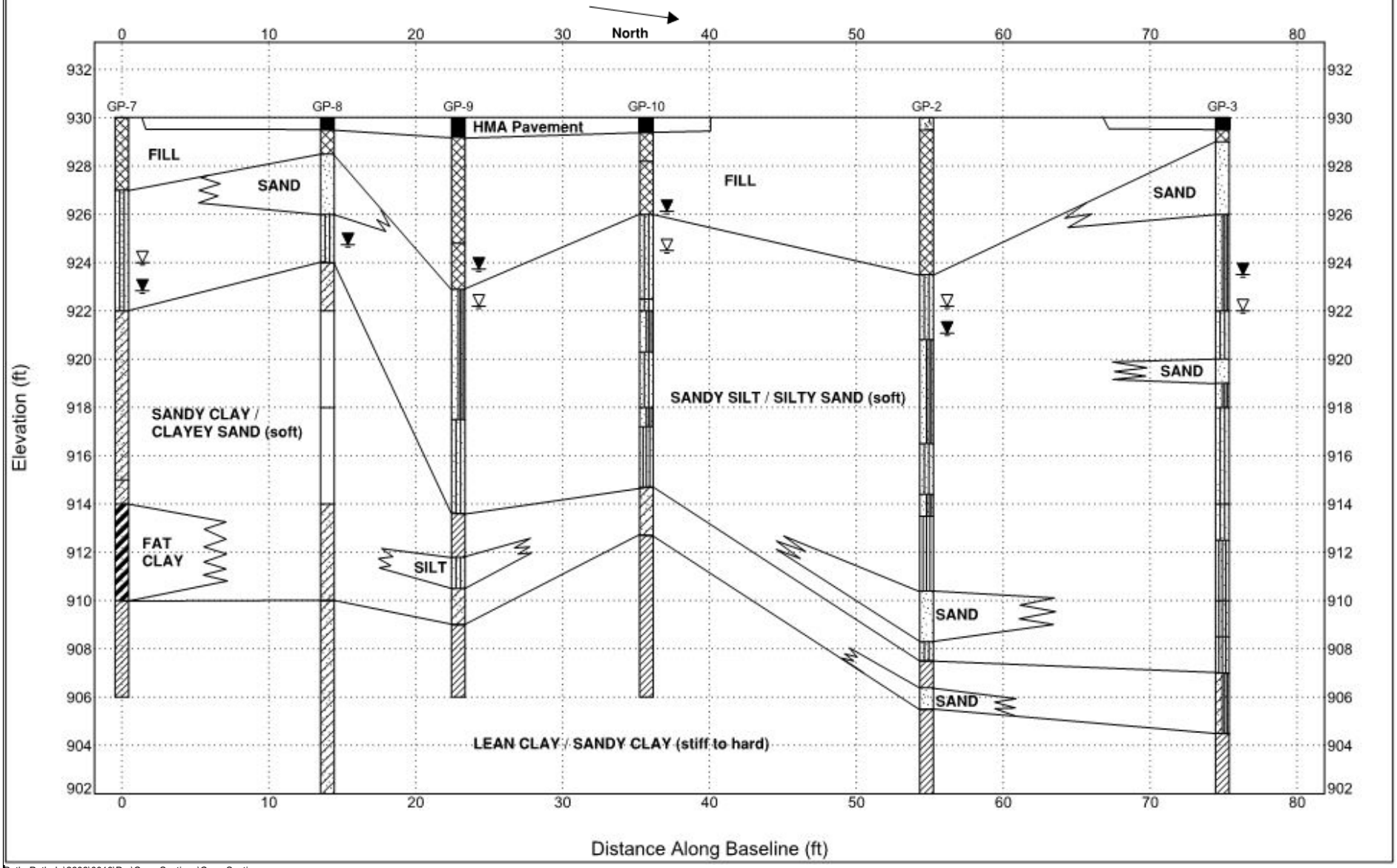
WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Well Receptor Survey		Figure 7



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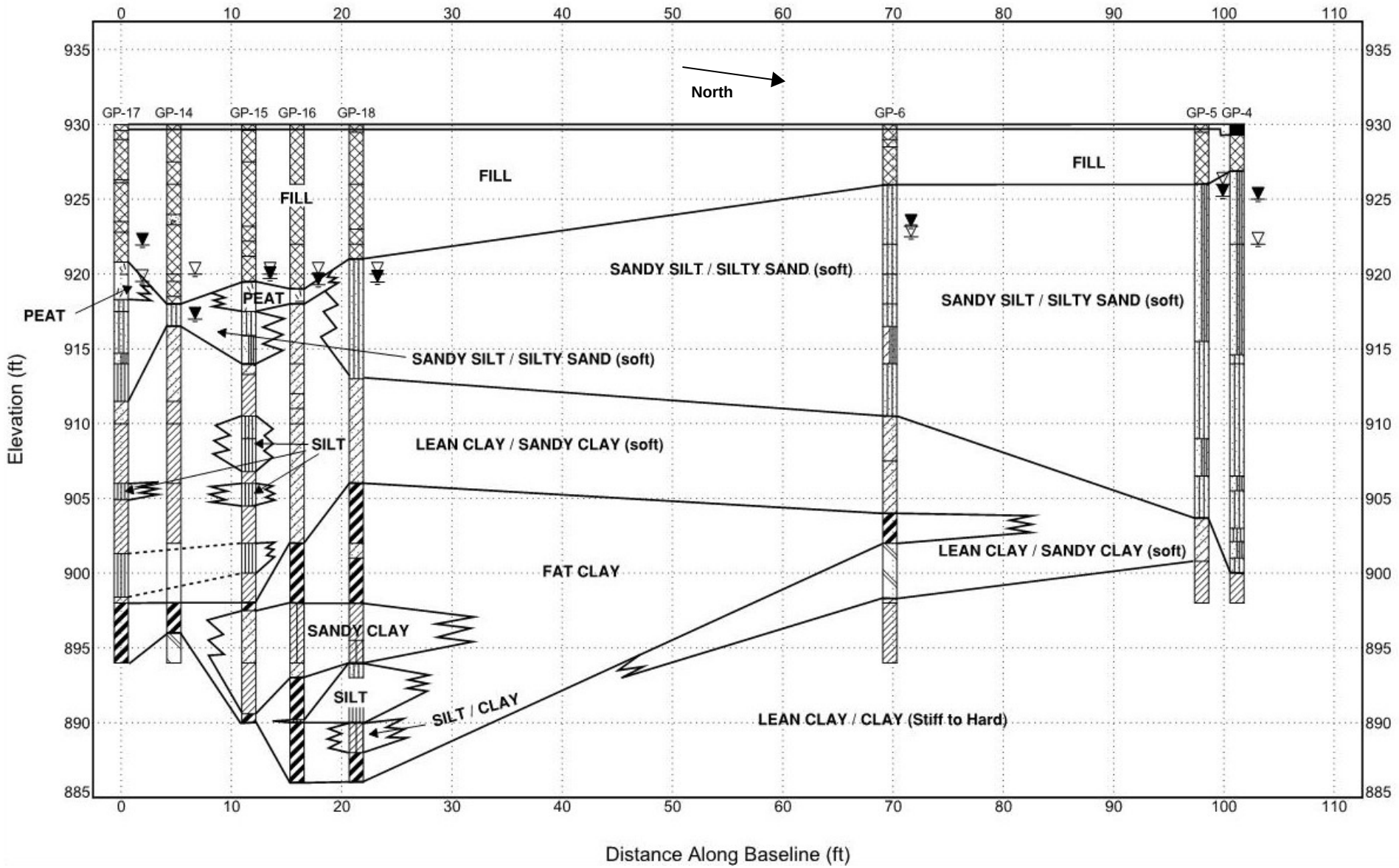
Geologic Cross Section A-A'		Figure 8



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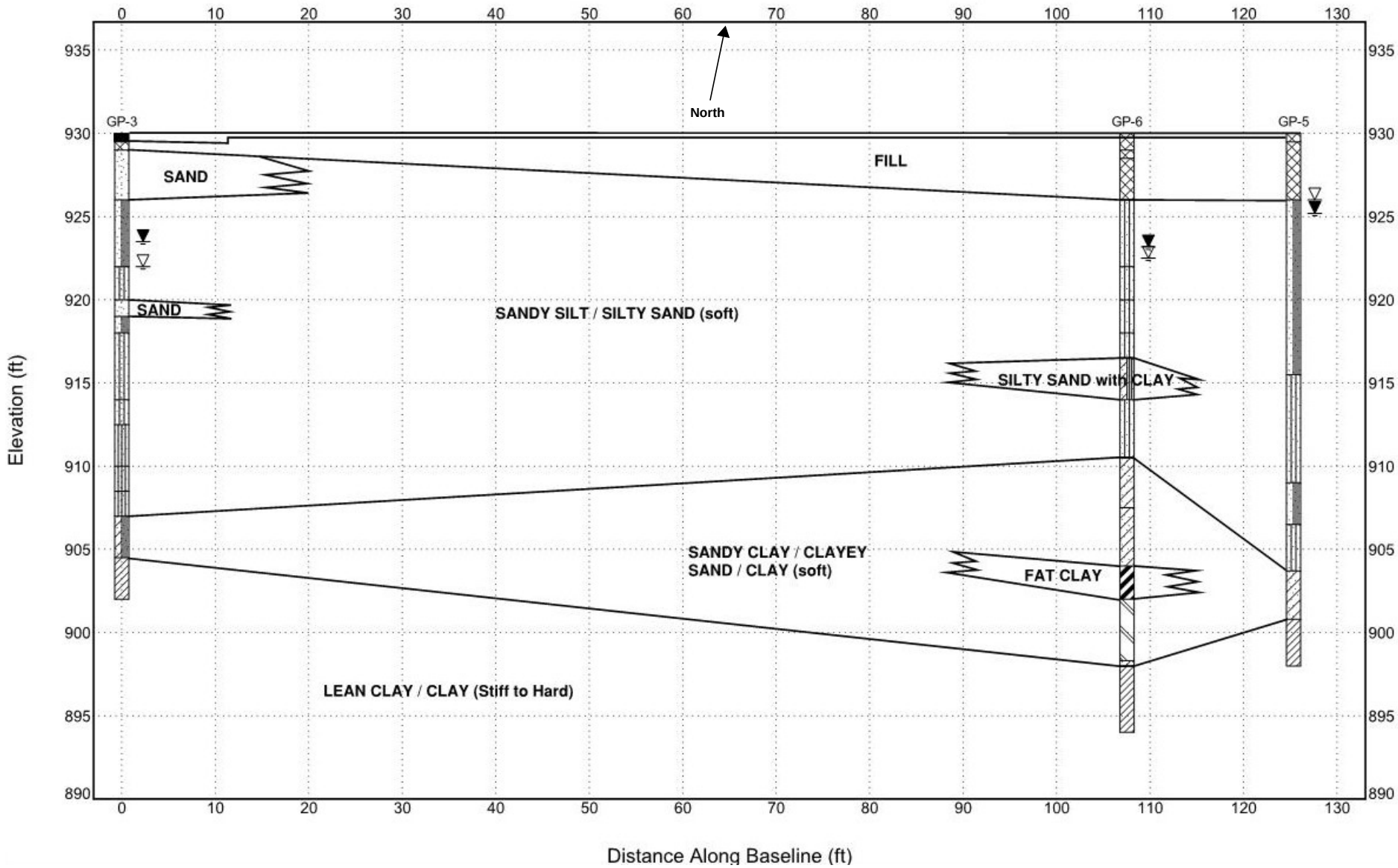
WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Geologic Cross Section B-B'		Figure 9



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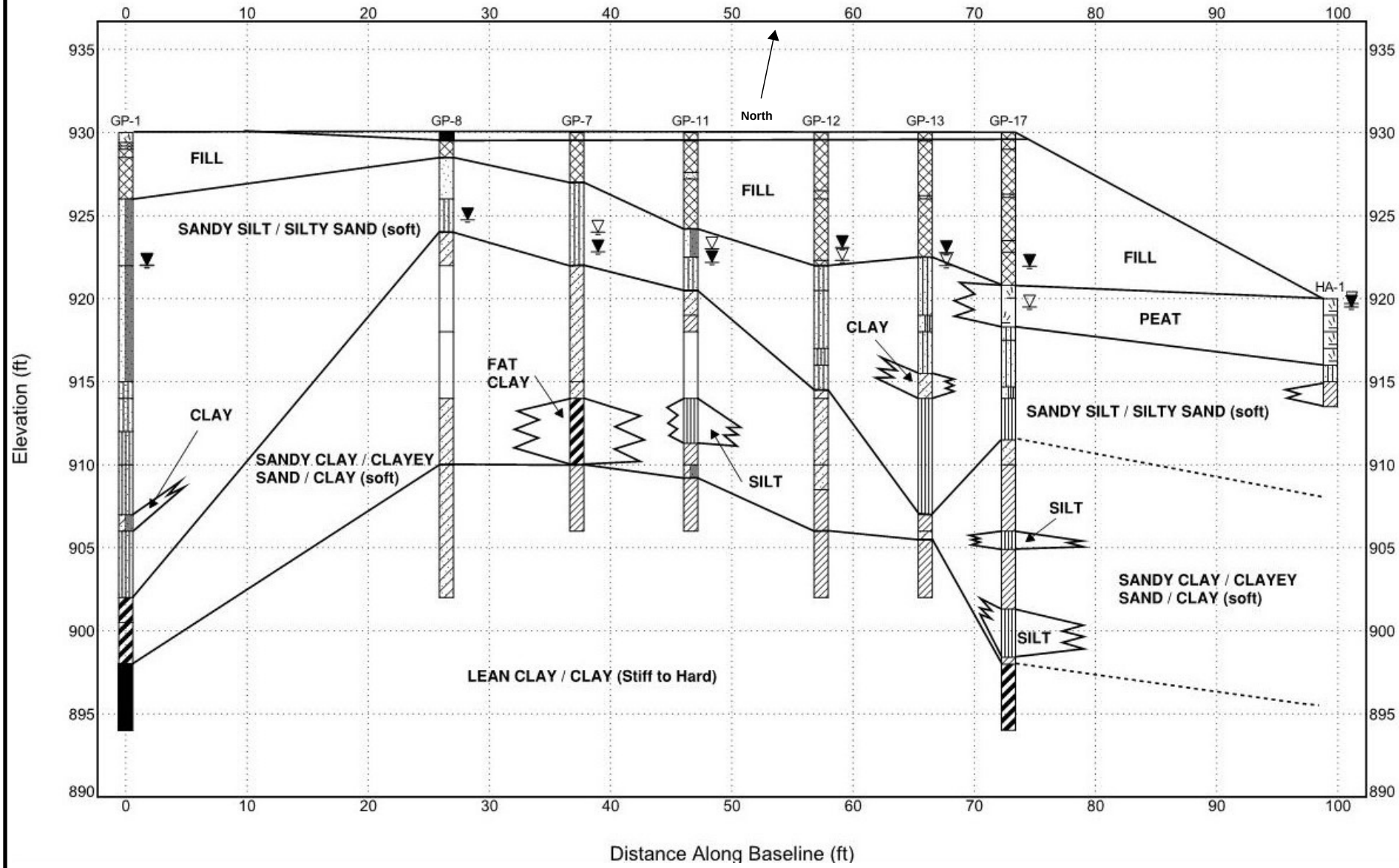
Geologic Cross Section C-C'		Figure 10



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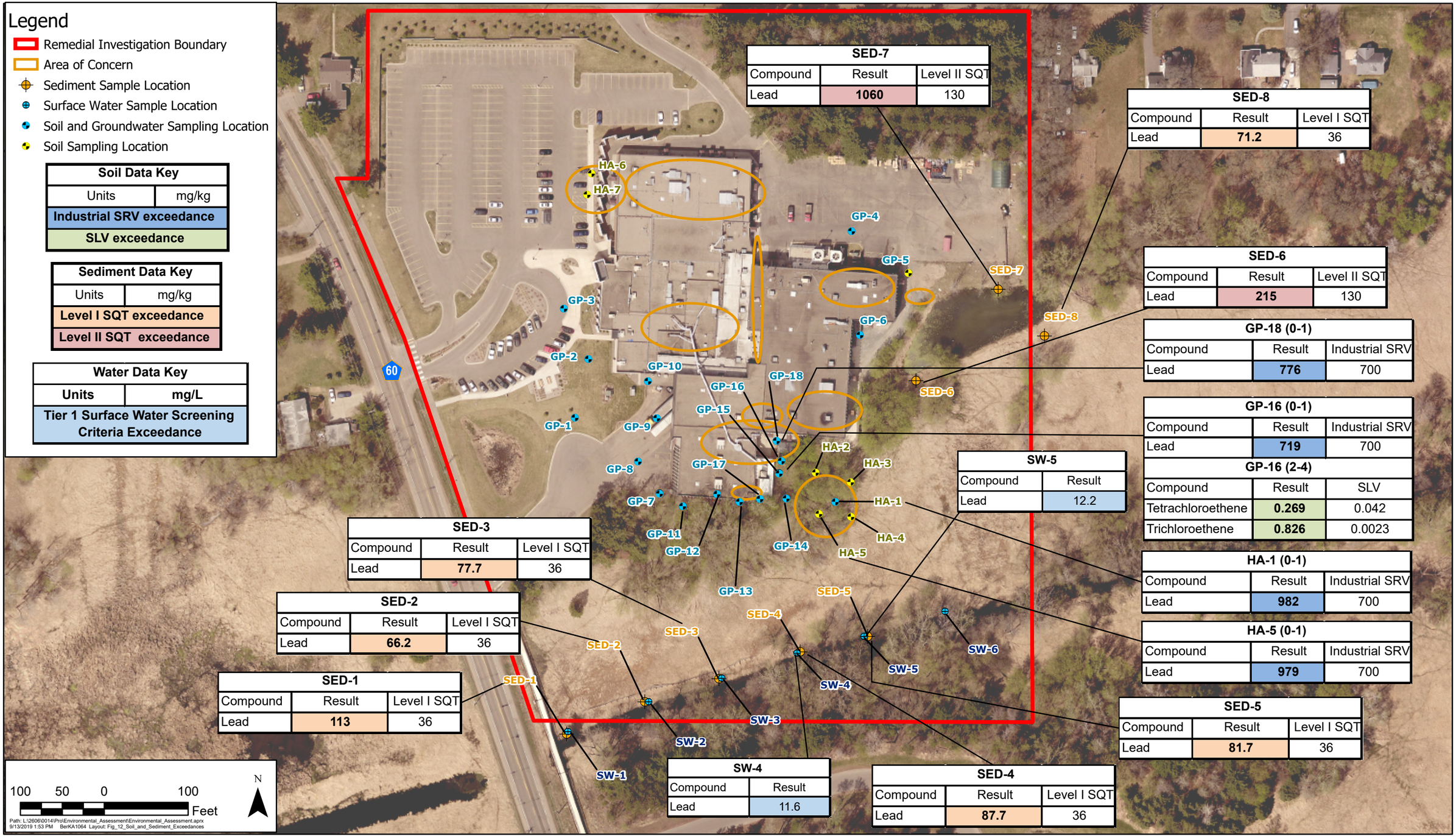
WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
Geologic Cross Section D-D'		Figure 11



SED-7		
Compound	Result	Level II SQT
Lead	1060	130

SED-8		
Compound	Result	Level I SQT
Lead	71.2	36

SED-6		
Compound	Result	Level II SQT
Lead	215	130

GP-18 (0-1)		
Compound	Result	Industrial SRV
Lead	776	700

GP-16 (0-1)		
Compound	Result	Industrial SRV
Lead	719	700

GP-16 (2-4)		
Compound	Result	SLV
Tetrachloroethene	0.269	0.042
Trichloroethene	0.826	0.0023

SW-5	
Compound	Result
Lead	12.2

HA-1 (0-1)		
Compound	Result	Industrial SRV
Lead	982	700

HA-5 (0-1)		
Compound	Result	Industrial SRV
Lead	979	700

SED-3		
Compound	Result	Level I SQT
Lead	77.7	36

SED-2		
Compound	Result	Level I SQT
Lead	66.2	36

SED-1		
Compound	Result	Level I SQT
Lead	113	36

SED-5		
Compound	Result	Level I SQT
Lead	81.7	36

SW-4	
Compound	Result
Lead	11.6

SED-4		
Compound	Result	Level I SQT
Lead	87.7	36

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Soil and Sediment Exceedances

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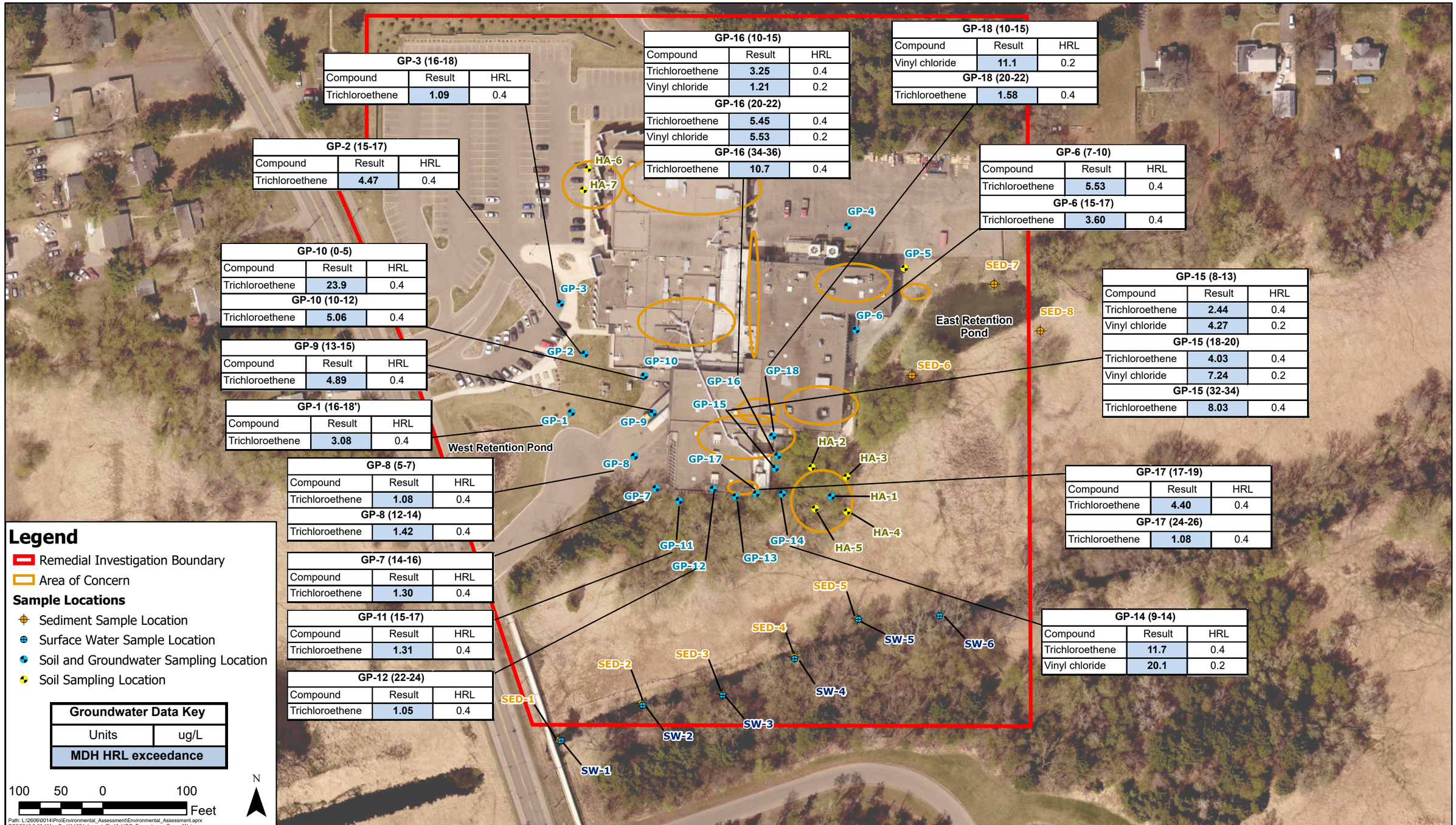
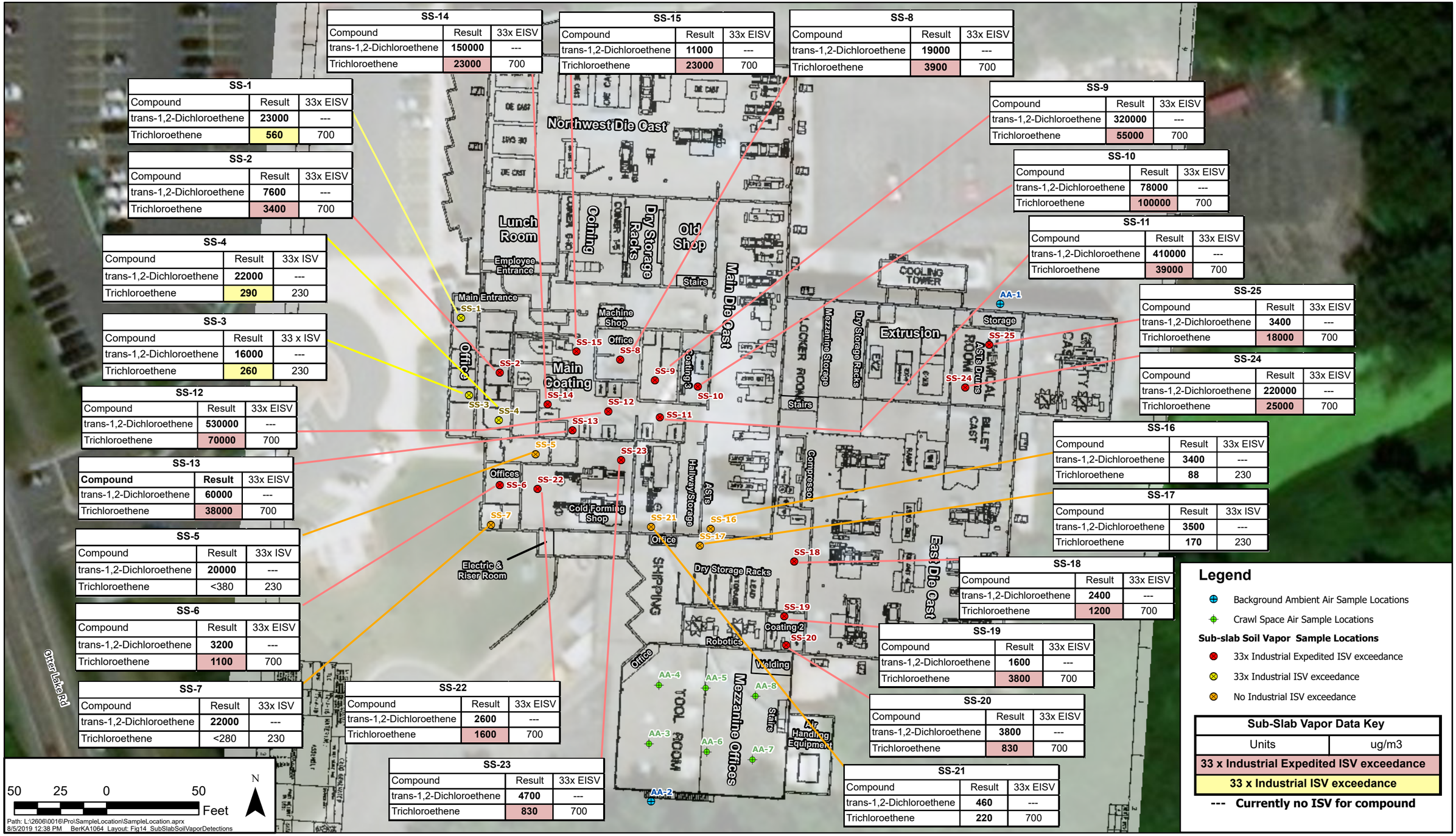
Figure 12



WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	JUL 2019
VOC Exceedances in Groundwater		Figure 13



SS-14		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	150000	---
Trichloroethene	23000	700

SS-15		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	11000	---
Trichloroethene	23000	700

SS-8		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	19000	---
Trichloroethene	3900	700

SS-1		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	23000	---
Trichloroethene	560	700

SS-2		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	7600	---
Trichloroethene	3400	700

SS-4		
Compound	Result	33x ISV
trans-1,2-Dichloroethene	22000	---
Trichloroethene	290	230

SS-3		
Compound	Result	33 x ISV
trans-1,2-Dichloroethene	16000	---
Trichloroethene	260	230

SS-12		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	530000	---
Trichloroethene	70000	700

SS-13		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	60000	---
Trichloroethene	38000	700

SS-5		
Compound	Result	33x ISV
trans-1,2-Dichloroethene	20000	---
Trichloroethene	<380	230

SS-6		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	3200	---
Trichloroethene	1100	700

SS-7		
Compound	Result	33x ISV
trans-1,2-Dichloroethene	22000	---
Trichloroethene	<280	230

SS-22		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	2600	---
Trichloroethene	1600	700

SS-23		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	4700	---
Trichloroethene	830	700

SS-9		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	320000	---
Trichloroethene	55000	700

SS-10		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	78000	---
Trichloroethene	100000	700

SS-11		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	410000	---
Trichloroethene	39000	700

SS-25		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	3400	---
Trichloroethene	18000	700

SS-24		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	220000	---
Trichloroethene	25000	700

SS-16		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	3400	---
Trichloroethene	88	230

SS-17		
Compound	Result	33x ISV
trans-1,2-Dichloroethene	3500	---
Trichloroethene	170	230

SS-18		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	2400	---
Trichloroethene	1200	700

SS-19		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	1600	---
Trichloroethene	3800	700

SS-20		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	3800	---
Trichloroethene	830	700

SS-21		
Compound	Result	33x EISV
trans-1,2-Dichloroethene	460	---
Trichloroethene	220	700

Legend

- Background Ambient Air Sample Locations
- Crawl Space Air Sample Locations

Sub-slab Soil Vapor Sample Locations

- 33x Industrial Expedited ISV exceedance
- 33x Industrial ISV exceedance
- No Industrial ISV exceedance

Sub-Slab Vapor Data Key	
Units	ug/m3
33 x Industrial Expedited ISV exceedance	
33 x Industrial ISV exceedance	

--- Currently no ISV for compound

WATER GREMLIN COMPANY

Sub-Slab Vapor Detections

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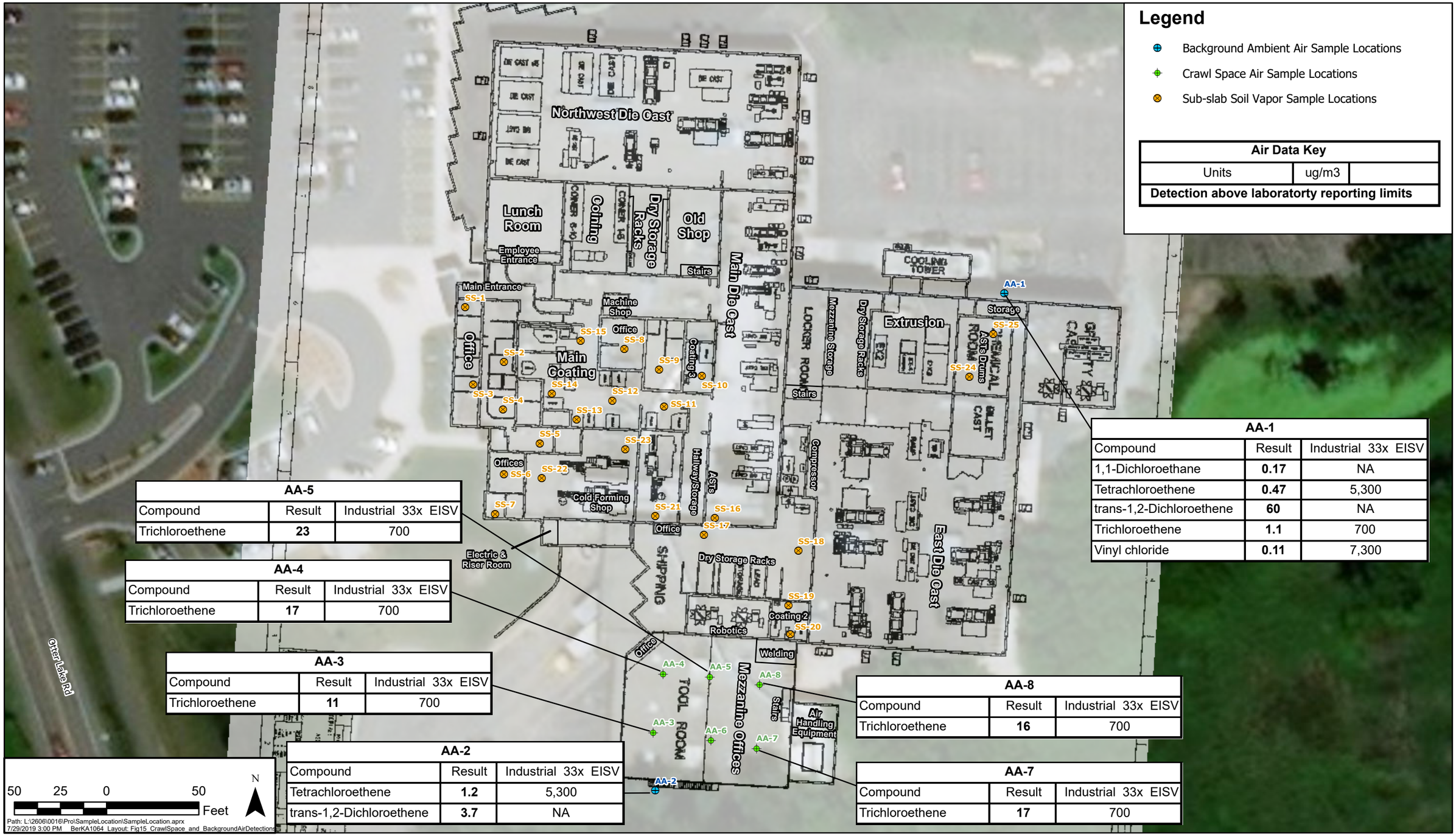
AUG 2019

Figure 14



Legend

- Background Ambient Air Sample Locations
- Crawl Space Air Sample Locations
- Sub-slab Soil Vapor Sample Locations

Air Data Key		
Units	ug/m3	
Detection above laboratorty reporting limits		

AA-1		
Compound	Result	Industrial 33x EISV
1,1-Dichloroethane	**0.17**	NA
Tetrachloroethene	**0.47**	5,300
trans-1,2-Dichloroethene	**60**	NA
Trichloroethene	**1.1**	700
Vinyl chloride	**0.11**	7,300

AA-5		
Compound	Result	Industrial 33x EISV
Trichloroethene	**23**	700

AA-4		
Compound	Result	Industrial 33x EISV
Trichloroethene	**17**	700

AA-3		
Compound	Result	Industrial 33x EISV
Trichloroethene	**11**	700

AA-2		
Compound	Result	Industrial 33x EISV
Tetrachloroethene	**1.2**	5,300
trans-1,2-Dichloroethene	**3.7**	NA

AA-8		
Compound	Result	Industrial 33x EISV
Trichloroethene	**16**	700

AA-7		
Compound	Result	Industrial 33x EISV
Trichloroethene	**17**	700

WATER GREMLIN COMPANY

Crawl Space and Background Air Detections

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JUL 2019

Figure 15

Tables

Table 1 Summary of Investigation Sample Coordinates
Table 2 Soil Analytical Results Summary
Table 3 Groundwater Analytical Results Summary
Table 4 Sub-Slab Vapor Analytical Results Summary
Table 5 Crawl Space and Background Air Analytical Results Summary
Table 6 Sediment Analytical Results Summary
Table 7 Surface Water Analytical Results Summary

Table 1
Investigation Sample Coordinates
Water Gremlin RI
4400 Otter Lake Road
White Bear Township, MN
July 2019

Sample Type	Sample ID	UTM Zone 15N X	UTM Zone 15N Y	NAD 1983 X-Coord	NAD 1983 Y-Coord
Soil Boring	GP-1	497417.9813	4991195.916	-93.032803	45.074220
Soil Boring	GP-2	497422.8933	4991217.226	-93.032740	45.074412
Soil Boring	GP-3	497413.9708	4991235.606	-93.032854	45.074578
Soil Boring	GP-4	497518.5312	4991263.701	-93.031526	45.074831
Soil Boring	GP-5	497539.2254	4991248.467	-93.031263	45.074694
Soil Boring	GP-6	497521.5865	4991225.938	-93.031487	45.074491
Soil Boring	GP-7	497448.7646	4991168.423	-93.032412	45.073973
Soil Boring	GP-8	497440.9175	4991180.008	-93.032511	45.074077
Soil Boring	GP-9	497447.7706	4991195.813	-93.032424	45.074220
Soil Boring	GP-10	497444.5764	4991209.258	-93.032465	45.074341
Soil Boring	GP-11	497457.2026	4991163.816	-93.032304	45.073932
Soil Boring	GP-12	497469.6536	4991168.144	-93.032146	45.073971
Soil Boring	GP-13	497477.7984	4991165.406	-93.032043	45.073946
Soil Boring	GP-14	497494.8093	4991166.522	-93.031827	45.073956
Soil Boring	GP-15	497492.2243	4991175.756	-93.031859	45.074039
Soil Boring	GP-16	497493.0603	4991180.286	-93.031849	45.074080
Soil Boring	GP-17	497485.2387	4991166.399	-93.031948	45.073955
Soil Boring	GP-18	497491.2599	4991187.462	-93.031872	45.074144
Hand Auger Boring	HA-1	497512.5978	4991165.41	-93.031601	45.073946
Hand Auger Boring	HA-2	497505.4435	4991176.076	-93.031692	45.074042
Hand Auger Boring	HA-3	497518.1845	4991172.555	-93.031530	45.074010
Hand Auger Boring	HA-4	497518.3021	4991159.938	-93.031528	45.073897
Hand Auger Boring	HA-5	497506.6738	4991161.01	-93.031676	45.073906
Hand Auger Boring	HA-6	497424.0297	4991284.577	-93.032726	45.075018
Hand Auger Boring	HA-7	497422.4248	4991276.937	-93.032747	45.074950
Sediment Sample	SED-1	497413.5881	4991076.955	-93.032858	45.073149
Sediment Sample	SED-2	497443.5202	4991090.218	-93.032478	45.073269
Sediment Sample	SED-3	497472.9134	4991093.582	-93.032104	45.073299
Sediment Sample	SED-4	497499.1976	4991107.061	-93.031771	45.073421
Sediment Sample	SED-5	497521.9768	4991121.094	-93.031481	45.073547
Sediment Sample	SED-6	497541.9233	4991209.44	-93.031228	45.074343
Sediment Sample	SED-7	497571.8011	4991242.598	-93.030849	45.074641
Sediment Sample	SED-8	497588.598	4991225.731	-93.030635	45.074489
Surface Water Sample	SW-1	497414.2662	4991076.536	-93.032849	45.073146
Surface Water Sample	SW-2	497443.9352	4991089.57	-93.032472	45.073263
Surface Water Sample	SW-3	497473.0725	4991093.135	-93.032102	45.073295
Surface Water Sample	SW-4	497499.2578	4991106.487	-93.031770	45.073416
Surface Water Sample	SW-5	497522.3819	4991120.681	-93.031476	45.073543
Surface Water Sample	SW-6	497551.976	4991122.064	-93.031100	45.073556

Table 2
Soil Analytical Results Summary
Water Gremlin
4400 Otter Lake Road
White Bear Township, MN
Wenck Project No. 2606-0016
July 2019

Compound/Parameter	MPCA Tier 2 Industrial SRVs 2009	MPCA SLVs 2013	Sample ID, Date Collected & MPCA LUI #																			
			GP-1 (0-1')	GP-1 (2-4')	GP-1 (8-10')	GP-1 (30-32')	GP-2 (0-1)	GP-2 (5-7)	GP-2 (22-24)	GP-3 (0-1)	GP-3 (0-2)	GP-3 (26-28)	GP-4 (0-1)	GP-4 (4-6)	GP-5 (0-1)	GP-5 (2-4)	GP-6 (0-1)	GP-6 (2-4)	GP-6 (4-6)	GP-7 (0-1)	GP-7 (2-4)	GP-7 (10-12)
			06/14/2019	06/14/2019	06/14/2019	06/14/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019
			2001004917	2001004917	2001004917	2001004917	2001004918	2001004918	2001004918	2001004919	2001004919	2001004919	2001004920	2001004920	2001004921	2001004921	2001004922	2001004922	2001004922	2001004923	2001004923	2001004923
Volatile Organic Compounds (VOCs) EPA Method 8260B (Modified List) - reported in mg/kg																						
1,1,1-Trichloroethane	472	55.7	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
1,1-Dichloroethane	55	0.41	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
1,1-Dichloroethene	60	1.4	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
1,2-Dichloroethane	6	0.0038	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
Chloroethane	3000	NE	NS	NS	<0.302	<0.296	NS	<0.171 UJ	<0.207 UJ	NS	<0.275 UJ	<0.273 UJ	NS	<0.231 UJ	NS	<0.178 UJ	NS	NS	<0.251 UJ	NS	<0.219 UJ	<0.256 UJ
cis-1,2-Dichloroethene	22	0.21	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
Tetrachloroethene	131	0.042	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
trans-1,2-Dichloroethene	33	0.42	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
Trichloroethene	46	0.0023	NS	NS	<0.302	<0.296	NS	<0.171	<0.207	NS	<0.275	<0.273	NS	<0.231	NS	<0.178	NS	NS	<0.251	NS	<0.219	<0.256
Vinyl chloride	2.2	0.0014	NS	NS	<0.302	<0.296	NS	<0.171 UJ	<0.207 UJ	NS	<0.275 UJ	<0.273 UJ	NS	<0.231 UJ	NS	<0.178 UJ	NS	NS	<0.251 UJ	NS	<0.219 UJ	<0.256 UJ
Lead EPA Method 6020 - reported in mg/kg																						
Lead	700	2700	**45.1**	**56.4**	NS	NS	**23.8**	NS	NS	**47.9**	NS	NS	**11.5**	NS	**57.4**	NS	**247**	**263**	NS	**69.6**	NS	NS

Compound/Parameter	MPCA Tier 2 Industrial SRVs 2009	MPCA SLVs 2013	Sample ID, Date Collected & MPCA LUI #																			
			GP-8 (0-1)	GP-8 (6-8)	GP-9 (0-1)	GP-9 (5-7)	GP-9 (6-8)	GP-10 (0-1)	GP-10 (1-3)	GP-11 (0-1)	GP-11 (6-8)	GP-12 (0-1)	GP-12 (4-6)	GP-12 (6-8)	GP-12 (8-9.5)	GP-13 (0-1)	GP-14 (0-1)	GP-14 (10-12)	GP-15 (0-1)	GP-15 (2-4)	GP-16 (0-1)	GP-16 (2-4)
			06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/19/2019	06/19/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/24/2019	06/24/2019	06/24/2019	06/24/2019	06/24/2019	06/24/2019
			2001004924	2001004924	2001004925	2001004925	2001004925	2001004926	2001004926	2001004934	2001004934	2001004935	2001004935	2001004935	2001004935	2001004936	2001004937	2001004937	2001004938	2001004938	2001004939	2001004939
Volatile Organic Compounds (VOCs) EPA Method 8260B (Modified List) - reported in mg/kg																						
1,1,1-Trichloroethane	472	55.7	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	<0.119
1,1-Dichloroethane	55	0.41	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	<0.119
1,1-Dichloroethene	60	1.4	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	<0.119
1,2-Dichloroethane	6	0.0038	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	<0.119
Chloroethane	3000	NE	NS	<0.256 UJ	NS	NS	<0.189 UJ	NS	<0.174 UJ	NS	<0.153 UJ	NS	<0.230 UJ	NS	<0.277 UJ	NS	NS	<0.158	NS	<0.123	NS	<0.119
cis-1,2-Dichloroethene	22	0.21	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	<0.119
Tetrachloroethene	131	0.042	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	**0.269**
trans-1,2-Dichloroethene	33	0.42	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	<0.119
Trichloroethene	46	0.0023	NS	<0.256	NS	NS	<0.189	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	**0.826**
Vinyl chloride	2.2	0.0014	NS	<0.256 UJ	NS	NS	<0.189 UJ	NS	<0.174	NS	<0.153	NS	<0.230	NS	<0.277	NS	NS	<0.158	NS	<0.123	NS	<0.119
Lead EPA Method 6020 - reported in mg/kg																						
Lead	700	2700	**25.8**	NS	**7.22**	**28.0**	NS	**3.51**	NS	**157 J**	NS	**147**	NS	**17.5**	NS	**158**	**473 J+**	NS	**174**	NS	**719**	NS

Compound/Parameter	MPCA Tier 2 Industrial SRVs 2009	MPCA SLVs 2013	Sample ID, Date Collected & MPCA LUI #													
			GP-17 (0-1)	GP-17 (8-10)	GP-17 (28-30)	GP-18 (0-1)	GP-18 (4-6)	GP-18 (6-8)	GP-18 (41-43)	HA-1 (0-1)	HA-2 (0-1)	HA-3 (0-1)	HA-4 (0-1)	HA-5 (0-1)	HA-6 (0-0.5)	HA-7 (0-0.5)
			06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/19/2019	06/19/2019	06/19/2019	06/19/2019	06/19/2019	06/19/2019	06/19/2019
			2001004940	2001004940	2001004940	2001004941	2001004941	2001004941	2001004941	2001004927	2001004928	2001004929	2001004930	2001004931	2001004932	2001004933
Volatile Organic Compounds (VOCs) EPA Method 8260B (Modified List) - reported in mg/kg																
1,1,1-Trichloroethane	472	55.7	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
1,1-Dichloroethane	55	0.41	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
1,1-Dichloroethene	60	1.4	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
1,2-Dichloroethane	6	0.0038	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
Chloroethane	3000	NE	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63 UJ	<1.78 UJ	<0.957 UJ	<1.66 UJ	<2.28 UJ	<0.301 UJ	<0.236 UJ
cis-1,2-Dichloroethene	22	0.21	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
Tetrachloroethene	131	0.042	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
trans-1,2-Dichloroethene	33	0.42	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
Trichloroethene	46	0.0023	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
Vinyl chloride	2.2	0.0014	NS	<0.148	<0.147	NS	<0.186	NS	<0.205	<1.63	<1.78	<0.957	<1.66	<2.28	<0.301	<0.236
Lead EPA Method 6020 - reported in mg/kg																
Lead	700	2700	**140 J**	NS	NS	**776**	NS	**13.8**	NS	**982**	**566**	**498**	**563**	**979**	**60.1**	**71.1**

Notes:
NE = Not Established
NS = Not Sampled
< = Less than the laboratory reporting limit
Bold = analyte detected above the laboratory reporting limit but less than regulatory limit
Industrial SRV exceedance
SLV exceedance
mg/kg = milligrams per kilogram (parts per million)
MPCA = Minnesota Pollution Control Agency
SRV = Soil Reference Value
SLV = Soil Leaching Value

Qualifiers (US EPA Qualifier Code):
UJ = Samples marked with this flag were non-detect but contained a representative quality control sample with a relative percent difference (RPD)outside the quality control range, or percent recovery of the analyte was below the QC limits; The associated parent sample is therefore flagged as estimated even though the results were below the laboratory reporting limits.
J = Analyte was positively identified in the sample, but the concentration is an estimated (approximate) value; Samples marked with this flag were designated as estimated based on an associated MS/MSD QC sample that contained lead recovery outside of the QC limits; As a result, the parent sample is considered estimated. This flag was also added to samples where the serial dilution exceeded a percentage with the result greater than 50x the MDL; This value is considered to be estimated also.
J+ = Analyte was positively identified in the sample, but the concentration is believed to be estimated with a potential positive bias; Samples with this flag had an associated MS/MS sample where the RPD was outside the QC limits, resulting in a parent sample detection that is considered estimated with a potential positive bias.

Table 3
Groundwater Analytical Results Summary
Water Gremlin
4400 Otter Lake Road
White Bear Township, MN
Wenck Project No. B2606-0016
July 2019

Compound/Parameter	CAS No.	MDH Health Risk Limit (HRL) µg/L / MDH Health Based Value (HBV) µg/L	Sample ID, Date Collected & MPCA LUI #																			
			GP-1 (7-11')	GP-1 (16-18')	GP-1 (23-25')	GP-2 (7-10)	GP-2 (15-17)	GP-2 (22-24)	GP-3 (8-11)	GP-3 (16-18)	GP-3 (23-25)	GP-4 (5-7)	GP-4 (12-14)	GP-4 (19-21)	GP-4 (26-28)	GP-6 (7-10)	GP-6 (15-17)	GP-6 (22-24)	GP-7 (6-9)	061819-A	GP-7 (14-16)	GP-7 (21-23)
			06/14/2019	06/14/2019	06/14/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/17/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019	6/18/2019	06/18/2019	06/18/2019
			2001004837	2001004837	2001004837	2001004838	2001004838	2001004838	2001004839	2001004839	2001004839	2001004840	2001004840	2001004840	2001004840	2001004842	2001004842	2001004842	2001004843	Blind Dup GP-7 (6-9)	2001004843	2001004843
Volatile Organic Compounds (VOCs) - EPA Method 8260B (Modified List) - reported in ug/L																						
1,1,1-Trichloroethane	71-55-6	9000 / NE	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-/UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00
1,1-Dichloroethane	75-34-3	80 / NE	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00
1,1-Dichloroethene	75-35-4	200 / NE	<1.00 UJ-	<1.00	<1.00	<2.00	<2.00	<2.00 UJ-	<2.00	<2.00	<2.00 UJ-	<2.00	<2.00	<2.00	<2.00	<2.00 UJ-/UJ-	<2.00	<2.00	<2.00	<2.00	<2.00 UJ-	<2.00
1,2-Dichloroethane	107-06-2	1 / NE	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00
Chloroethane	75-00-3	NE	<1.00 UJ-	<1.00	<1.00	<4.00	<4.00	<4.00 UJ-	<4.00	<4.00	<4.00 UJ-	<4.00	<4.00	<4.00	<4.00	<4.00 UJ-	10	<4.00	<4.00	<4.00	<4.00 UJ-	<4.00
cis-1,2-Dichloroethene	156-59-2	50 / 6	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	**2.45 J-**	<1.00
Tetrachloroethene	127-18-4	5 / 4	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-/UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00
trans-1,2-Dichloroethene	156-60-5	40 / NE	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-/UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00
Trichloroethene	79-01-6	0.4 / NE	**<1.00 UJ-**	**3.08**	**<1.00**	**<1.00**	**4.47**	**<1.00 UJ-**	**<1.00**	**1.09**	**<1.00 UJ-**	**<1.00**	**<1.00**	**<1.00**	**<1.00**	**5.53 J-/J-**	**3.60**	**<1.00**	**<1.00**	**<1.00**	**1.30 J-**	**<1.00**
Vinyl chloride	75-01-4	0.2 / NE	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00

Compound/Parameter	CAS No.	MDH Health Risk Limit (HRL) µg/L / MDH Health Based Value (HBV) µg/L	Sample ID, Date Collected & MPCA LUI #																			
			GP-8 (5-7)	GP-8 (12-14)	GP-8 (19-21)	GP-9 (6-8)	GP-9 (13-15)	GP-9 (20-22)	061819-B	GP-10 (0-5)	GP-10 (10-12)	GP-10 (17-19)	HA-1	GP-11 (5-10)	GP-11 (15-17)	GP-12 (7-10)	GP-12 (15-17)	GP-12 (22-24)	GP-13 (7-10)	GP-13 (15-17)	GP-13 (22-24)	GP-14 (9-14)
			06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/18/2019	06/19/2019	06/19/2019	06/19/2019	06/19/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/21/2019	06/24/2019
			2001004844	2001004844	2001004844	2001004845	2001004845	2001004845	Blind Dup GP-9 (20-22)	2001004846	2001004846	2001004846	2001004847	2001004848	2001004848	2001004849	2001004849	2001004849	2001004850	2001004850	2001004850	2001004851
Volatile Organic Compounds (VOCs) - EPA Method 8260B (Modified List) - reported in ug/L																						
1,1,1-Trichloroethane	71-55-6	9000 / NE	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ-
1,1-Dichloroethane	75-34-3	80 / NE	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00	**3.87 J-**	**1.31 J-**	**15.7 J-**	**28.4 J-**	<1.00 UJ-	**15.1 J-**	**22.3 J-**	**2.35 J-**	**31.3 J-**
1,1-Dichloroethene	75-35-4	200 / NE	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00	<2.00	<2.00	<2.00 UJ-	<2.00 UJ-	<2.00	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<20.0 UJ-
1,2-Dichloroethane	107-06-2	1 / NE	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ-
Chloroethane	75-00-3	NE	<4.00 UJ-	<4.00 UJ-	<4.00 UJ-	<4.00 UJ-	<4.00 UJ-	<4.00	<4.00	<4.00	<4.00 UJ-	<4.00 UJ-	<4.00	<4.00 UJ-	<4.00 UJ-	<4.00 UJ-	<4.00 UJ-	<4.00 UJ-	**4.91 J-**	**6.58 J-**	<4.00 UJ-	<40.0 UJ-
cis-1,2-Dichloroethene	156-59-2	50 / 6	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00 UJ-	**1.27 J-**	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ-
Tetrachloroethene	127-18-4	5 / 4	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ-
trans-1,2-Dichloroethene	156-60-5	40 / NE	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00	**1.91**	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ-
Trichloroethene	79-01-6	0.4 / NE	**1.08 J-**	**1.42 J-**	**<1.00 UJ-**	**<1.00 UJ-**	**4.89 J-**	**<1.00**	**<1.00**	**23.9**	**5.06 J-**	**<1.00 UJ-**	**<1.00**	**<1.00 UJ-**	**1.31 J-**	**<1.00 UJ-**	**<1.00 UJ-**	**1.05 J-**	**<1.00 UJ-**	**<1.00 UJ-**	**<1.00 UJ-**	**11.7 J-**
Vinyl chloride	75-01-4	0.2 / NE	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	**20.1 J-**

Compound/Parameter	CAS No.	MDH Health Risk Limit (HRL) µg/L / MDH Health Based Value (HBV) µg/L	Sample ID, Date Collected & MPCA LUI #																	
			GP-14 (19-21)	GP-14 (26-28)	GP-15 (8-13)	GP-15 (18-20)	GP-15 (25-27)	GP-15 (32-34)	GP-16 (10-15)	GP-16 (20-22)	GP-16 (27-29)	GP-16 (34-36)	062619-A	GP-17 (7-12)	GP-17 (17-19)	GP-17 (24-26)	GP-18 (10-15)	062619-B	GP-18 (20-22)	GP-18 (34-38)
			06/24/2019	06/24/2019	06/24/2019	06/24/2019	06/24/2019	06/24/2019	06/24/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019	06/26/2019
			2001004851	2001004851	2001004852	2001004852	2001004852	2001004852	2001004853	2001004853	2001004853	2001004853	Blind Dup GP-16 (34-36')	2001004854	2001004854	2001004854	2001004855	Blind Dup GP-18 (10-15')	2001004855	2001004855
Volatile Organic Compounds (VOCs) - EPA Method 8260B (Modified List) - reported in ug/L																				
1,1,1-Trichloroethane	71-55-6	9000 / NE	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<10.0 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ--	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ--
1,1-Dichloroethane	75-34-3	80 / NE	**17.3**	<1.00	<1.00 UJ-	**1.75**	**7.52 J-**	<1.00	<1.00 UJ-	**1.28**	<10.0 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ--	**4.32**	**1.06**	**1.33 J-**	**1.41 J-**	<1.00 UJ-	<1.00 UJ--
1,1-Dichloroethene	75-35-4	200 / NE	<2.00	<2.00	<2.00 UJ-	<2.00	<2.00 UJ-	<2.00	<2.00 UJ-	<2.00	<20.0 UJ-	<2.00 UJ-	<2.00 UJ-	<20.0 UJ--	<2.00	<2.00	<2.00 UJ-	<2.00 UJ-	<2.00 UJ-	<2.00 UJ--
1,2-Dichloroethane	107-06-2	1 / NE	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<10.0 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ--	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ--
Chloroethane	75-00-3	NE	<4.00	<4.00	<4.00 UJ-	<4.00	<4.00 UJ-	<4.00	<4.00 UJ-	<4.00	<40.0 UJ-	<4.00 UJ-	<4.00 UJ-	<40.0 UJ--	<4.00	<4.00	<4.00 UJ-	<4.00 UJ-	<4.00 UJ-	<4.00 UJ--
cis-1,2-Dichloroethene	156-59-2	50 / 6	<1.00	<1.00	**1.51 J-**	**1.59**	<1.00 UJ-	<1.00	<1.00 UJ-	**2.24**	<10.0 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ--	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ--
Tetrachloroethene	127-18-4	5 / 4	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<10.0 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ--	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ--
trans-1,2-Dichloroethene	156-60-5	40 / NE	<1.00	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<1.00 UJ-	<1.00	<10.0 UJ-	**3.01 J-**	**2.11 J-**	<10.0 UJ--	<1.00	<1.00	<1.00 UJ-	<1.00 UJ-	<1.00 UJ-	<1.00 UJ--
Trichloroethene	79-01-6	0.4 / NE	**<1.00**	**<1.00**	**2.44 J-**	**4.03**	**<1.00 UJ-**	**8.03**	**3.25 J-**	**5.45**	**<10.0 UJ-**	**10.7 J-**	**9.34 J-**	**<10.0 UJ--**	**4.40**	**1.08**	**<1.00 UJ-**	**<1.00 UJ-**	**1.58 J-**	**<1.00 UJ--**
Vinyl chloride	75-01-4	0.2 / NE	<1.00	<1.00	**4.27 J-**	**7.24**	<1.00 UJ-	<1.00	**1.21 J-**	**5.53**	<10.0 UJ-	<1.00 UJ-	<1.00 UJ-	<10.0 UJ--	<1.00	<1.00	**11.1 J-**	**12.2 J-**	<1.00 UJ-	<1.00 UJ--

Notes:

ND = Not detected above laboratory reporting limits

All results reported in micrograms per liter (ug/L)

Bold = analyte detected above the laboratory reporting limit but less than regulatory limit

<1.00 = lab reporting limit greater than regulatory risk-screening value

HRL or HBV exceedance

[a] = MDH Health Based Value (HBV)

NA = Not Applicable

ug/L - micrograms per liter (parts per billion)

MDH = Minnesota Department of Health

NE = Not Established

Qualifiers (US EPA Qualifier Code):

UJ- = The analyte was not detected above laboratory quantitation limit, however the quantitation limit is approximate as the preservation did not necessarily achieve the proper pH level of the samples, allowing for the possibility of sample degradation outside of 7-day hold time that represents a preservation qualifier with a potentially low bias; The method 14-day hold time was met, however preservation interference resulted in the estimated value; The resulting non-detect value is considered an estimated result based on this fact.

-/- = Samples with multiple qualifiers separated by a "/" are those where a separate QC issue resulted in the MS/MSD sample, resulting in parent sample being marked as estimated also (in addition to the original estimated flag from improper sample pH); The associated QC sample recovered analyte outside of the QC limits, thus the parent sample is considered estimated for this reason as well.

UJ-- = Same reasoning as "UJ-" flag; Non-detected value resulting from quantitation that is believed to be biased very low.

J- = Detected analyte was properly analyzed within hold time, however the preservation was unable to obtain a low enough sample pH criteria and corrective action was not possible prior to analysis; Detected value therefore represents an estimated value with a potentially low bias.

Table 4
Sub-Slab Vapor Analytical Results Summary
Water Gremlin
4400 Otter Lake Road
White Bear Township, MN
Wenck Project No. 2606-0016
July 2019

Compound/Parameter	CAS No.	Industrial ISV	33X Industrial ISV	Industrial EISV	33X Industrial EISV	Sample ID, Date Collected & MPCA LUI #																		
						SS-7	SS-4	SS-5	SS-6	SS-3	SS-2	061119 A	SS-1	SS-8	SS-9	SS-11	SS-12	SS-13	SS-15	SS-14	SS-16	SS-17	SS-18	061119 B
						06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19	06/11/19
						GS00685	GS00686	GS00688	GS00687	GS00689	GS00690	SS-2 Blind Duplicate	GS00699	GS00700	GS00701	GS00702	GS00703	GS00704	GS00705	GS00706	GS00707	GS00708	GS00709	SS-18 Blind Duplicate
						Paula's Office	Bruce's Office	Tom's Cubicle	Open Office area	Vacant Office	Office Lunch Room	Office Lunch Room	Conference Room	Quality Control Office (east)	Quality Control Office (west)	Main Coating (east)	Main Coating (center)	Main Coating (southwest)	Main Coating (west)	Main Coating (north)	Main Die Cast - hallway	Scale (west side)	Shipping & Receiving (east)	Shipping & Receiving (east)
Volatile Organic Compounds (VOCs) reported in ug/m3 - TO-15 Modified List																								
1,1,1-Trichloroethane	71-55-6	18,000	600,000	53000	1800000	<280	<440	<380	<44	<340	<110	<110	<430	<430	<4600	<6900	<8000	<420	<280	<2200	**99**	**470**	**630**	**460**
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	<210	<320	<280	<32	<250	<81	<81	<320	<320	<3400	<5100	<5900	<310	<210	<1600	**17**	<32	**15**	**8.2**
1,1-Dichloroethene	75-35-4	700	23,000	2100	70000	<210	<320	<280	<32	<250	<79	<79	<310	<310	<3300	<5000	<5800	<310	<210	<1600	<32	<32	<24	<7.9
1,2-Dichloroethane	107-06-2	3.8	130	38	1300	<210	<320	<280	<32	<250	<81	<81	<320	<320	<3400	<5100	<5900	<310	<210	<1600	<32	<32	<24	<8.1
Chloroethane	75-00-3	14000	470,000	42000	1400000	<340	<530	<460	<53	<410	<130	<130	<510	<510	<5500	<8300	<9600	<510	<340	<2600	<53	<53	<40	<13
cis-1,2-Dichloroethene	156-59-2	NA	NA	NA	NA	<210	<320	<280	<32	<250	<79	<79	<310	<310	<3300	<5000	<5800	<310	**300**	<1600	<32	<32	<24	<7.9
Tetrachloroethene	127-18-4	33	1100	160	5300	<350	<540	<470	<54	<420	<140	<140	<530	<530	<5700	<8500	<9900	**110**	**180**	<2700	<54	<54	**7.2**	**12**
trans-1,2-Dichloroethene	156-60-5	NA	NA	NA	NA	**22000**	**22000**	**20000**	**3200**	**16000**	**7600**	**11000**	**23000**	**19000**	**320000**	**410000**	**530000**	**60000**	**11000**	**150000**	**3400**	**3500**	**2400** JFD90	**910** JFD90
Trichloroethene	79-01-6	7	230	21	700	<280	**290**	<380	**1100**	**260**	**3400** JFD61	**6400** JFD61	**560**	**3900**	**55000**	**39000**	**70000**	**38000**	**23000**	**23000**	**88**	**170**	**1200**	**900**
Vinyl chloride	75-01-4	22	730	220	7300	<130	<200	<180	<20	<160	<51	<51	<200	<200	<2100	<3200	<3700	<200	<130	<1000	<20	<20	<15	<5.1

Compound/Parameter	CAS No.	Industrial ISV	33X Industrial ISV	Industrial EISV	33X Industrial EISV	Sample ID, Date Collected & MPCA LUI #								
						SS-19	SS-20	SS-10	061219	SS-21	SS-23	SS-22	SS-24	SS-25
						06/11/19	06/11/19	06/12/19	06/12/19	06/12/19	06/12/19	06/12/19	06/12/19	06/12/19
						GS00710	GS00711	GS00712	SS-10 Blind Duplicate	GS00713	GS00714	GS00715	GS00716	GS00717
						Coating 3 (north)	Coating 3 (south)	Coating 3	Coating 3	Cold Forming (east)	Cold Forming (north)	Cold Forming (west)	Chemical Storage (south)	Chemical Storage (north)
Volatile Organic Compounds (VOCs) reported in ug/m3 - TO-15 Modified List														
1,1,1-Trichloroethane	71-55-6	18,000	600,000	53000	1800000	**1100**	**230**	<1600	<1100	**16**	<49	<27	<2700	<220
1,1-Dichloroethane	75-34-3	NA	NA	NA	NA	**18**	<40	<1200	<810	<8.1	<36	<20	<2000	<160
1,1-Dichloroethene	75-35-4	700	23,000	2100	70000	<16	<40	<1200	<790	<7.9	<36	<20	<2000	<160
1,2-Dichloroethane	107-06-2	3.8	130	38	1300	<16	<40	<1200	<810	<8.1	<36	<20	<2000	<160
Chloroethane	75-00-3	14000	470,000	42000	1400000	<26	<66	<2000	<1300	<13	<59	<33	<3300	<260
cis-1,2-Dichloroethene	156-59-2	NA	NA	NA	NA	<16	<40	<1200	<790	<7.9	<36	<20	<2000	<160
Tetrachloroethene	127-18-4	33	1100	160	5300	**30**	<68	<2000	<1300	<14	<61	<34	<3400	**40**
trans-1,2-Dichloroethene	156-60-5	NA	NA	NA	NA	**1600**	**3800**	**78000**	**76000**	**460**	**4700**	**2600**	**220000**	**3400**
Trichloroethene	79-01-6	7	230	21	700	**3800**	**830**	**100000**	**120000**	**220**	**830**	**1600**	**25000**	**18000**
Vinyl chloride	75-01-4	22	730	220	7300	<10	<26	<770	<510	<5.1	<23	<13	<1300	<100

Notes:
EPA = Environmental Protection Agency
MPCA = Minnesota Pollution Control Agency
ISV = Intrusion Screening Value
EISV = Expedited Intrusion Screening Value
VOCs = Volatile Organic Compounds
NE = Not Established
ND= Not Detected above laboratory reporting limits
ug/m3 = micrograms per meter cubed
Bold = analyte detected above the laboratory reporting limit but less than regulatory limit
33X Industrial ISV Exceedance
33X Industrial EISV Exceedance

Qualifiers (DSA designation - No EPA Code Available):
JFD# = These samples and there associated pair observed a RPD result that was outside of the 50% QAPP limit previously specified; The # value represents the RPD number for the associated sample analyte.

Table 5
Crawl Space and Background Air Analytical Results Summary
Water Gremlin
4400 Otter Lake Road
White Bear Township, MN
Wenck Project No. 2606-0016
July 2019

Compound/Parameter	CAS No.	Industrial ISV	33X Industrial ISV	Sample ID, Date Collected & MPCA LUI #							
				AA-1	AA-2	AA-3	AA-4	AA-5	AA-6	AA-7	AA-8
				06/12/19	06/12/19	06/12/19	06/12/19	06/12/19	06/12/19	06/12/19	06/12/19
				GS00691	GS00693	GS00692	GS00694	GS00695	GS00696	GS00697	GS00698
				Northeast exterior	Southwest exterior	Crawl Space (southwest)	Crawl Space (northwest)	Craw Space (North-center)	Crawl Space (south-center)	Crawl Space (southeast)	Crawl Space (southwest)
Volatile Organic Compounds (VOCs) reported in ug/m3 - TO-15 Modified List											
1,1,1-Trichloroethane	71-55-6	18,000	600,000	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1
1,1-Dichloroethane	75-34-3	NA	NA	**0.17**	<0.81	<0.81	<0.81	<0.81	<0.81	**0.38**	<0.81
1,1-Dichloroethene	75-35-4	700	23,000	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
1,2-Dichloroethane	107-06-2	3.8	130	<0.81	<0.81	**0.36**	<0.81	<0.81	<0.81	<0.81	<0.81
Chloroethane	75-00-3	14000	470,000	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
cis-1,2-Dichloroethene	156-59-2	NA	NA	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79	<0.79
Tetrachloroethene	127-18-4	33	1100	**0.47**	**1.2**	**3.0**	**0.30**	**8.7**	<1.4	**0.36**	**0.26**
trans-1,2-Dichloroethene	156-60-5	NA	NA	**60**	**3.7**	**110**	**130**	**160**	**1.4**	**140**	**140**
Trichloroethene	79-01-6	7	230	**1.1**	<1.1	**11**	**17**	**23**	<1.1	**17**	**16**
Vinyl chloride	75-01-4	22	730	**0.11**	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51

Notes:

EPA = Environmental Protection Agency

MPCA = Minnesota Pollution Control Agency

ISV = Intrusion Screening Value

VOCs = Volatile Organic Compounds

NE = Not Established

ND= Not Detected above laboratory reporting limits

ug/m3 = micrograms per meter cubed

Bold = analyte detected above the laboratory reporting limit but less than regulatory limit

Table 6
Sediment Analytical Results Summary
Water Gremlin
4400 Otter Lake Road
White Bear Township, MN
Wenck Project No. 2606-0016
July 2019

Compound/Parameter	CAS No.	MPCA Level I SQT	MPCA Level II SQT	Sample ID, Date Collected & MPCA LUI #								
				SED-1	SED-2	SED-3	062019-13	SED-4	SED-5	SED-6	SED-7	SED-8
				06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019
				County Ditch 14	County Ditch 14	County Ditch 14	County Ditch 14	County Ditch 14	County Ditch 14	Stormwater Pond Inlet	Stormwater Pond Inlet	Stormwater Pond Outlet
Volatile Organic Compounds (VOCs) EPA Method 8260B (Modified List) - reported in mg/kg												
1,1,1-Trichloroethane	71-55-6	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
1,1-Dichloroethane	75-34-3	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
1,1-Dichloroethene	75-35-4	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
1,2-Dichloroethane	107-06-2	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
Chloroethane	75-00-3	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
cis-1,2-Dichloroethene	156-59-2	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
Tetrachloroethene	127-18-4	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
trans-1,2-Dichloroethene	156-60-5	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
Trichloroethene	79-01-6	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
Vinyl chloride	75-01-4	NE	NE	<1.57 UJ	<1.50	<1.71	<1.70	<1.68	<0.351	<0.464	<0.263	<0.334
Lead EPA Method 6020 - reported in mg/kg												
Lead	7439-92-1	36	130	**113**	**66.2**	**77.7**	**87.7**	**81.7**	**7.01**	**215**	**1060**	**71.2**

Notes:
NE = Not Established
NS = Not Sampled
< = Less than the reporting limit
Bold = analyte detected above the laboratory reporting limit but less than regulatory limit
mg/kg = PPM
MPCA = Minnesota Pollution Control Agency
SQT = Sediment Quality Targets
Level I SQT exceedance
Level II SQT exceedance

Qualifiers (US EPA Qualifier Code):
UJ = Samples marked with this flag were non-detect but contained a representative quality control sample with a relative percent difference (RPD)outside the quality control range, or percent recovery of the analyte was below the QC limits; The associated parent sample is therefore flagged as estimated even though the results were below the laboratory reporting limits.

Table 7
Surface Water Analytical Results Summary
Water Gremlin
4400 Otter Lake Road
White Bear Township, MN
Wenck Project No. 2606-0016
July 2019

Compound/Parameter	CAS No.	Tier I Surface Water Screening Criteria (non ORVW or OIRW waters)	Sample ID, Date Collected & MPCA LUI #						
			SW-1	SW-2	SW-3	SW-4	062019-A	SW-5	SW-6
			06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019	06/20/2019
			County Ditch 14	County Ditch 14	County Ditch 14	County Ditch 14	Blind Dup SW-4	County Ditch 14	County Ditch 14
Volatile Organic Compounds (VOCs) - EPA Method 8260B (Modified List) - reported in ug/L									
1,1,1-Trichloroethane	71-55-6	200	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethane	75-34-3	47	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
1,1-Dichloroethene	75-35-4	7	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00
1,2-Dichloroethane	107-06-2	3.5	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chloroethane	75-00-3	NE	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00
cis-1,2-Dichloroethene	156-59-2	70	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Tetrachloroethene	127-18-4	3.8	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
trans-1,2-Dichloroethene	156-60-5	100	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Trichloroethene	79-01-6	5	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Vinyl chloride	75-01-4	0.17	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Lead EPA Method 6020 - reported in (mg/L)									
Lead	7439-92-1	6.72	<1.00	<1.00	<1.00	**11.6**	**12.5**	**12.2**	**3.74**

All results reported in micrograms per liter (ug/L)

Bold = analyte detected above the laboratory reporting limit but less than regulatory limit

Tier I Surface Water Screening Criteria Exceedance

MDH = Minnesota Department of Health

[a] = MDH Health Based Value (HBV)

NA = Not Applicable

ND = Not detected above method detection limits

NE = Not Established

OIRW = Outstanding International Resource Waters

ORVW = Outstanding Resource Value Waters

Appendix A

Wenck May 2019 Remedial Investigation Work Plan

WENCK File #2606-0014
May 2019

Remedial Investigation Work Plan

Water Gremlin Company
White Bear Lake Township

Prepared for:

Water Gremlin

4400 Otter Lake Road,
White Bear Township, MN 55110

WENCK

Responsive partner.
Exceptional outcomes.

Prepared by:

WENCK Associates, Inc.
1800 Pioneer Creek Center
Maple Plain, MN 55359
Phone: 763-479-4200
Fax: 763-479-4242

Table of Contents

1.0 PURPOSE AND SCOPE 1-1

2.0 PROJECT BACKGROUND 2-1

2.1 Site History and Potential Contaminants 2-1
2.2 SUmmary of Existing Site Data 2-2
2.2.1 1994 Soil Investigation Report 2-3
2.2.2 1995 Braun Phase I Report 2-4
2.2.3 1995 Soil Excavation Report 2-6
2.2.4 1996 Braun Phase II Report 2-6
2.2.5 1996 Response Action Plan 2-6
2.2.6 1997 Appraisal 2-6
2.2.7 1997 RAP Implementation 2-7
2.2.8 1997 NFA 2-7
2.2.9 1997 Soil and Groundwater Evaluation 1 2-7
2.2.10 1998 Soil and Groundwater Evaluation 2 2-8
2.2.11 1999 Soil and Groundwater Evaluation 3 2-8
2.2.12 1999 Soil and Groundwater Evaluation 4 2-8
2.2.13 1999 Annual Monitoring Report 2-9
2.2.14 2000 Annual Monitoring Report 2-10
2.2.15 2001 Annual Monitoring Report 2-10
2.2.16 2002 Annual Monitoring Report 2-11
2.2.17 2003 Annual Monitoring Report 2-11
2.2.18 2004 Phase I ESA 2-11
2.2.19 2004 Groundwater Monitoring Report 2-12
2.2.20 2004 NFA 2-12
2.2.21 2004 Phase II ESA 2-13
2.2.22 1999-2004 Water Gremlin Tanks Inventory 2-13
2.2.23 2012 MPCA Tanks Change In Status 2-15
2.2.24 2019 Geotechnical Report 2-15
2.2.25 2019 Wenck Phase I ESA Report 2-15

3.0 SITE DESCRIPTION AND HISTORY 3-1

3.1 Site Location and General Description 3-1
3.2 Current Site Conditions and Use 3-1
3.3 Past Site Use 3-2

4.0 CONCEPTUAL SITE MODEL 4-1

4.1 General 4-1
4.2 Physical Setting 4-1
4.2.1 Topography 4-1
4.2.2 Geology 4-2
4.2.3 Hydrogeology 4-2
4.2.4 Surface Water 4-2
4.3 Contaminants of Concern 4-2
4.4 Contamination Mechanism 4-3

4.5 Source Media 4-3
4.6 Transport Mechanisms 4-3
4.7 Potential Exposure Media 4-4
4.8 Potential Exposure Pathway Analysis 4-4

5.0 PROJECT ORGANIZATION AND RESPONSIBILITY 5-1

5.1 Responsibilities and Authorities of Quality Control Personnel 5-1
5.2 Project Coordination 5-2
5.3 Subcontractors 5-2
5.4 Training 5-2

6.0 SITE INVESTIGATION WORK PLAN 6-1

6.1 Areas of Concern 6-1
6.2 Rationale and Objective 6-1
6.3 Subsurface Investigation Work Plan 6-2
6.3.1 Drinking Water Well Survey 6-2
6.3.2 Surface Water Survey 6-2
6.3.3 Soil Investigation Activities 6-2
6.3.4 Groundwater Investigation Activities 6-3
6.3.5 Sub-Slab Soil Vapor, Crawl Space and Background Vapor Assessment Activities 6-4
6.3.6 Surface Water Sampling Activities 6-5
6.3.7 Sediment Sampling Activities 6-6
6.3.8 Investigation-Derived Waste Management 6-6
6.3.9 Utility Clearance 6-6
6.3.10 Quality Control 6-7
6.3.11 Surveying 6-7

7.0 FIELD DOCUMENTATION 7-1

7.1 Field Logbooks 7-1
7.2 Photographic Records 7-1
7.3 Sample Documentation 7-2
7.3.1 Sample Numbering System 7-2
7.3.2 Sample Labels and/or Tags 7-2
7.3.3 Chain-of-Custody Records 7-2
7.4 Documentation Procedures/Data Management and Retention 7-4

8.0 SAMPLE PACKAGING AND SHIPPING REQUIREMENTS 8-1

9.0 CONTRACTOR QUALITY CONTROL 9-1

9.1 General 9-1
9.2 Pre-Project Meeting 9-1
9.3 Project Inspection 9-2
9.4 Follow-Up Inspections 9-2

10.0 NONCONFORMANCE/CORRECTIVE ACTIONS 10-1

10.1 General 10-1
10.2 Field Sampling 10-1
10.3 Laboratory 10-1

11.0 STANDARD OF CARE 11-1

12.0 REFERENCES 12-1

IN-TEXT TABLES

Table 5-1: Personnel Responsibilities and Qualifications 5-1
Table 5-2: Contact List for Key Project Personnel 5-2
Table 6-1: Soil Sampling and Analytical Requirements 6-3
Table 6-2: Groundwater Sampling and Analytical Requirements 6-4
Table 6-3: Vapor Sampling and Analytical Requirements 6-5
Table 6-4: Surface Water Sampling and Analytical Requirements 6-5
Table 6-5: Sediment Sampling and Analytical Requirements 6-6

FIGURES

Figure 1 – Site Location Map
Figure 2 – Parcel Map
Figure 3 – Current Site Conditions Map
Figure 4 – Proposed Remedial Investigation Map
Figure 5 – Sub-Slab and Crawl Space Vapor Samples

APPENDICES

Appendix A – Excerpts from Previous Environmental Reports

1.0 Purpose and Scope

This is a work plan for the investigation and characterization of the Areas of Concern (AOC) at the Water Gremlin Company Facility in White Bear Lake Township, Minnesota (the Site). This work plan is intended, following Minnesota Pollution Control Agency (MPCA) review and approval, to meet the requirements of Section 10, paragraphs aa. and cc. of the March 1, 2019 Stipulation Agreement between Water Gremlin Company and the MPCA. Water Gremlin will implement a Remedial Investigation (RI) at the site in accordance with the MPCA-approved Work Plan. Following the RI, an RI Report will be submitted documenting the investigation activities, provide a risk assessment for the site to determine the appropriate next step.

2.0 Project Background

2.1 SITE HISTORY AND POTENTIAL CONTAMINANTS

According to reviewed sources of information, the Site was originally purchased by the Ratte family in 1918 for agricultural use. Small scale manufacturing operations of Rubbercor fishing sinkers began in a garage at the Site in approximately 1949. Operations increased over subsequent years and multiple building additions were completed. By approximately 1964 Water Gremlin began coining operations and expanded their facility to 12,000-square feet. By the early 1970s Water Gremlin was a leading manufacturer of fishing sinkers and the facility had expanded to approximately 24,000-square feet. Water Gremlin expanded operations to include custom lead parts in the mid to late 1970s and in approximately 1977 the facility was expanded to approximately 32,000-square feet to include custom parts manufacturing equipment. Between 1997 and 1998, additions totaling roughly 24,000-square foot were completed to the south and eastern portions of the North Campus building. The South Campus building was constructed at 4316 Otter Lake Road in 2013 and is primarily used for packaging, warehousing and shipment of product.

Water Gremlin utilizes various chemicals in the manufacturing process including lead, (both hard (alloy) and soft lead), resin, sulfuric acid, propane, lubricants, petroleum products, solvents, and oils. The chemicals are stored in various areas of the North Campus building in pails, drums, totes, and tanks. The main storage area for hazardous materials is the chemical room located in the eastern portion of the North Campus building. The chemical storage room contains impervious coating and a sub-grade concrete containment that can store up to 1,000 gallons of material.

The hazardous wastes generated as reported for 2017 in the MPCA WIMN online database included:

- Bead blast media — 5,358 pounds
- Cotton Gloves — 4,077 pounds
- Degreasing Solvent — 1,277 gallons
- Floor Sweepings — 6,450 pounds
- Hazardous Waste Solid NOS — 1,819 pounds (burned for fuel)
- Mop and Oily Water — 40 gallons
- Resin/TCE — 385 gallons
- Waste Water Sludge — 14,165 pounds

Numerous petroleum products are used in the manufacturing process. Petroleum products currently used at the North Campus building include:

- Die-Slick® mold release compound
- Way Lube oil gear lubricant
- Equipment lubrication oils
- Hydraulic fluids
- Petroleum naphtha parts wasting solvent
- Kerosene
- Diesel fuel (for mobile equipment)
- Paratherm (fluidized bed thermal oil)

Die Slick is the most utilized petroleum-based product in manufacturing operations. The material is stored in 325-gallon plastic totes and smaller 55-gallon drums at die cast machines throughout the North Campus building. Used oil is collected from drip trays under processing equipment. Mobile vacuum carts are used to collect oils which are disposed of in a used oil AST located in the chemical room of the North Campus building.

Parts washers are located in the toolroom, coating room, north die cast, billet and shop//extrusion room.

2.2 SUMMARY OF EXISTING SITE DATA

Water Gremlin provided Wenck with the following previous environmental reports prepared for the Site:

- *Environmental Soils Evaluation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; November 28, 1994 (1994 Soil Investigation Report)
- *Phase I Environmental Site Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. Braun Intertec Corporation; April 10, 1995. (1995 Braun Phase I Report)
- *Soil Excavation Observations and Documentation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. Braun Intertec Corporation; September 26, 1995. (1995 Soil Excavation Report)
- *Phase II Environmental Site Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. Braun Intertec Corporation; March 26, 1996. (1996 Braun Phase II Report)
- *Response Action Plan, Water Gremlin Company, 1610 Whitaker, White Bear Lake, Minnesota*. Prepared For Minnesota Pollution Control Agency. Braun Intertec Corporation; September 12, 1996. (1996 Response Action Plan)
- *APPRAISAL OF 4326 OTTERTAIL ROAD, WHITE BEAR TOWNSHIP, MN 55110.* Prepared for David Zinschlag, Water Gremlin Company. The Search Co. Appraisal Division. (1997 Appraisal)
- *Response Action Plan Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; April 8, 1997. (1997 RAP Implementation)
- *Environmental Soil and Groundwater Evaluation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; August 4, 1997. (1997 Soil and Groundwater Evaluation 1)
- *Environmental Soil and Groundwater Evaluation Report 2, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 6, 1998. (1998 Soil and Groundwater Evaluation 2)
- *Environmental Soil and Groundwater Evaluation Report 3, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 15, 1999. (1999 Soil and Groundwater Evaluation 3)
- *Environmental Groundwater Evaluation Report 4, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; November 5, 1999. (1999 Soil and Groundwater Evaluation 4)

- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; February 25, 2000. (1999 Annual Monitoring Report)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 3, 2001. (2000 Annual Monitoring Report)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; April 30, 2002. (2001 Annual Monitoring Report)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; January 13, 2003. (2002 Annual Monitoring Report)
- *Annual Groundwater Monitoring Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota*. Prepared for Water Gremlin Company. Braun Intertec Corporation; February 19, 2004. (2003 Annual Monitoring Report)
- Letter Report to Mr. David Zinschlag, Water Gremlin Company*, RE: Additional Groundwater Monitoring Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.* Prepared for Water Gremlin Company. May 6, 2004. (2004 Groundwater Monitoring Report)
- Letter Report to Mr. David Zinschlag, Water Gremlin Company*, RE: Water Gremlin Site, 1610 Whitaker Avenue, White Bear Lake, Minnesota, MPCA Project Number VP5540, No Further Action Determination.* Prepared for Water Gremlin Company. May 14, 2004. (2004 NFA)
- Facsimile message from Dave Zinschlag, Water Gremlin Co. to JoAnn Henry, MPCA Tanks Division regarding Water Gremlin Tank Inventory, October 5, 1999 & May 13, 2004 (1999-2004 Tank Inventory)
- Mi*nnesota Pollution Control Agency AST Notification of Installation or Change in Status Form*. October 10, 2012. (2012 MPCA Tanks – Change In Status)
- Minnesota Department of Health Well and Boring Sealing Record, Minnesota Well and Boring Sealing No. H355975. American Engineering Testing.4-25-2018. (MWD Well Sealing)
- Report of Geotechnical Exploration, Die Cast Machine Foundation, Water Gremlin Company, 4400 Otter Lake Road, White Bear Township, Minnesota. Prepared for Water Gremlin Company. American Engineering and Testing; May 16, 2018.
- *Phase I Environmental Site Assessment, Water Gremlin Company, 4400 Otter Lake Road, White Bear Lake Township, Minnesota.* Prepared for Water Gremlin Company. Braun Intertec Corporation; April 2019. (2019 Wenck Phase I Report)

2.2.1 1994 Soil Investigation Report

The 1994 Environmental Soils Evaluation was completed by Braun Intertec (Braun) on behalf of Water Gremlin to investigate a drum storage and landfill area near the southeast corner of the Site. Ramsey County requested the following actions be completed at the Site after four 55-gallon drums containing foundry sand with lead detected at concentrations of 30,650 milligrams per kilogram (mg/kg) to 58,410 mg/kg were identified at the southeast corner of the property:

- "*Determine the levels of lead in the soil in the immediate area of the drum storage;*
- *Determine the levels of lead in the soil on the perimeter of the drum storage areas;*
- *Establish a background soil lead level for the property south of the loading docks and consisting of the wooded areas bounded by the wooden fences and traffic areas; and*
- *Include the landfilled areas.*"

Ramsey County Department of Health staff was on-site to oversee the investigation which consisted of the completion of fourteen shallow hand auger borings, soil classification and laboratory analysis for total lead concentrations in the collected soil samples. Soil samples were collected from 0-6'' at each hand auger locations and from 2' and 4.5' at select sample locations. The borings HAB-1 through HAB-3 were completed within the former drum storage area, HAB-4 through HAB-7 were completed around the perimeter of the drum storage area, HAB-8 was completed approximately 100-feet west of the drum storage area, HAB-9 through HAB-11 were completed in the filled area south of the drum storage area, and HAB-12 through HAB-14 were completed in the filled area east of the drum storage area.

Elevated concentrations of lead was identified in HAB-1 at 900 mg/kg (0-6''), 3,800 mg/kg (2'), 940 mg/kg (4.5'); in HAB-3 at 1,800 mg/kg (0-6''), 2,000 mg/kg (2'); in HAB-4 at 1,100 mg/kg (0-6''), 1,200 mg/kg (2'); HAB-5 at 2,400 mg/kg (0-6''); HAB-6 110 mg/kg (0-6''), 450 mg/kg (2'); HAB-7 at 4,200 mg/kg (0-6''), 670 mg/kg (2'); and HAB-12 (1,700 mg/kg (0-6''). The remaining detections of lead identified in the upper 0-6'' ranged from 32 mg/kg to 95 mg/kg.

The report concluded that based on widespread lead concentrations identified in the shallow soil, the drum storage area most likely not the sole source of lead impacts and additional assessment was recommended. The report indicated additional sources of lead impacts could be related to lead dust from equipment stored in the area and/or vehicular traffic. The report indicated Water Gremlin was planning on expanding the facility to the southeast (in the vicinity of the shipping & receiving area at the time) in the spring of 1995 and Braun was preparing a work plan to assess soils in the area of the proposed expansion.

The 1994 Soil Investigation Report included an attached document titled "Evaluation of Environmental and Biological Conditions, Water Gremlin Company," prepared by Lee Norman, Industrial Consultant and dated November 11, 1984. The document provided a brief history of the Water Gremlin Company up to 1984 and indicated a 8,104-square foot building addition was proposed. The report indicated approximately 146-soil samples were collected along the northern and western property boundaries and analyzed for total lead concentrations. The majority of the lead concentrations were between approximately 10 mg/kg and 30 mg/kg in the soil samples collected during the 1984 assessment.

2.2.2 1995 Braun Phase I Report

Braun completed a Phase I ESA for the Site addressed as 1610 Whitaker Avenue on behalf of Water Gremlin. At the time of the Phase I, the Site consisted of approximately 10-acres occupied by a 45,000 square foot concrete and steel, slab on grade manufacturing and office building; a 1,500-square foot concrete and steel building for cooling non-contact manufacturing process water; and a 6,500-square foot pole building for storage. The remainder of the Site consisted of two single family residences, a shed, paved and un-paved parking/drive areas, an unpaved loading dock/storage area and undeveloped pasture and wooded areas. Surrounding sites consisted of residential development along Whitaker Avenue and Otter Lake Road and undeveloped pastures, wetlands and/or wooded areas.

According to the 1995 Braun Phase I a previous subsurface investigation was completed in November 1994 on the southern portion of the Site to investigate previous complaints regarding disposal of lead sludge allegedly being dumped near the "back" of the property, an abandoned drum containing lead-impacted sand and lead contaminated soil and various

violations identified during a facility inspection completed by the Ramsey County Department of Health. Lead-impacted soil was identified during the 1994 subsurface investigation; however, the extent of lead-impacted soil had not been fully defined. The 1995 Phase I report also indicated an area of demolition debris comprised of concrete from former building walls at the Site, wood, tires and miscellaneous waste associated with a former farm dump was identified on the southern portion of the Site.

The 1995 Braun Phase I indicated operations at the Site included manufacturing of fishing lures and battery casings since the 1940s and major expansions of the manufacturing facility were completed between the 1960s and 1980s. Prior to municipal sanitary sewer connections in 1985, a septic tank was utilized at the Site. The Site was connected to the municipal water system in 1993 and the two domestic wells formerly utilized were abandoned. The 1995 Phase I report indicated in 1966 a 175-foot well was completed to provide water for the cooling tower.

According to the 1995 Phase I report, manufacturing processes at the Site utilized hard and soft lead that is processed by either melt molding, melt extrusion, cold pressed and/or coining to produce a variety of battery terminals and fishing lures. The manufacturing process also included coating operations which utilized solvents including TCE. Petroleum products utilized during operations included used oil, Die-Stick mold release compounds, hydraulic oil, lubricants, diesel and fuel oil. Various ASTs were observed throughout the facility and a 20,000-gallon fuel oil AST was located south of the facility. The 1995 Phase I report did not identify any USTs at the facility.

The 1995 Braun Phase I ESA identified the following Recognized Environmental Conditions (RECs) in connection with the Site:

- "*Areas of Spilled, used oil, potentially contaminated with lead, were identified on the concrete floor and cinder block walls of the manufacturing building and on the gravel paved exterior areas beneath the lead-melting pot exhaust vents. It is not known whether the used oil may have seeped through cracks and seems in the concrete flooring and contaminated the underlaying soils. The extent of oil-stained gravel is also not known.*
- *Small areas of stained flooring were observed in the manufacturing building near the coating operations and in the vicinity of drums of unused TCE. It is not known whether the underlaying soils in these areas have been contaminated from TCE seeping through cracks and seams in the floor in these areas.*
- *The active fuel oil AST at the Site is connected to the boiler by a buried supply line, which is approximately 200-feet in length. The AST and associated piping reportedly were inactive from the date of installation in 1978 to October 1993. According to Water Gremlin Company personnel, during that time, the fuel oil supply valve at the AST was locked closed and no fuel oil was present in the buried supply line. In addition, no loss of product from the AST was visually observed or apparent based on measurements of the product levels in the AST. However, the buried piping does to appear to have been tightness tested on a regular basis. It is possible that leaks may have occurred in the buried piping or the base of the AST, which could have impacted soil and groundwater at the Site.*
- *An area of lead-contaminated soil has been identified in the southern portion of the Site. The full extent of the soil contamination has not yet been determined. The exact source of contamination also has not been identified."*

2.2.3 1995 Soil Excavation Report

During a routine Ramsey County inspection conducted on September 20, 1994, oil was observed on the ground beneath several electrostatic precipitators located on the north end of the existing facility. Ramsey County requested that soil samples be collected from the oil-stained areas, composited and chemically tested for lead to determine if the soil had been impacted with lead at hazardous levels. The initial testing revealed detectable levels of lead above the US EPA's characteristic hazardous limit of 5 milligrams per liter (mg/l). As a result, Ramsey County requested that a work plan be prepared and implemented to remove and dispose of the lead-impacted soils. The work plan was reviewed and approved by the MPCA and the Ramsey County Department of Public Health. The excavation activities consisted of removing impacted soils from 10 separate locations. Depths of excavation varied from approximately two-feet below grade (bg) to approximately five feet bg. At the completion of the remedial excavation activities approximately 101 cubic yards of non-hazardous lead-impacted soil and approximately 12 cubic yards of hazardous lead-impacted soils were hauled off-site to approved landfills and properly disposed.

2.2.4 1996 Braun Phase II Report

Braun Intertec conducted an environmental assessment within a proposed building expansion area south of the then existing building to evaluate potential lead impacts. Braun advanced 48 shallow soil borings in August and September 1995. The soil borings ranged in depth from approximately 4.5-feet bg and 7.5-feet bg. Soil samples were collected from each boring at several depths and submitted to a fix-based laboratory for total and TCLP lead analysis. The data collected during the assessment activities revealed seven distinct areas of lead-impacted soils. Two of the eight areas were found to contain hazardous (i.e., >5 mg/l) levels of lead. Based on the findings of the assessment, Braun estimated volumes of approximately 160 cubic yards of non-hazardous and approximately 75 cubic yards of hazardous soil required removal from the site prior to construction of the proposed building addition.

2.2.5 1996 Response Action Plan

On behalf of Water Gremlin, Braun prepared a Response Action Plan (RAP) to remediate the identified lead-impacted soil. The RAP was submitted to the MPCA on September 12, 1996 and approved on October 24, 1996.

2.2.6 1997 Appraisal

The appraisal was prepared for one of two former residential properties that make up a portion of the Water Gremlin Facility southern facility. It was noted in the appraisal that "No environmental studies were requested or done."

The following standard language is included in the appraisal: "*…the existence of potentially hazardous material used in the construction or maintenance of buildings, such as the presence of ureaformaldehyde foam insulation, asbestos, and/or the existence of substances above or below ground level such as toxic waste, radon gas, etc., and/or the existence of any other environmental influence that may adversely affect the value of the property or the health of the inhabitants of the property, was not observed by me; nor do we have an knowledge of the existence of such materials/substances/influences on or in the property." Additionally: "The value estimated in this appraisal is based on the assumption that: 1) the sanitary waste is disposed of by a municipal sewer or a proper alternate*

treatments (sic) system in good functional condition...5) there is no hazardous waste on the property and there are no hazardous waste sites near the subject property that negatively affect the value of safety of the property and 6) any functioning underground storage tanks are not leaking and are properly registered; 7) any abandoned U.S.T.'s are free from contamination and were properly drained, filled and sealed…12) there is no apparent leaking florescent light ballasts, capacitors or transformers anywhere on or nearby unless noted…14) there is no known infectious medical wastes, pesticides or agricultural pollution on the site and 15) there is no known storage of chemical products, storage drums, radiation or electromagnetic radiation …

It was noted in the appraisal report that there was electrical service and city water and sewer service to the property but no indication of natural gas service. Wenck reviewed the photographs of the property included with the appraisal and saw no indication of an oil-burning furnace.

2.2.7 1997 RAP Implementation

During the periods of September 28th and 30th, October 1st - 2nd and November 7th, 1996, the eight lead-impacted areas as identified during Braun's 1995 soil assessment activities were remediated through excavation. At the completion of the MPCA-approved remedial excavation activities approximately 1,026 cubic yards of lead-impacted soil were removed from the eight individual areas. The entire volume of excavated soil treated with a stabilization additive to ensure the waste was not hazardous. Upon successfully treating the soil, it was hauled to BFI-owned Subtitle D landfill located in Inver Grove Heights, Minnesota.

On June 20, 1997 a NFA Letter for the lead impacted soil release response actions was issued by the MPCA. A copy of this letter was not available for review.

2.2.8 1997 NFA

On June 20, 1997 The MPCA issued a NFA Letter for the lead impacted soil release response actions. The letter indicated a soil investigation had been completed at the site in the vicinity of a proposed building expansion. Elevated concentrations of lead were identified in the upper 2-feet of soil and 1,026 cubic yards of lead-impacted soil was excavated from the site. According to the 1997 NFA Letter approximately 8-cubic yards of lead impacted soil remains at the site which could not be removed due to the presence of underground utilities. The letter indicates this area was covered by the proposed building expansion. The 1997 NFA Letter indicated the MPCA would not request additional investigation of the identified release of lead impacted soil at the Site; however, the determination does not apply to groundwater conditions at the Site.

2.2.9 1997 Soil and Groundwater Evaluation 1

As a result of the *Recognized Environmental Condition* identified in the April 10, 1995 Phase I ESA, Braun Intertec performed an environmental soil and groundwater (Phase II ESA) at the Water Gremlin facility in March and April 1997. The Phase II ESA consisted the of completion of 25 soil borings, the installation of three permanent groundwater monitoring wells and the collection of three surface water samples. Soil samples for chemical testing were collected from 14 of the soil borings. The soil samples were analyzed for VOCs. Sample results revealed low concentrations of 1,1,2- TCE in five of the 14 soil samples collected. TCE was detected at concentrations ranging from 0.06 mg/kg to 0.68 mg/kg. Groundwater

samples were collected from 20 soil boring locations and the three groundwater monitoring wells and analyzed for VOCs. The groundwater test results revealed the presence of 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-1,2-DCE, PCE, 1,1,1-TCA, 1,1,2-TCA and VC within the area investigated. The surface water samples did not reveal the presence of VOCs above the laboratory reporting limits. Based on the of Phase II ESA, Braun recommended quarterly groundwater monitoring be conducted in the three permanent groundwater monitoring wells.

2.2.10 1998 Soil and Groundwater Evaluation 2

In October 1998, Braun conducted addition soil and groundwater evaluation driven by the findings of the March and April 1997 investigation activities. The October 1998 investigation activities consisted of the advancement of two deep soil borings (ST-1 = 110.5' and ST-2 65.5'), the collection of groundwater samples from the borings for chemical testing, the collection of a "raw" water sample from Municipal Well No. 5 for chemical testing and the completion of a groundwater receptor survey. Groundwater samples collected from ST-1 within the water table aquifer revealed the presence of 1,1-DCA 1,2-DCA, 1,1-DCE, cis-1,2-DCE, PCE, 1,1,1-TCA, 1,1,2-TCA and VC above state drinking water standards. The sample collected from the deeper buried glacial aquifer did not reveal any VOCs above the laboratory reporting limits. Toluene was detected at very low concentrations in the shallow samples collected form soil boring ST-2. No chlorinated compounds were detected above their respective laboratory reporting limits in any of the samples collected from ST-2. Chemical testing the sample collected from Municipal Well No. 5 did not reveal the presence of VOCs above the laboratory reporting limits. The well receptor survey identified 49 water wells within a one-mile radius of the facility. It was determined that all of the water supply wells obtain water from either the buried glacial aquifer or a bedrock aquifer. According to revealed information a confining to semi-confining layer of glacial till separates the surficial aquifer from the buried aquifer in the vicinity of the facility. Based on the findings of the Phase II ESA Braun recommended the installing of two additional permanent groundwater monitoring wells.

2.2.11 1999 Soil and Groundwater Evaluation 3

In May 1999 Braun installed permanent groundwater monitoring wells MW-3D and MW-4/RW-1 on the property. As part of this phase of investigation Braun performed two rounds of groundwater quality testing from existing monitoring wells MW-1 through MW-3 and the newly installed wells MW-3D and MW-4/RW-1. The additional investigation activities revealed consistent chlorinated groundwater impacts within the shallow water table aquifer. Sampling of the deeper, buried glacial aquifer did not reveal the presence of chlorinated compounds. Braun opined that the chlorinated solvent release was isolated to the shallow aquifer and not a risk to the deeper buried glacial or bedrock aquifers. Braun recommended that a groundwater monitoring program be implemented and that the MCPA issue a "No Further Action" contingent on future groundwater quality results.

2.2.12 1999 Soil and Groundwater Evaluation 4

Based on the outcomes of a June 1999 meeting with the MPCA, Braun conducted additional assessment activities including the collection of groundwater quality samples from the existing monitoring well network and the newly installed wells, performed additional assessment of the confining layer at the base of the upper-most glacial aquifer and installed two additional permanent groundwater monitoring wells in the shallow water table aquifer. The additional drilling activities were performed in June 1999. The drilling activities

consisted of the advancement of soil borings ST-3 and ST-4 and the installation of groundwater monitoring wells MW-5 and MW-6. Groundwater quality samples were collected from temporary wells installed in boring ST-3 and ST-4 and wells MW-5 and MW-6. None of the water samples collected during this phase of investigation revealed chlorinated compounds above any applicable drinking water standards.

2.2.13 1999 Annual Monitoring Report

The 1999 Annual Groundwater Monitoring investigation consisted of collection of groundwater samples from seven monitoring wells to further investigate the extent of a chlorinated solvent impacted groundwater plume previously identified at the Site. Based on the results of ongoing groundwater investigations, the highest concentrations of chlorinated solvents and associated breakdown products had been identified near the southeast corner of the main manufacturing facility and beneath a building addition completed in 1998.

The monitoring wells were completed throughout the Site in the following locations respective to the identified release: MW-1 was located in an upgradient position, MW-2 was located in a downgradient position, MW-3 was located in a downgradient position, MW-3D was located in a deeper buried glacial aquifer, MW-4/RW-1 was installed as a potential recovery well located within the suspected source area, MW-5 was located in a downgradient position and MW-6 was located downgradient of the contaminate plume.

Groundwater data indicates shallow groundwater at the Site is located between seven and 12-feet bg and approximately 25-feet bg within the deeper buried glacial aquifer. Groundwater flow direction was identified to the south.

Four rounds of groundwater samples were collected from the monitoring wells MW-1, MW-2, MW-3, MW-3D, MW-4/RW-1 and two rounds of sampling from the monitoring wells MW-5 and MW-6 for laboratory analysis of VOCs and natural attenuation parameters (total dissolved iron, total nitrate, total sulfide, organic reduction potential, dissolved oxygen, conductivity and temperature).

The 1999 Annual Monitoring report indicated VOCs were not detected above laboratory reporting limits at the monitoring wells MW-1, MW-3D or MW-6 during the 1999 sampling events.

One or more of the following VOCs were identified during the 1999 sampling events: chloroform, 1,1-DCA, 1,1-DCE, 1,2-DCE, cis-1,2-DCE, dichlorodifluoromethane were identified in the well MW-2; and 1,1-DCA, tetrahydrofuran and 1,1,1-TCA were identified at MW-5; however, the detected concentrations were below their respective MDH HRLS. In the monitoring well MW-3, the VOCs 1,1-DCA, 1,2-DCA, 1,1-DCE, tran-1,2-DCE and vinyl chloride were detected at concentrations exceeding their respective MDH HRLs. In the monitoring well MW-4/RW-1, TCE was detected at a concentration of 33 ug/L, above the MDH HRL of 30 ug/L. The 1999 Annual Groundwater Monitoring Report concluded the following:

- "*The concentrations of solvents in the groundwater have remained stable or decreased over time.*
- *The solvent-impacted groundwater is limited to the surficial aquifer.*
- *The solvent-impacted groundwater does not extend beyond the wetland area or Ramsey County Ditch 14 located south of the Water Gremlin building, and does not extend beyond the Site boundaries.*

- *Chemical and field analysis of groundwater samples for groundwater nutrient parameters and the presence of the chemical breakdown products of the released material indicate that natural attenuation of the impacted groundwater is occurring.*"

The 1999 Annual Monitoring Report recommended continued annual sampling and natural attenuation monitoring be completed at the Site in pursuit of a NFA Letter.

2.2.14 2000 Annual Monitoring Report

On April 4, 2000, the MPCA approved a reduced monitoring frequency to once per year at the Site based on the Contingency Plan prepared by Braun dated January 3, 2001. The Contingency Plan outlined possible changes in the monitoring frequency based on the following circumstances:

- "*Chlorinated solvent compounds or their degradation products are detected in the deep well, MW-3D, during routine sampling event and also during a follow up sampling event of this well conducted within one month of receiving the original sampling results.*
- *Contaminates are detected in MW-6 for two annual events in a row.*
- *The concentrations of individual solvent compounds added together exceeds by more than 20 percent the highest total concentration observed for a single sampling event in MW-3 or MW-4 prior to 2001. Or, the total of the concentrations for individual chlorinated solvent compounds in MW-2 or MW-5 exceeds 10 ug/L. The compounds to be included in the totals include: 1,1-dichloroethane, 1,2-dichlorethane, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1,1-tirchloroethane, trichloroethene, vinyl chloride and/or chloroethane.*"

According to the 2000 Annual Groundwater Monitoring Report, the seven monitoring wells at the Site were sampled for VOCs during the 2000 annual sampling event and no VOCs were detected above laboratory reporting limits in the samples collected from MW-1, MW-3D, MW-5 or MW-6. Detections of the VOCs 1,1-DCA and dichlorodifluoromethane in MW-2 did not exceed the MDH HRLs. Detections of 1,1-DCA, 1,2-DCA, 1,1-DCE and vinyl chloride in MW-3 exceeded the MDH HRLS and the detection of vinyl chloride in MW-4 exceeded the MDH HRL.

The 2000 Annual Monitoring Report concluded that VOC concentrations were decreasing with the exception of vinyl chloride in MW-4 and cis-1,2-DCE in MW-3. The decreasing trend of VOCs indicates natural attenuation is occurring at the Site and Braun recommended discontinuation of natural attenuation parameters.

2.2.15 2001 Annual Monitoring Report

On November 15, 2001, the seven groundwater monitoring wells at the Site were sampled for laboratory analysis of VOCs. No VOCs were detected in the monitoring wells MW-1, MW-1 duplicate, MW-3D, MW-5 or MW-6. The VOCs 1,1-DCA, 1,2-DCA, 1,1-DCE and vinyl chloride were identified above their respective MDH HRLs in MW-3 as well as the VOC chloroethane for the first time. Vinyl chloride was detected at a concentration of 390 ug/L in MW-3 during the November 15, 2001 sampling event, significantly higher than the previous detection of 3.7 ug/L identified during the previous sampling event completed on November 7, 2000. Vinyl chloride was also identified above the MDH HRL at MW-4.

Braun concluded the detection of vinyl chloride identified in MW-3 was anomalously high; however, was not a threat to human health or the environment and did not warrant a change in the monitoring plan. The 2001 Annual Monitoring Report concluded the overall VOC concentrations were decreasing and recommended to continue annual groundwater sampling at the Site.

2.2.16 2002 Annual Monitoring Report

The seven monitoring wells at the Site were sampled on November 19, 2002. VOCs were not detected above laboratory reporting limits in the samples collected from MW-1/MW-1 duplicate, MW-3D, MW-5 or MW-6.

In MW-3 the detected concentration of 1,1-DCA exceeded the MDH HRL and vinyl chloride was not detected above laboratory reporting limits during the 2002 sampling event. Detected concentrations of chloroethane identified in MW-3 increased during subsequent sampling events; however, Braun concluded chloroethane is a product of vinyl chloride and the increase supports previous conclusions that natural attenuation is occurring at the Site. The 2002 Annual Monitoring Report concluded the overall VOC concentrations were decreasing and to continue annual groundwater sampling at the Site.

2.2.17 2003 Annual Monitoring Report

The seven monitoring wells at the Site were sampled on November 24, 2003 and on January 13, 2004 the monitoring well MW-3D was re-sampled. VOCs were not detected above laboratory reporting limits in the samples collected from MW-1/MW-1 duplicate, MW-5 or MW-6 during the 2003 sampling event.

None of the detected concentrations of VOCs identified in MW-3, MW-3D or MW-4, exceeded their respective MDH HRLs and vinyl chloride was not identified above laboratory reporting limits. The detected concentration of chloroethane in MW-3 decreased during the 2003 sampling event.

The VOC 1,1-DCA was detected for the first time in MW-3D at a concentration of 2.2 ug/L, well below the MDH HRL of 70 ug/L. The well was re-sampled on January 13, 2004 and no VOCs were detected above laboratory reporting limits.

Based on the results of the 2004 sampling event Braun recommended the wells MW-3, MW-3D, MW-5 and MW-6 be resampled in June 2004 to determine if downward or lateral migration of contaminates had occurred. The report based on the results of the June 2004 sampling, either an NFA would be requested or additional sampling may be warranted.

2.2.18 2004 Phase I ESA

Wenck Associates prepared a Draft Phase I ESA for the northern portion of the Site in 2004. The 2004 Phase I noted that the Site was addressed as 1610 Whitaker Avenue and consisted of a manufacturing plant that produced lead terminals, lead fishing weights and lead-free fishing weight products. The 2004 Wenck Phase I ESA identified the following Recognized Environmental Conditions in connection with the Site:

- *"Groundwater impacts due to past TCE and TCA releases – the facility has been working with the regulatory agency since 1995 to clean up groundwater*

contaminated by solvents releases from the process. MPCA has not determined yet that the health risks at the site are below acceptable levels.

- *Soil impacts due to past lead releases to soil – the facility has had to remediate lead-impacted soils in the past and in some areas the impacted soils remain in place.*
- *Current and past small releases of petroleum within the building – small spills and leaks of petroleum products were observed and groundwater monitoring data at the site has detected petroleum-related chemicals.*
- *Current releases of Die Slick from electrostatic precipitators – these air emission control units were observed to leak small amounts of Die-Slick compound.*
- *Current oily releases to exterior of building associated with down spouts and condensation vent – oily material was observed to be mixed with water discharges*
- *Current leaking electrical unit – stained foundation and soils were observed around this electric unit.*
- *Area of dead trees – a group of pine trees planted in 1997 were yellow and appeared dead; although many factors can stress newly planted trees, this observation was included as a Recognized Environmental Condition due to known past lead-impacted soil reported on the Subject Property."*

2.2.19 2004 Groundwater Monitoring Report

On April 23, 2004 the seven monitoring wells at the Site were resampled. VOCs were not detected above laboratory reporting limits in the samples collected from MW-1, MW-3D or MW-5 during the 2004 sampling event. Dichlorodifluoromethane was detected at a concentration of 3.2 ug/L, 1,1-DCA was detected at a concentration of 1.5 ug/L, TCE was detected at a concentration of 1.8 ug/L in the monitoring well MW-3. At MW-3 dichlorodifluoromethane was detected at a concentration of 2.3 ug/L, chloroethane was detected at a concentration of 200 ug/L, 1,1-DCA was detected at a concentration of 60 ug/L, tetrahydrofuran was detected at a concentration of 16 ug/L and toluene was detected at a concentration of 5.9 ug/L. In the monitoring well MW-4 dichlorodifluoromethane was detected at a concentration of 4.4 ug/L and 1,1-DCA was detected at a concentration of 5.8 ug/L. Ethylbenzene was detected in MW-6 at a concentration of 1.9 ug/L. The detected concentrations of VOCs at the monitoring wells MW-1, MW-3, MW-4 and MW-6 were below their respective MDH HRLs. Based on the results of the April 2004 sampling event Braun recommended a NFA Letter be issued for the Site.

2.2.20 2004 NFA

The MPCA VIC staff issued a NFA Letter for the identified release of the following VOCs to groundwater at the Site: acetone, benzene, chloroethane, chloroform, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, trans-1,1-dichloroethylene, dichlorodifluoromethane, ethylbenzene, methyl ethyl ketone, methyl isobutyl ketone, tetrahydrofuran, toluene, 1,1,-trichloroethane, trichloroethene, trichlorofluoromethane, vinyl chloride and xylenes.

The letter indicated past industrial operations at the Site resulted in a release from a coating machine area within the facility. Chlorinated solvents and their degradation products were identified during subsurface investigations completed in the late 1990s and response actions consisting of groundwater sampling and natural attenuation monitoring were completed between 2000 and 2004. Concentrations of VOCs in groundwater have generally decreased and are below their respective MDH HRLS. The 2004 NFA Letter was subject to the following condition:

1. "*Water Gremlin shall record, at its own expense, in the office of the Ramsey County Recorder or Registrar of Titles, whichever is appropriate, in and for Ramsey County, an Affidavit describing the contamination remaining at the Site in the from attached as Attachment C. The description of the remaining contamination should include both groundwater concentrations in excess of the MDH HRLs and soil concentrations in excess of the Industrial Soil Reference Values. The Affidavit should include language that describes that cleanup goals established for this Site were based on an industrial property use and that if the Site is redeveloped as other than industrial, the need for other response actions more appropriate to the new property use will need to be evaluated. A copy of the proposed appropriate language shall be submitted to the MPCA staff for review and approval within sixty days after receipt of this letter and Water Gremlin shall record the affidavit within 30 calendar days after receipt of MPCA approval. Water Gremlin shall submit a copy of the affidavit as recorded to the MPCA within 30 days after the affidavit is officially recorded.*"

The NFA was revised on June 9, 2004. The revised letter was subject to the following condition:

1. "*Cleanup goals established for this Site were based on an industrial property use and if the Site is redeveloped as other than industrial, the need for other response actions more appropriate to the new property use will need to be evaluated.*"

2.2.21 2004 Phase II ESA

The Phase II consisted of collection of groundwater samples from the seven monitoring wells at the Site. During the groundwater sampling event Wenck staff accompanied Braun staff and collected split groundwater samples for laboratory analysis for VOCs. The detected concentrations of VOCs from the seven monitoring wells were below their respective MDH HRLs. The following VOCs were detected in the monitoring wells at the Site during the 2004 Phase II ESA: MW-2 dichlorodifluoromethane at 3.2 ug/L, 1,1-dichloroethane at 1.5 ug/L, trichloroethene at 1.8 ug/L; MW-3 dichlorodifluoromethane at 2.3 ug/L, chloroethane at 200 ug/L, 1,1-dichloroethane at 60 ug/L, tetrahydrofuran at 16 ug/L, toluene at 5.9 ug/L; MW-4 dichlorodifluoromethane at 4.4 ug/L, 1,1-dichloroethane at 5.8 ug/L; MW-5 ethylbenzene at 1.9 ug/L.

Four soil samples were also collected from an area of distressed vegetation identified at the Site during completion of the 2004 Wenck Phase I for lead analysis. Concentrations of lead were identified at 17.6 mg/kg, 5.68 mg.kg, 13.7 mg/kg and 6.63 mg/kg, well below the MPCA Residential Soil Reference Value of 300 mg/kg for lead.

2.2.22 1999-2004 Water Gremlin Tanks Inventory

The facsimile message includes a table of storage tanks with tank number, status, substance stored, capacity, installation date and removal date. The facsimile is reproduced below:

tss101 TABS SITE, OWNER TANK INFO vquinon 09/02/99 13:21

Site id: 53354 Above or Under: A Facility Type: INDUSTRY/MANUFACTURI
Site Name: WATER GREMLIN CO Old AST ID: 3354
Address 1: 1610 WHITAKER AVE
City: WHITE BEAR LAKE State: MN Zip: 55110
County: 62 RAMSEY Region Code: M UST AST
Site Phone: 6514297761 Registration Date: 07/16/1992

----------OWNER INFORMATION----------

Owner ID: 63354 WATER GREMLIN CO
Address: 1610 WHITAKER AVE Phone: 6514297761
City: WHITE BEAR LAKE State: MN Zip: 55110

----------TANK INFORMATION----------

Nbr	A/U	Status	Substance Stored	Capacity	Install	Removed
1001	A	ACTIVE	HYDRAULIC FLUID	500	07/07/92	4/95
1002	A	ACTIVE	DIE SLICK	500	07/07/92	4/95
1003	A	ACTIVE	LUBE OIL	300	07/07/92	4/95
1006	A	ACTIVE	WASTE WATER	225	07/07/92	
1007	A	INACTIVE	CALCIUM CHLORIDE/WATE	265	07/07/92	3/94
1008	A	ACTIVE	WASTE OIL	225	07/07/92	
1009	A	REMOVED	FUEL OIL 1-2	265		07/07/92
1010	A	REMOVED	WASTE OIL	2,500		07/07/92
1011	A	ACTIVE	TRICHLOROETHYLENE	150	07/07/92	7/95
1012	A	ACTIVE	TRICHLOROETHYLENE	150	07/07/92	7/95
1013	A	ACTIVE	TRICHLOROETHYLENE	150	07/07/92	7/95
1014	A	ACTIVE	TRICHLOROETHYLENE	250	07/07/92	7/95
1015	A	REMOVED	FUEL OIL 1-2	20,000		07/07/92
1016	A	REMOVED	FUEL OIL 1-2	20,000		07/07/92
		ACTIVE	WASTE OIL	600		7/95

Note: Shading indicates hand-written entries on table.

Also included in the Water Gremlin Company file was a print out from the MPCA website dated May 13, 2004. The table is reproduced below:

Tank Number	Last Action Date	Registration Date	Tank Capacity	Tank Status	Stored Product	Above or Underground
1001	Apr 01, 95	Jul 16, 92	500	Removed	Hydraulic Fluid	Above Ground
1002	Apr 01, 95	Jul 16, 92	500	Removed	Petroleum Other	Above Ground
1003	Apr 01, 95	Jul 16, 92	300	Removed	Lube Oil	Above Ground
1006	Jul 07, 92	Jul 16, 92	225	Active	Sewage, Manure Or Wastewater	Above Ground
1007	Mar 01, 94	Jul 16, 92	265	Removed	Other Substance	Above Ground
1008	Jul 07, 92	Jul 16, 92	225	Active	Used Or Waste Oil	Above Ground
1009	Jul 07, 92	Jul 16, 92	265	Removed	Fuel Oil	Above Ground
1010	Jul 07, 92	Jul 16, 92	2500	Removed	Used Or Waste Oil	Above Ground
1011	Jul 01, 95	Jul 16, 92	150	Removed	Chemical Other Or Unspecified	Above Ground
1012	Jul 01, 95	Jul 16, 92	150	Removed	Chemical Other Or Unspecified	Above Ground

Tank Number	Last Action Date	Registration Date	Tank Capacity	Tank Status	Stored Product	Above or Underground
1013	Jul 01, 95	Jul 16, 92	150	Removed	Chemical Other Or Unspecified	Above Ground
1014	Jul 01, 95	Jul 16, 92	250	Removed	Chemical Other Or Unspecified	Above Ground
1015	07/07/92	Jul 16, 92	20000	Removed	Fuel Oil	Above Ground
1016	07/07/92	Jul 16, 92	20000	Removed	Fuel Oil	Above Ground
1017	Jul 01, 95	May 15, 00	600	Active	Used Or Waste Oil	Above Ground
1018	Jun 01, 00	May 15, 00	4000	Active	Chemical Caustic	Above Ground

2.2.23 2012 MPCA Tanks Change In Status

The form provides notification of two storage tanks (1006 and 1018) being removed. Tank 1006 is listed as a 225-gallon wastewater tank having been removed on March 1, 1997. Tank 1018 is listed as a 4,000-gallon chemical/caustic tank having been removed on April 1, 2002. No other information is provided on the form.

2.2.24 2019 Geotechnical Report

White Bear Township building permits contained the Geotechnical Exploration Report prepared by American Engineering and Testing (AET) dated May 16, 2018. The report indicated Water Gremlin intended to move large equipment and construct a machine pad foundation within the North Campus building. A new die cast machine was placed adjacent to the existing die cast #19 machine and the existing floor required removal and replacement. The report indicated one geotechnical boring (B-1) was completed within the building to approximately 20-feet bg. According to the report soils were screened with a photoionization detector (PID) during drilling and select samples were collected for environmental analytical testing (specific parameters were not listed). The soil boring encountered approximately 4-feet of fill soils comprised of clayey and silty sand overlaying native fine-grained sand. Groundwater was encountered at approximately 7.7-feet bgs. The report recommended excavation of the upper 2 to 4-feet of existing fill. PID readings and analytical results were not included with the report.

2.2.25 2019 Wenck Phase I ESA Report

Wenck completed a Phase I ESA for the Site in April 2019. This ESA has identified no RECs, CRECs or HRECs relative to the Subject Property except for the following:

- In 1982 the MPCA had investigated a complaint of alleged discharge of contaminated cooling water with oil from the Water Gremlin plant to a county ditch. Lead impacted soil was identified in the soil sample collected at the discharge point. The identified impacts associated with the discharge of contaminated cooling water is considered to represent a REC for the Subject Property.

- The potential for subsurface soil, groundwater and soil vapor impacts at the Subject Property associated with the former septic system is considered to represent a REC for the Subject Property.

- Previous lead contaminated soil and solvent impacted groundwater investigated as VP5540 is considered a CREC for the Subject Property.

- Petroleum impacts to soil and groundwater have been identified at the North Campus building of the Subject Property during previous subsurface investigations completed between 1995 and 2004. The identified petroleum impacts have not been investigated and therefore are considered to represent a REC.

- Oil staining in the vicinity of the die cast machines and along the wall of the tool room in the North Die Cast building is considered and REC.

- The air pollution control equipment at the North Campus building was found to be not functioning properly causing TCE to be emitted into the air at levels exceeding Water Gremlin's air permit. Corrective actions are currently on-going. The identified TCE release is considered a REC for the Subject Property.

Select information was used in the preparation of this work plan and has been included in **Appendix A**.

3.0 Site Description and History

3.1 SITE LOCATION AND GENERAL DESCRIPTION

The Site is located in a commercial and residential area at 4400 Otter Lake Road White Bear Lake Township, Ramsey County, Minnesota. Additional addresses of the Site include: 1596 and 1610 Whitaker Avenue; 4316, 4336, 4350 and 4370 Otter Lake Road. The Site is located in the East ½ of the Southwest ¼ of the Northeast ¼ of Section 22, Township 30 North, Range 22 West.

The Site consists of seven parcels occupied by two manufacturing buildings (the North Campus building and the South Campus building) with paved parking lots and drive areas, support structures, storage areas and landscaped areas along the western portion of the property. The eastern half of the Site primarily consists of undeveloped wetlands. County Ditch 14 (Lambert Creek) bisects the center of the Site in an approximate east-west configuration. A pedestrian bridge is located along Otter Lake Road providing access to the two buildings. The site is approximately 61.44-acres in size and is associated with the following parcel numbers:

- 1596 Whitaker Street: 22-30-22-13-0024 (2.77-acres)
- 1596 Whitaker Street: 22-30-22-14-0009 (0.69-acres)
- 4400 Otter Lake Road: 22-30-22-13-0022 (10.77-acres)
- 4316 Otter Lake Road: 22-30-22-22-42-0013 (6.9-acres)
- 4336 Otter Lake Road: 22-30-22-13-0007 (0.64-acres)
- 4370 Otter Lake Road: 22-30-22-13-0023 (4.62-acres)
- 0 Whitaker Street: 22-30-22-14-0008 (35.05-acres)

The Site location is shown in **Figure 1**. A parcel map showing the site boundaries on an aerial photograph is included as **Figure 2**.

3.2 CURRENT SITE CONDITIONS AND USE

The Site currently consists of a North Campus and a South Campus. The North Campus is the primary manufacturing operation. The existing North Campus building is approximately 90,000 square feet in size with the original building constructed in 1949. Building additions were made in approximately 1952, 1954, 1959, 1962, 1964, 1965, 1968, 1969, 1971, 1973, 1974, 1976, 1978, 1987, 1994, 1995, 1997, 1998 with interior renovations in 2013 and 2018.

Manufacturing operations in the North Campus building include die casting, hot melt molding, hot melt extrusion, cold forming, coining, gravity casting and coating. Lead bars are melted into liquid via hot melt pots located on die cast machines. The molten lead is injected into a die (mold) forming custom lead parts. Scrap material is dropped into a conveyor that brings the scrap back to the lead melting pot. Lead die cast machines are equipped with electro static precipitators (brand name "Smog Hog") to remove particulates before emitting outside the building.

The coating operations consist of mixing a solvent with solid coating materials (Oppanol and wood resin) to produce a liquid material for application on lead parts. Coating operations are conducted within plexiglass enclosures, which are vented to a common duct and directly

vented to the atmosphere. Prior to January 2019, trichloroethylene (TCE) was used as the primary carrier in the coating process. Water Gremlin has recently resumed coating operations using FluoSolv, a solvent primarily comprised of trans-1,2-dichloroethylene (TDCE).

The South Campus currently improved with one approximately 84,000 square foot building. The building was constructed in 2014. Operations in the South Campus building primarily consist of warehousing, light assembly, research and development and shipping and receiving. The majority of the building consists of warehouse space. Light assembling and product packaging activities are conducted in the southeastern portion of the building and research and development laboratories are located along the southwestern portion of the building. Loading docks and shipping/receiving are located on the east side of the building.

Current Site conditions are shown in **Figure 3**.

3.3 PAST SITE USE

According to reviewed sources of information, the Site was originally purchased by the Ratte family in 1918 for agricultural use. Small scale manufacturing operations of Rubbercor fishing sinkers began in a garage at the Site in approximately 1949. Operations increased over subsequent years and multiple building additions were completed. By approximately 1964 Water Gremlin began coining operations and expanded their facility to 12,000-square feet. By the early 1970s Water Gremlin was a leading manufacturer of fishing sinkers and the facility had expanded to approximately 24,000-square feet. Water Gremlin expanded operations to include custom lead parts in the mid to late 1970s and in approximately 1977 the facility was expanded to approximately 32,000-square feet to include custom parts manufacturing equipment. Between 1997 and 1998, additions totaling roughly 24,000-square foot were completed to the south and eastern portions of the North Campus building. Interior and exterior renovations were completed at the North Campus building in 2013, and in 2016 the west parking lot and stormwater ponds were completed. In 2018 an interior portion of the North Campus building floor was replaced.

Former dwellings on the northern portion of the Site were addressed as 1596 Whitaker Street, 4350 Otter Lake Road & 4370 Otter Lake Road. The residential structures were located adjacent to the west and northwest of the North Campus building from at least 1940 until 2015 when the structures were razed.

Residential structures were located on the southern portion of the Site in the vicinity of the current south building from at least 1940 until the early 1990s. The South Campus building was constructed at 4316 Otter Lake Road in 2013. A residential structure was located at 4336 Otter Lake Road, adjacent to the north of the South Building, from 1924 until 2017 when the residence was razed.

The central and eastern portions of the Site have remained vacant wetlands, bisected by County Ditch 14 (Lambert Creek) from at least 1940 to the present. A pedestrian bridge was constructed over the county ditch and wetlands, along Otter Lake Road in 2017.

4.0 Conceptual Site Model

4.1 GENERAL

A Conceptual Site Model (CSM) was developed for this Work Plan's scope of work that provides the basis for identifying and evaluating potential contaminant sources and transport mechanisms for contaminant migration through the environment as well as evaluation of risk to receptors. The CSM includes all potential sources, release and transport pathways, and potential exposure media. The components of the CSM include:

- Physical Setting
- Contaminants of Concern
- Contamination Mechanisms
- Source Media
- Transport Mechanisms
- Exposure Media
- Exposure Pathways

Environmental site conditions described by the CSM included the review of existing contaminant sources, site conditions, surrounding geology and hydrogeology, and hydrologic information. This information was used to identify potential contaminant migration pathways.

4.2 PHYSICAL SETTING

4.2.1 Topography

The Site has a general slope to the east toward Goose Lake and White Bear Lake with approximate elevation ranging from 920 to 910 feet above mean sea level. Site surface drainage is sheet flow into the municipal stormwater sewer system associated with adjacent public streets and via infiltration in the wetland areas on the eastern portion of the Site. Historic development may have included grading or filling of the Site to improve the location for construction and drainage.

County Ditch 14 (Lambert Creek) is in an east-west configuration and bisects through the approximate center of the Site. County Ditch 14 receives drainage from the adjacent wetlands, residential developments and Goose Lake and flows southwest and eventually drains into East Vadnais Lake, located approximately 3.5-miles southwest of the Site.

A stormwater retention pond is located directly east of the main manufacturing building and receives stormwater runoff from the parking lot areas located on the east, north and southeast sides of the building as well as roof drain runoff. The eastern stormwater pond overflows to the surrounding wetlands and then to County Ditch 14 (Lambert Creek), which runs along the south side of the Facility.

A stormwater pond is located southwest of the loading docks of the North Campus building and receives runoff from the southwest portion of the facility, which includes the shipping and receiving docks, covered dumpsters, and diesel generator. The retention pond has an outlet on the south side and water flows under the drive via a culvert and then flows overland to County Ditch 14 (Lambert Creek).

4.2.2 Geology

Published references describe the surficial geology at the Site as organic sediment comprised of peat, shallow lakes and/or marshes. The Ramsey County Atlas indicates some areas have been excavated and/or artificially filled (Minnesota Geological Survey, 1992).

Previous subsurface investigations completed at the Site have identified shallow fill soils underlain by fine-grained, poorly graded sandy soils ranging in thickness from five (south end of the Site) to approximately 30 feet (north end of the Site). This sandy unit overlies a silty clay semi-confining layer with silt and sand lenses. The semi-confining layer is estimated to be approximately 45 to 65 feet thick. Beneath this semi-confining layer is a clayey to silty sand unit. Based on geologic references the thickness of the unconsolidated sediments in the area of the Site are approximately 200 feet thick.

Bedrock in the vicinity of the Site consists of the Ordovician-aged St. Peter Sandstone. The St. Peter Sandstone units ranges in thickness from approximately 155 to 165 feet in Ramsey County. The upper portion of the St. Peter Sandstone consists of fine- to medium-grained sandstone. The lower portion of this unit is composed of fine-grained units of mudstone, siltstone and shale interbedded with coarse-grained sandstone. Lying beneath the St. Peter Sandstone is the Prairie du Chein Group consists of thinly to thickly-bedded dolostone. (Minnesota Geological Survey, 1992). Depth to bedrock is anticipated to be approximately 200 feet bg (Minnesota Geological Survey, 1992).

4.2.3 Hydrogeology

According to available hydrogeologic references, the general direction of shallow groundwater flow in the area of the Site is to the west (Minnesota Geological Survey, 1992). Previous monitoring wells completed at the Site identified shallow groundwater at approximately seven and 12-feet bg with a southerly flow direction, towards the wetland and County Ditch 14 (Lambert Creek). The previous subsurface investigations completed at the Site indicate two distinct aquifers are present in the vicinity of the Site. Groundwater has historically been identified within the upper 10-feet bg of the shallow unconsolidated aquifer and at approximately 25-feet bg within a deeper buried glacial aquifer.

4.2.4 Surface Water

Based on a review of the digital United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (http://www.fws.gov/wetlands/data/Mapper.html), the Site does have designated wetland areas onsite. Discharge from both on-Site retention ponds flows through designated wetlands before discharging to County Ditch 14 (Lambert Creek).

4.3 CONTAMINANTS OF CONCERN

A list of potential contaminants of concern (COCs) based on past site assessment activities is as follows:

- Volatile organic compounds (VOCs): Chloroethane, 1,1-Dichloroethane (1,1-DCA), 1,2-Dichloroethane (1,2-DCA), 1,1-Dichloroethene (1,1-DCE), cis-1,2-Dichloroethene (cis-1,2-DCE), trans-1,2-Dichloroethene (trans-1,2-DCE), Tetrachloroethene (PCE, 1,1,1-Trichloroethane (1,1,1-TCA), 1,1,2-Trichloroethene (TCE), Vinyl Chloride (VC)
- Lead

Laboratory methodologies that will be used during this investigation are as follows:

Parameter	Laboratory Methodology
Lead	EPA Method 6020
VOCs	EPA Method 8260

4.4 CONTAMINATION MECHANISM

Historical lead and VOC releases, with the potential to provide a mechanism for contamination, were documented as part of the previous site investigations. The primary site activities identified were lead deposition through equipment exhaust, release of petroleum-related contamination through surface discharges and historical releases of chlorinated solvents to the subsurface.

4.5 SOURCE MEDIA

Historical investigation has identified releases of VOCs to the shallow groundwater system and lead to the Site soils. The facility, until 2019, used TCE in its battery terminal manufacturing process. The facility has manufactured lead sinkers and battery terminals since the 1940s.

4.6 TRANSPORT MECHANISMS

The following transport mechanisms were evaluated in preparation for this Work Plan:

- Volatilization
- Air Emissions
- Leaching
- Erosion

Volatilization: Contaminants in the subsurface may migrate via volatilization if solid materials convert into a gas and become mobile. The ability for chemicals to volatilize from soil is a function of the chemical's volatility. This parameter is represented by Henry's law coefficient. Volatilization may be a significant transport pathway for highly volatile chemicals.

Air Emissions/Fugitive Dust: Contaminants may become airborne via emission control equipment associated with the manufacturing activities. The formation of fugitive dust is highly dependent on the ground cover at the site. Currently, ground cover consisting of impervious drive and parking surfaces, natural and landscaped vegetation, surface water features, brush and trees cover the entire Site.

Leaching: Contaminants may migrate to the groundwater system via leaching from impacted soil. Leaching is caused by precipitation infiltrating through contaminated media and transporting the leached chemical into the groundwater. The factors that affect the leaching rate include a contaminant's solubility, partition coefficient and concentration. Insoluble compounds will precipitate out of solution in the subsurface or remain in their

insoluble forms with little leaching. Another factor that affects whether a contaminant will reach groundwater via leaching is the contaminant's rate of decay. Inorganic chemicals do not decay; however, most organic chemicals decay at characteristic rates that are described by the chemical's half-life. Chemicals with long half-lives have a greater potential for contaminating groundwater than those with shorter half-lives. Based on historical groundwater data, leaching appears to be a primary transport mechanism at the site. Groundwater may also transport contaminants to other locations, including surface water bodies.

Erosion/Stormwater Transport: Contaminants in surface soil/sediments/fugitive dust in paved areas may migrate to surface water via erosion (i.e., stormwater surface flow). The ability for chemicals to migrate via erosion is dependent on the amount of exposed soils/sediments/fugitive dust.

4.7 POTENTIAL EXPOSURE MEDIA

Potential exposure media describe the individual medium where contaminants are available to human receptors. Potential exposure media include the following:

- Exterior Air– Potential contamination from volatilization from the soil or from fugitive dust is considered very low. There is limited exposure potential due to the inability of contaminants to concentrate in the breathing zone if not contaminants (lead and VOCs) are disturbed in the soil.
- Indoor Air – Potential contamination associated from vapor intrusion from soils beneath the North Campus building into the breathing zone within the building.
- Soil– Potential contamination associated with dermal contact and inhalation exposure of materials when disturbed or in contact with a receptor.
- Surface Water – Potential contamination from erosion of impacted soil. Contaminants have the ability to concentrate in the on-Site stormwater detention ponds and the county ditch that borders the North Campus building to the south.
- Groundwater – Known groundwater contamination exists at the Site. Past investigation has shown the unconfined water table at the Site has been impacted with chlorinated solvents. Past investigation has also revealed a semi-confining layer beneath the unconfined groundwater table aquifer protecting the deeper potable groundwater aquifer. Limited exposure potential because there are no drinking water wells located at the site. In addition, past investigation demonstrated natural attenuation of the chlorinated solvent pollution within the shallow groundwater system.

4.8 POTENTIAL EXPOSURE PATHWAY ANALYSIS

The CSM for fate and transport provided the basis for identifying and evaluating the contamination mechanism, source media, transport mechanisms, and potential exposure media. The contaminated media (soil and groundwater), if present, acts as potential sources of contamination for transport to other potential exposure media. Contaminants in soil may migrate to air via fugitive dust, to surface water via erosion, and groundwater via leaching. The exposure pathways to a human receptor from the potential source media are discussed below:

- Vapor intrusion pathway: Indoor air exposure through vapor intrusion could occur if groundwater impacts from leached soil originated or migrated beneath a building, volatilized then migrated through the vadose zone into the interior spaces of a

building. Based on current data, this exposure pathway is possible and warrants additional evaluation.

- Direct contact exposure pathway: Potential exposure would likely occur from soil disturbance during any future excavation activities (i.e. building construction, utility installation, etc.) that will occur at the site. Based on current data, this exposure pathway is possible and warrants additional evaluation.
- Drinking water exposure pathway: Potential impacted groundwater exposure would occur from the leaching of contaminated soil into the groundwater system, the migration of the contaminated groundwater to a potable water well, and the consumption or dermal contact of the withdrawn contaminated water. Based on current data, this exposure pathway has not been documented or is not expected at the site and is, therefore, considered an incomplete pathway. However, additional investigation of potential sources is warranted given the fact past investigation focused on the upper portion of the shallow non-potable water table aquifer. Efforts will be made to evaluate the lower portion of the unconfined water table aquifer as the chlorinated solvents are heavier than water and have the potential to reside at the base of the aquifer, or on the top of the confining unit.
- Groundwater to surface water risk pathway: Based on current data it is presumed shallow groundwater at the Site may discharge to the ditch located south of the North Campus building. This groundwater to surface water discharge scenario has the potential to adversely impact surface water and sediment in the receiving water. This potential risk pathway warrants additional evaluation.

The CSM presented herein is based on the previous investigation data available for the site and will be modified if necessary, during future project activities and will be considered during the risk assessment performed during the preparation of the Remedial Investigation Report.

5.0 Project Organization and Responsibility

5.1 RESPONSIBILITIES AND AUTHORITIES OF QUALITY CONTROL PERSONNEL

Table 5-1 identifies the responsibilities and authorities of key project personnel identified in the Project Organization Chart. **Table 5-2** provides a contact list for key project personnel.

Table 5-1: Personnel Responsibilities and Qualifications

Name	Title	Organizational Affiliation	Responsibilities
Chris Bratsch	Wenck Project Manager	Wenck Associates, Inc.	▲ Review and approve technical reports, including subsequent revisions. ▲ Provide document control on technical reports to ensure project team has the most current version. ▲ Coordinate with the QA Manager on all QA/QC matters. ▲ Ensure compliance with appropriate technical reports for all project work. ▲ Assign trained staff and resources to complete work in accordance with technical plans.
Shane Waterman	Technical Lead, QA Manager	Wenck Associates, Inc.	▲ Evaluates analytical results generated during sampling activities. ▲ Provides technical direction of field sampling team. ▲ Technical report preparation. ▲ Prepare or oversee preparation of field data validation reports. ▲ Initiate corrective action. ▲ Internal QC review of field documentation and laboratory samples ▲ Completes final quality control and technical review of all deliverables prior to release. Coordination with the third-party data validator.
Katie Swor	Risk Assessor	Wenck Associates, Inc.	▲ Performs risk assessment ▲ Technical report preparation ▲ Provides regulatory support.

Table 5-2: Contact List for Key Project Personnel

Individual	Affiliation	Project Role(s)	Phone Number	Email Address
Chris Bratsch	Wenck Associates, Inc.	Wenck Project Manager	763.252.6825	cbratsch@wenck.com
Shane Waterman	Wenck Associates, Inc.	Technical Lead, QA Manager	651.294.4588	swaterman@wenck.com
Katie Swor	Wenck Associates, Inc.	Risk Assessor	651.395.5227	kswor@wenck.com
Denise L'Allier-Pray	Water Gremlin Co.	EHS Manager	651.209.9441	Denise.L'Allier-Pray@watergrem.com
Michael Ginsbach	MPCA	Hydrogeologist	651.757.2329	michael.ginsbach@state.mn.us

5.2 PROJECT COORDINATION

The Wenck PM will serve as the POC for communications with Water Gremlin. The Wenck PM will collaboratively oversee the scheduling and reporting and conduct project meetings and briefings (including conference calls). Formal and informal periodic reviews will also be scheduled within Wenck and with Water Gremlin, to evaluate status progress against plans, adjust schedules, and to coordinate resolution of outstanding issues.

5.3 SUBCONTRACTORS

Subcontractor support will be needed to complete the project. Wenck will subcontract services for environmental drilling support, laboratory chemical analysis, and waste management. The Wenck Technical Lead/QA Manager will be the laboratory contact and will verify all data associated with the project. The Wenck PM will maintain ultimate control and accountability for the project by means of formal subcontract agreements with subcontractors and through directives and communication with the subcontractor's program and project management staff. The Wenck PM will have administrative authority for the subcontractors. The Wenck Technical Lead/QA Manager will manage subcontractor field operations.

5.4 TRAINING

All field personnel scheduled for work at the Site have been appropriately trained in accordance with the Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response (HAZWOPER). Field personnel are experienced in hazardous waste site work, use of personal protective equipment (PPE), and emergency response procedures. All Wenck field personnel assigned to the project will receive the project planning documents and the Site Safety and Health Plan (SSHP) prior to beginning work on the site. The Wenck-Trained Field Technician (FT) will perform work status and safety/health briefings daily throughout the project. Relevant health and safety issues will be discussed during project safety meetings.

6.0 Site Investigation Work Plan

6.1 AREAS OF CONCERN

Based on the review of past investigation documentation and the completion of the April 2019 Phase I ESA and multiple Site visits, Wenck has identified several AOCs that warrant additional evaluation and form the basis of this work plan. The following is a list of AOCs that will be evaluated as part of the proposed work plan:

- AOC #1 Coating Rooms #1 and #3
- AOC #2 Coating Room #2
- AOC #3 Chemical Storage Room
- AOC #4 Tool Room Crawl Space
- AOC #5 Location of the 1982 oil discharge area
- AOC #6 Former septic system
- AOC #7 Smog Hog unit located on the east side of the North Campus Building revealing oil discharge to the exterior surfaces of the building
- AOC #8 Smog Hog units located on the northwest corner of the North Campus Building revealing oil discharge to the exterior surfaces of the building
- AOC #9 Utility trenches in the Main Die Cast Area
- AOC #10 North Campus Building rooftop oil and particulate discharges near several rooftop heat extraction blower bed units

6.2 RATIONALE AND OBJECTIVE

The objective of the RI at the Site is to evaluate and ensure adequate protection of public health, welfare, and the environment. The scope of services associated with the RI consists of the following tasks:

- Preparation of the RI Work Plan (this document).
- Preparation of the Site Safety and Health Plan (SSHP). The SSHP will be prepared to cover all field work under this Work Plan. The SSHP includes emergency phone numbers and directions to the local hospital. The SSHP will also address safety and health requirements based on site-specific conditions encountered during the field activities.
- Advancement of push-probe soil cores for the purpose of field-screening Site soils and for the collection of grab soil samples for chemical testing.
- Advancement of push-probe soil cores for the purpose of collecting grab groundwater samples.
- Installation of sub-slab vapor points within the North Campus building and collecting sub slab samples for chemical testing.
- Sampling of surface water samples from the County 14 Ditch.
- Collection of sediment samples from the County 14 Ditch.
- Preparation of a RI report documenting RI activities.

Procedures for soil, soil vapor, sediment, surface water and groundwater sampling activities are detailed herein. This investigation work plan was prepared using appropriate guidance included in the MPCA's publicly available documents entitled *Risk Based Site Characterization and Sampling Guidance* (Working Draft, September 16, 1998) and the

MPCA's current *Vapor Intrusion Best Management Practices for Vapor Intrusion and Building Mitigation Decisions* (October 2017, c-rem3-06e).

Based on the findings of this investigation Wenck will begin to evaluate the nature and extent of contamination, evaluate the AOCs as identified in Section 6.1, evaluate the risk associated with identified contaminant source(s) and determine whether or not those impacts will require additional investigation or response actions.

6.3 SUBSURFACE INVESTIGATION WORK PLAN

6.3.1 Drinking Water Well Survey

A water well receptor survey will be conducted to identify the existence and location of any drinking water wells within a one-mile radius of the Site. Based upon the results of groundwater investigation completed as part of this investigation, a secondary well receptor survey may be completed to identify down-gradient high capacity wells within a three-mile radius.

6.3.2 Surface Water Survey

A surface water receptor survey will be conducted to identify all potential surface waters within a one-mile radius of the Site.

6.3.3 Soil Investigation Activities

Wenck proposes to complete approximately 28 push-probe soil borings at the Site to assess soil and groundwater conditions at the locations shown on **Figure 4**. In addition, Wenck proposes to collect up to four shallow soil samples from within the utility trenches located behind the Main Die Cast machines (AOC #9). Soil sample locations within the Main Die Cast Area will be determined in the field based on accessibility. The soil boring/sampling locations were determined based on the findings of Wenck's April 2019 Phase I ESA and the developed AOCs. Field oversight of the soil borings by a geoscientist, including sample collection and field-screening of soil, will be conducted. Soil samples will be visually assessed and screened for the presence of volatile organics with a photoionization detector (PID) equipped with a 10.6 eV lamp. Based on soil screening, collection of soil samples for laboratory analysis will be completed. Soil classification will be performed in the field in accordance with ASTM Method D2488, *Standard Practice for Description and Identification of Soils*. A boring log will be created for each soil boring showing stratigraphic sequence and associated field screening notes and observations. Visual evidence of contamination will be noted on the field log.

If elevated soil PID readings are encountered, soil samples will be collected from each soil boring location for analysis of VOCs. Soil samples will be collected at the interval(s) revealing the highest PID response or at intervals revealing visual evidence of contamination. If there is evidence of contamination in a soil boring, Wenck will attempt to collect a second sample at a deeper interval from the soil boring if contamination terminates before water is encountered. In the absence of obvious soil impacts, soil samples will be collected just above the unconfined water table.

A minimum of one soil sample will be collected from each boring location for total lead analysis. Total lead samples will be collected from the zero to one-foot zone at each boring location. Deep samples for total lead analysis will be collected if field-evidence of

contamination are observed. Soil boring locations will be surveyed per the procedures documented in Section 6.3.11 below.

Appropriate Quality Control (QC) samples will be collected during the RI activities. Matrix spike (MS) and matrix spike duplicate (MSD) samples will be collected for each sampling method at a rate of 1:20 samples collected for lab analysis. Rinsate Blank samples will also be collected at a rate of 1:20. Lab provided Trip Blanks will accompany each sample cooler.

A summary of the soil sampling and analytical requirements are presented in **Table 6-1**.

Table 6-1: Soil Sampling and Analytical Requirements

Matrix	No. Field Samples	Analysis	Holding Time	Preservation Requirements	Sample Containers
Soil	Samples = Min. 32 MS/MSD = 2 Rinsate Blanks = 2 Trip Blanks = 1/cooler (lab-provided) **Total No. of samples = Min. 36**	VOCs by EPA Method 8260B (modified list detailed in Section 4.3)	14 days	Methanol 1:1 ratio, temperature <4 degrees Celsius	40 ml amber vial
Soil	Samples = Min. 32 MS/MSD = 2 Rinsate Blanks = 2 **Total No. of samples = Min. 36**	Lead by EPA Method 6020	180 days	None	40 ml amber vial

6.3.4 Groundwater Investigation Activities

Wenck proposes to advance approximately 25 push-probes for the purpose of collecting grab groundwater samples at the locations shown on **Figure 4**. The soil boring locations were determined based on the findings of Wenck's April 2019 Phase I ESA and the developed AOCs. Vertical groundwater sampling will be conducted at each location with multiple samples collected from each boring. Vertical groundwater sampling will be conducted immediately adjacent to the soil borings. The first grab groundwater sample will be collected at the top (within the upper 3 feet) of the unconfined groundwater table and every five feet thereafter. Groundwater sampling will discontinue once the semi-confining layer is encountered. The elevation of the semi-confining layer will be determined based on the soil characterization activities as discussed in Section 6.3.3 above. A minimum of two water samples will be collected at each location. Grab groundwater samples will be collected in lab-provided 40 ml glass vials with hydrochloric acid preservative and placed in a cooler with ice.

Groundwater samples will be collected directly from the push-probe equipment using low-flow methods. Laboratory samples will be collected for VOC analysis (EPA Method 8260). Quality control samples, including equipment rinsate blanks, blind field duplicates, matrix spike, matrix spike duplicate, and trip blanks will be collected. Samples will be labeled, recorded on chain-of-custody (COC) forms, packed on ice, and sent to Pace Analytical Services for analysis within the required holding times. Groundwater sample locations will be surveyed per the procedures documented in Section 6.3.11 below.

Blind field duplicate samples will be collected at a rate of 1:10 samples collected for lab analysis. MS and MSD samples will be collected at a rate of 1:20 samples collected for

analysis. Field blanks and Rinsate Blanks will also be collected at a rate of 1:20. Lab provided Trip Blanks will accompany each sample cooler.

A summary of the groundwater sampling and analytical requirements are presented in **Table 6-2** below.

Table 6-2: Groundwater Sampling and Analytical Requirements

Matrix	No. Field Samples	Analysis	Holding Time	Preservation Requirements	Sample Containers
Groundwater	Samples = Min of 50 Blind Dups = 5 MS/MSD = 3 Field Blanks = 4 Rinsate Blanks = 5 Trip Blanks = 1/cooler (lab-provided) **Total No. of samples = Approx. 67**	VOCs by EPA Method 8260B (modified list detailed in Section 4.3)	14 days	pH <2, temperature <4 degrees Celsius	40 ml amber vial

6.3.5 Sub-Slab Soil Vapor, Crawl Space and Background Vapor Assessment Activities

Installation of 25 permanent sub-slab vapor sampling ports will occur inside the building. Sub-slab sample locations are shown on **Figure 5**. The locations of the sub-slab sampling ports will be dependent on building use and access. The sub-slab vapor samples will be analyzed for VOCs by EPA method TO-15. The permanent sampling ports will allow for follow-up sampling of the sub-slab if additional monitoring is warranted.

Interior sub-slab soil vapor samples will be collected using the Vapor-Pin™ kit methodology for permanent sub-slab soil vapor sampling ports. The concrete slab will be cored with a 5/8” drill bit and the vapor pin is installed in the hole along with the silicone sealing sleeve. In addition, a larger diameter hole will be drilled to countersink the permanent port equipment. Dedicated polyethylene tubing is then placed on the fitting. Approximately 300 mL of air will be purged out of the sample line with a syringe prior to collecting the sample. The samples will be collected in 1L Summa canisters equipped with 5-minute fill regulator (200 mL per minute flow rate) and dedicated in-line moisture filter. The soil vapor samples will be submitted under chain-of-custody control to the selected accredited laboratory. A PID equipped with a 10.6 eV source lamp is then connected to the tubing for field screening purposes upon the completion of the Summa can sample collection.

Crawl space samples will be collected from six locations as shown on **Figure 5**. The samples will be collected in 6L Summa canisters equipped with 24-hr fill regulators and dedicated in-line moisture filter. The crawl space air samples will be submitted under chain-of-custody control to the selected accredited laboratory.

Background samples will be taken to represent ambient air conditions. Two background air samples will be collected as part of this investigative effort. One sample will be collected from northeast of the North Campus building and one sample will be collected from southwest of the North Campus building. The samples will be collected at the same time as the crawl space samples. Background TO-15 samples will be collected using the same procedures used to collect crawl space vapor samples. 24-hour samples will be taken using a 6L summa canister. Background air sampling will begin approximately one hour

before any indoor air sampling is to commence. Background air sample locations will be surveyed per the procedures documented in Section 6.3.11 below.

Blind field duplicate samples will be collected at a rate of 1:10 samples collected for lab analysis. A summary of the vapor sampling and analytical requirements are presented in **Table 6-3**.

Table 6-3: Vapor Sampling and Analytical Requirements

Matrix	No. Field Samples	Analysis	Holding Time	Preservation Requirements	Sample Containers
Sub-Slab Soil Vapor Samples	Samples = 25 Blind Dups = 3 **Total No. of samples = Approx. 28**	EPA Method TO-15 (modified list detailed in Section 4.3)	30 days	None	1L Summa Canister
Crawl Space Air Samples	Samples = 6 Background ambient samples = 2 **Total No. of samples = Approx. 8**	EPA Method TO-15 (modified list detailed in Section 4.3)	30 days	None	6L Summa Canister

6.3.6 Surface Water Sampling Activities

Wenck proposes to collect six surface water samples from the County 14 Ditch (Lambert Creek) south of the North Campus building at the locations shown on **Figure 4**. The water samples will be collected from the north bank of the ditch using a dedicated disposable poly-bailer. One surface water sample will be collected from each location for chemical testing. The subcontracted laboratory will be directed to analyze the surface water samples for total lead by EPA Method 6020 and VOCs by EPA Method 8260.

Blind field duplicate samples will be collected at a rate of 1:10 samples collected for lab analysis. MS and MSD samples will be collected at a rate of 1:20 samples collected for analysis. Field blanks and Rinsate Blanks will also be collected at a rate of 1:20. Lab provided Trip Blanks will accompany each sample cooler with VOC samples.

A summary of the surface water sampling and analytical requirements are presented in **Table 6-4**.

Table 6-4: Surface Water Sampling and Analytical Requirements

Matrix	No. Field Samples	Analysis	Holding Time	Preservation Requirements	Sample Containers
Surface Water	Samples = 8 Blind Dups = 1 MS/MSD = 1 Field Blanks = 1 Trip Blanks = 1/cooler (lab-provided) **Total No. of samples = Approx. 11**	VOCs by EPA Method 8260B (modified list detailed in Section 4.3)	14 days	HCL, temperature <4 degrees Celsius	40 ml amber vial
Surface Water	Samples = 8 Blind Dups = 1 MS/MSD = 1 Field Blanks = 1 **Total No. of samples = Approx. 11**	Total Lead by EPA Method 6020	180 days	HNO_3	250 ml HDPE bottle

6.3.7 Sediment Sampling Activities

Wenck proposes to collect five sediment samples from the County 14 Ditch (Lambert Creek) south of the North Campus building at the locations shown on **Figure 4**. The sediment samples will be collected from the ditch bottom near the north bank of the ditch using a hand push-probe sampling device. One sediment sample will be collected from each location for chemical testing. Wenck proposes to collect three sediment samples; two at the pond inlets and one at the pond outlet for chemical testing. The subcontracted laboratory will be directed to analyze the sediment samples for total lead by EPA Method 6020 and VOCs by EPA Method 8260.

MS and MSD samples will be collected at a rate of 1:20 samples collected for analysis. Rinsate Blank samples will also be collected at a rate of 1:20. Lab provided Trip Blanks will accompany each sample cooler with VOC samples. A summary of the sediment sampling and analytical requirements are presented in **Table 6-4** below.

Table 6-5: Sediment Sampling and Analytical Requirements

Matrix	No. Field Samples	Analysis	Holding Time	Preservation Requirements	Sample Containers
Sediment	Samples = 5 MS/MSD = 1 Rinsate Blanks = 1 Trip Blanks = 1/cooler (lab-provided) **Total No. of samples = Approx. 7**	VOCs by EPA Method 8260B (modified list detailed in Section 4.3)	Extraction within 14 days of sample collection. Analysis within 40 days of extraction.	pH < 2, temperature <6 degrees Celsius	40 ml amber vial
Sediment	Samples = 5 MS/MSD = 1 Rinsate Blanks = 1 **Total No. of samples = Approx. 7**	Lead by EPA Method 6020	180 days	None	40 ml amber vial

6.3.8 Investigation-Derived Waste Management

Investigation Derived Waste in the form of drill soil cuttings and purge water will be collected and temporarily staged on-Site until characterized through analytical testing. Containers will be labeled and staged in a secure location until removal from the site. Once the waste streams have been characterized, they will be properly disposed of. Characterization of the Investigation-Derived Waste will be based in part on the analytical testing results from the investigation.

6.3.9 Utility Clearance

Minnesota State Statute 216D requires anyone who engages in excavation/subsurface activities to provide advance notice of at least 48 hours to underground utility operations affected by the subsurface work. Prior to performing the subsurface investigation, Gopher One (811) will be notified to identify any underground lines or structures in the vicinity of the Site. Any utility lines buried at the Site will be located by the appropriate utility company and indicated on the ground surface. Private underground utilities buried by the property owner will also need to be identified. Private utilities will be located by contracted service provider.

6.3.10 Quality Control

Quality control (QC) procedures are of prime importance to this investigation to ensure quality of the data collected, and thus the interpretations made from this data. The Wenck corporate QC program will be followed throughout the investigation, which mandates the use of industry-wide accepted procedures and practices during investigations. Laboratory results will be reviewed with respect to the laboratory's reported quality control (QC) results, including assessment of whether any observed deviations from QC criteria will affect the usability of the data for the intended purpose. Results for any field QC samples (e.g., field duplicates, field blanks, etc.) will also be assessed, if collected.

6.3.11 Surveying

Upon completion of remedial investigation activities, exterior investigation locations will be surveyed to a common Site datum as a reference. Vertical control (0.1-inch accuracy) and horizontal control (0.01-inch accuracy) will be established for reference with existing structures. Vertical measurements will be referenced to the National Geodetic Vertical Datum (NGVD) and longitude and latitude coordinates recorded. Interior sample locations will be surveyed using traditional staff and level technology. Horizontal locations will be established taking measurements from a minimum of two permanent structural features with a tape measure.

7.0 Field Documentation

The following sections describe the general field procedures to be used during the excavation activities performed at the site.

7.1 FIELD LOGBOOKS

Field logbooks will be hardbound with supplemental, water-resistant log sheets. Entries in the logbooks and supplemental log sheets will be written using indelible ink. The top of each page will include the project name and number, date, and page number. The bottom of each page in the book will include the time, initials of the person recording the entries, and sufficient detail so that the logic used in decision making during the project can be tracked through later review. During each day of project activity, information will be recorded in each field logbook including, but not limited to:

- Project Name
- Date/time
- Name and title of any personnel representatives onsite
- Purpose of the field activity
- Location of project activities
- Planned chronology of events during the day
- Information concerning any property access arrangements
- Information about any conversations with facility staff
- Weather conditions and air temperature
- General field observations
- Date and time of sample collection
- Notes related to QC samples (i.e., blind duplicate)
- Sample Identification (I.D.) number(s) and location information
- Sample transportation information, including the name of the laboratory and courier (if applicable)
- Information on any deviations from the approved work plans, including methodology and sample collection
- Summary of daily tasks and documentation on any scope of work changes required by field conditions
- Printed name, signature and date on the bottom of each logbook page

7.2 PHOTOGRAPHIC RECORDS

Digital photography will be conducted during the field activities. Digital photography will be numbered and cataloged in the field notebook to include a description of the scene, site area, date, and time. Selected digital photographs will be incorporated in the Remedial Investigation Report. A photographic log will be maintained in the field notebook to identify the location and subject of each photograph. The photographer will review the photographs and compare them to the photographic log to confirm the log and photographs match on a daily basis.

7.3 SAMPLE DOCUMENTATION

7.3.1 Sample Numbering System

The field sample numbering system will follow the MPCA's Location Unique Identifiers (LUIs) protocol. Sample numbers will be generated prior to implementing field sampling activities using the MPCA's Remediation LUI Generator.

Trip blanks, equipment rinsate blanks, and field duplicates use consecutive sample numbers (NN) just like any other environmental sample. The location of the blind duplicate will be noted in the log book.

Samples that are collected as blind field duplicates will be collected, numbered, packaged, and sealed in the same manner as other samples and submitted "blind" to the laboratory.

7.3.2 Sample Labels and/or Tags

Labels will be affixed to all sample containers during sampling activities. Information will be recorded on each sample container label at the time of sample collection. The information to be recorded on the sample container labels will be as follows:

- A unique sample number with consistent format (see below)
- Sample matrix
- Date
- Time
- Parameters to be analyzed
- Preservative (if any)
- Site ID
- Sampler's initials

Labels will be secured to the bottle and will be completed in indelible ink.

7.3.3 Chain-of-Custody Records

Field personnel are responsible for sample custody from the time of collection until the time of sample shipment. Samples must be kept in the secure possession of the sampler, meaning that they are either within sight of the sampler, in the sampler's secure vehicle, or within the secure office of the sampling firm. The chain-of-custody (CoC) procedures implemented for the project will provide documentation of the handling of each sample from the time of collection until completion of laboratory analysis. The CoC form serves as a legal record of possession of the sample. A sample is considered to be "in custody" if one or more of the following criteria is met:

- The sample is in the sampler's possession.
- The sample is in the sampler's view after being in possession.
- The sample was in the sampler's possession and then was placed into a locked area to prevent tampering.
- The sample is in a designated secure area.

Custody will be documented throughout the project field sampling activities by the CoC form initiated for each day during which samples are collected. This record will accompany the samples from the site to the laboratory and will be returned to the Wenck PM with the

final analytical report. All personnel with sample custody responsibilities will be required to sign, date, and note the time on the CoC form when relinquishing samples from their immediate custody (except in the case where samples are placed into designated secure areas for temporary storage prior to shipment). Bills of lading or air-bills will be used as custody documentation during times when the samples are being shipped from the site to the laboratory, and they will be retained as part of the permanent sample custody documentation.

CoC forms will be used to document the integrity of all samples collected. To maintain a record of sample collection, transfer between personnel, shipment, and receipt by the laboratory, CoC forms will be filled out for sample sets as determined appropriate during the course of fieldwork. An example of the CoC form to be used for the project is included in **Appendix F**.

The following procedures for chain-of-custody forms will be followed:

- Chain of custody forms will be Test America standard forms (see attached example).
- Chain of custody forms will include the project name or number, signature of sampler, receiving laboratory, sample ID numbers, date and time of collection, sample location, number of containers, analyses requested, sample matrix, and custody transfer signatures, including the name of the shipping company. Signature of personnel from the shipping company is not required. The shipping bill number will be recorded on the chain of custody form.
- One chain of custody form will be supplied in each cooler.
- Chain of custody forms will be completed in ink.
- Mistakes will be lined out with a single line and initialed and dated.
- Entries will be sequentially numbered.
- Repetitive entries made in the same column may be simplified with a continuous vertical arrow between the first entry and the next different entry. A "ditto" or quotation marks indicating repetitive information will not be used.
- Multiple chain of custody forms for a single shipment will be consecutively numbered using the "Page ___ of ___" designation.
- At least one copy of the chain of custody form will be filed with the sampling firm for tracking and laboratory communication purposes.

The individual responsible for shipping the samples from the field to the laboratory will be responsible for completing the CoC form and noting the date and time of shipment. This individual will also inspect the form for completeness and accuracy. After the form has been inspected and determined to be complete, the responsible individual will sign, date, and note the time of transfer on the form. For commercial couriers, the CoC form will be placed in a sealable plastic bag and placed inside the cooler used for sample transport after the field copy of the form has been detached. In this case the laboratory will retain a copy of the shipping bill as proof of custody during transit. For laboratory couriers, the CoC form will be placed in a sealable plastic bag on the top of the cooler for the courier to accept custody. The field copy of the form will be appropriately filed and kept at the site for the duration of the site activities.

In addition to the CoC form, CoC seals will also be placed on each cooler used for sample transport. These seals will consist of a tamper proof adhesive material placed across the lid and body of the coolers in such a manner that if the cooler is opened, the seals will be broken. The CoC seals will be used to ensure that no sample tampering occurs between the

time the samples are placed into the coolers and the time the coolers are opened for analysis at the laboratory. Cooler custody seals will be signed and dated by the individual responsible for completing the CoC form contained within the cooler.

7.4 DOCUMENTATION PROCEDURES/DATA MANAGEMENT AND RETENTION

Field documentation from logbooks, data collection sheets, digital photography, email correspondence, and CoC forms will comprise the bulk of the field documentation associated with the sampling and remediation at the site. Hard copy field data will be reproduced for backup and scanned for inclusion in the project.

The analytical laboratory will provide data as final analytical reports using a pdf format. The report will include all the report requirements of Minn. Rules Part 4740 and the details appear in Section C.2.3 of the MPCA's 2014 Site Assessment QAPP. All final lab reports will be reviewed and approved by the laboratory's technical QA/QC and project management staff. All data will be provided to Wenck electronically in the MPCA-developed EQuIS format. This format can be found at the following EarthSoft web page - http://www.earthsoft.com/?s=Lab_MN.

The Wenck QA Manager and Risk Assessor are charged with tracking the reporting of analytical data and sample coordinates and tracks the external analytical data validation. The Wenck QA Manager and Risk Assessor will also track and manage the updating and storage of all analytical data tables generated during the preparation of the RI Report.

Digital data files are stored on a network drive at Wenck's Maple Plain, Minnesota office. The network servers are backed up daily, then replicated to the Cloud for indefinite storage. Data stored electronically by Wenck will be retrievable from the Cloud indefinitely.

8.0 Sample Packaging and Shipping Requirements

The subcontracted laboratories will provide all sample containers. Preparation certification and lot numbers will accompany all sample containers delivered to the site from the vendors. The following procedures will be followed for samples that will be analyzed by subcontracted laboratories:

- Each lab-provided sample cooler will be wiped clean of all debris and water.
- Sample collection points, depth increments, and sampling devices documented in the field logbooks will be verified with the information written on the sample label and CoC form.
- Glass sample containers will be wrapped with plastic insulating material (bubble wrap) to prevent contact with other sample containers or the inner walls of the cooler. Samples will be placed into re-sealable plastic bags.
- Samples will be packaged in thermally insulated, rigid coolers, according to DOT specifications 173 Subparts A and B and 172 Subparts B, C, and D. Environmental samples and field QC blanks to be submitted to the analytical laboratory will be placed in a sample cooler along with ice and temperature blanks, and the final cooler temperature will be recorded. After a cooler is filled, the appropriate CoC form will be placed inside a re-sealable plastic bag and taped to the inside lid of the cooler, and the outer surface of the cooler will be cleaned.
- Coolers will be secured with at least two cooler custody seals and covered with clear plastic packing tape.
- Each cooler will be taped and sealed shut with clear plastic packing tape around each end of the cooler.
- Each cooler will either be hand delivered to the laboratory or be picked up by a laboratory courier the day of collection.

Sample preparation and packaging will be completed at the end of each day that samples are collected. If samples are collected during the weekend, the samples will undergo normal preparation and will be kept within a cooler, on ice, until all samples have been collected during the weekend. On the following Monday, the iced samples will be delivered to the laboratory. Samples held over the weekend will be checked once in the morning and once in the evening to ensure that they kept at proper temperature and have sufficient ice.

9.0 Contractor Quality Control

9.1 GENERAL

The Wenck Corporate QA/QC program is in place to ensure that sampling and analytical activities and the resulting chemical parameter measurement data comply with the data quality objectives (DQOs) and the requirements of the project work plan. The Wenck PM and Wenck QA Manager are responsible for the preparatory, initial, and follow-up phases of the project. Tasks subject to inspection consist of the review of planning documents, oversight of field and laboratory activities, oversight of data analysis and assessment, and oversight of report preparation. The PM or Technical Lead may, at any time, conduct a field or laboratory audit to ensure that proper protocols are being applied.

9.2 PRE-PROJECT MEETING

The Wenck PM and Technical Lead will conduct a pre-project meeting prior to initiating any field work associated with the project. The meeting will include a review of all work requirements, a physical examination of all required materials and equipment, an examination of work areas to ascertain completion of all preliminary work, and a demonstration of all field activities. The Wenck PM or the Technical Lead/QA Manager must conduct additional meetings with sampling or technical personnel arriving onsite during the work effort prior to their beginning work. Prior to the pre-project meeting, field personnel will have reviewed in detail the project work plan prior to the inspection and will participate in a discussion of all pertinent sections of these plans and/or specifications during the meeting. Project plans (Work Plan and SSHP) will be present onsite. Materials to be accumulated during the preparatory phase will consist of the items listed below:

- Site maps
- Sample summary tables, correlating field samples to field control samples
- Field instrument calibration tables
- Laboratory information, including name, address, telephone number, POC, and turnaround time for the analyses, instructions for laboratory on requirements for sample procedures
- Field logbooks
- Field file box or equivalent to store field documentation
- Indelible ink pens
- Field instrumentation pertinent to the project
- Instrument operating manuals
- Established procedures or contracts for instrument repair
- PPE (e.g., nitrile gloves)
- Supplies for soil sampling (i.e., stainless steel spade, Alconox, decontamination wash bucket, decontamination rinse bucket)
- Drum for storage of IDW
- Plastic bags
- Stainless steel bowls and spoons
- Sample CoC forms
- Sample shipping documents
- Sample containers of the types to be used for each test or chemical analysis planned for all environmental samples and any QC samples
- Labels for sample containers

- Sample cooler custody seals
- Sample shipping coolers
- Clear tape

The Wenck PM or QA Manager will review pertinent sections of the plans and specifications during the meeting in order to ensure that all field personnel understand the overall project DQOs as well as any specific sampling and analysis requirements. Field instruments should be calibrated during the meeting using certified calibration standards. Frequency and contents of data reporting requirements will be discussed. The sampling team will demonstrate in detail how each type of sample will be collected, using the intended sample containers, sampling equipment, decontamination, and sample handling procedures. Equipment decontamination procedures will be reviewed in detail using the proper decontamination solutions in accordance with the project work plan. The area designated for decontamination will be identified.

The sample numbering system, sample labeling, and sample shipment documentation requirements will be discussed during the meeting. Laboratory address and contact information will be also be discussed. Analytical test methods, sample hold times per method, sample turnaround times and sample preservation requirements will be fully discussed. The items detailed in this section will be documented in the meeting minutes.

9.3 PROJECT INSPECTION

A project inspection will be conducted for each definable field task. The Wenck PM will provide direction and oversight for all project subtasks and will review the work for compliance with contract requirements. Oversight will ensure that initial and ongoing instrument calibrations are observed, verified, and documented. Field notes will be reviewed to ensure that all pertinent data are recorded in accordance with the requirements discussed in Section 7.0.

The packaging, shipping and overall handling of the samples will be inspected daily by the Field Technician (FT). Individual sample labels and CoC forms will be inspected for accuracy, completeness, and consistency. The FT will document each day of sampling in the project field book.

9.4 FOLLOW-UP INSPECTIONS

Follow-up inspections will be conducted as needed to ensure continued compliance with contract requirements until completion of each project task. Procedures and documentation will be checked periodically to ensure they are complete, accurate, and consistently applied throughout the duration of the project. Inspections will include a review of any field data and the daily calibration log of all instruments being used. The Wenck PM, and QA Manager may, at any time, conduct a field audit to ensure that proper protocols are being applied.

The subcontractor laboratory for the project is Eurofins TestAmerica. Laboratory audits (internal) will be conducted by the Eurofins TestAmerica Quality Manager (or designee) on an annual basis (minimum). Throughout the project, Wenck will submit blind performance samples along with project samples to a designated laboratory for analysis. The analytical results of these single-blind performance samples are evaluated to ensure that the laboratory maintains acceptable performance.

10.0 Nonconformance/Corrective Actions

10.1 GENERAL

Discovery and resolution of a nonconformance with project procedures or other problem discovered during the implementation of project activities will be noted in the FT's logbook. Possible discrepancies or problems could include, but are not limited to: improper sampling procedures, improper instrument calibration procedures, incomplete or improper sample preservation, and problems with samples upon receipt at the laboratory.

10.2 FIELD SAMPLING

The Wenck PM will be responsible for implementation and monitoring of the project work plan procedures. In the event of improper sampling procedures, the Wenck PM will:

1. Communicate to the sampling crew to immediately comply with the project work plan;
2. Document the discrepancy from proper sampling procedures and the reasons for the discrepancy; and
3. Re-collect samples, if necessary, using the proper sampling procedures.

Improper sampling procedures and any corrective action will be documented in the field book.

Field instruments will be calibrated using manufacturer's criteria as documented in the instrument manual. Instrument calibrations will be recorded daily by the project staff conducting the calibrations. Any instrument problems will be reported immediately to the Wenck PM for resolution. The FT will arrange to either attempt recalibration of the instrument or replace defective instruments with instruments in proper working condition. Improper instrument calibration and any corrective action will be documented in the field book.

Sample preservation procedures in the field will be supervised by the FT. Sampling containers that have been prepared by the laboratories will be inspected by the FT. The laboratory will relay problems with the samples to the FT in the field. In the event of discrepancies between the CoC form and the sample labels, the FT will resolve the problem. Broken sample containers or samples that are listed on the CoC forms and are not in the cooler will be replaced, if necessary, by the sampling crew. The FTL will documents in the project's field notebook. Any other deviations from the project work plan will be reported initially to the Wenck PM.

10.3 LABORATORY

Corrective actions may be required for analytical/equipment problems and noncompliance with criteria. Analytical and equipment problems may occur during sampling, sample handling, sample preparation, laboratory instrumental analysis, and data review.

Laboratory QA plans will provide systematic procedures to identify out-of-control situations and document corrective actions. Corrective actions will be implemented to resolve problems and restore malfunctioning analytical systems. In general, corrective action

procedures often are handled at the bench level by the analyst who reviews the preparation or extraction procedure for possible errors and checks such factors as instrument calibration, spike and calibration mixes, and instrument sensitivity. If the problem persists or cannot be identified, the matter is referred to the Laboratory Supervisor, Manager, and/or QA Department for further investigation. When resolved, full documentation of the corrective action procedure is filed with project records and the laboratory QA Department, and the information is summarized within case narratives.

11.0 Standard of Care

The standard of care for all professional services performed by Wenck and presented within this report is the care, skill, and diligence used by members of the consulting services profession practicing under similar circumstances at the same time and in the same locality. Wenck makes no warranties, express or implied, with respect to this report or otherwise, in connection with Wenck's services.

Report prepared by:

Shane Waterman, PG (MN)
Principal

Report reviewed by:

Chris Bratsch
Senior Environmental Engineer

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Minnesota Pollution Control Agency. October 10, 2012. *AST Notification of Installation or Change in Status Form*.

Minnesota Pollution Control Agency. October 2017. *Best Management Practices for Vapor Investigation and Building Mitigation Decisions. C-rem3-06e*

American Engineering Testing. April 25, 2018. Minnesota Department of Health Well and Boring Sealing Record, Minnesota Well and Boring Sealing No. H355975.

American Engineering and Testing. May 16, 2018. *Report of Geotechnical Exploration, Die Cast Machine Foundation, Water Gremlin Company, 4400 Otter Lake Road, White Bear Township, Minnesota*.

Wenck Associates, Inc. April 2019. *Phase I Environmental Site Assessment, Water Gremlin Company, 4400 Otter Lake Road, White Bear Lake Township, MN 55110.*

Figures

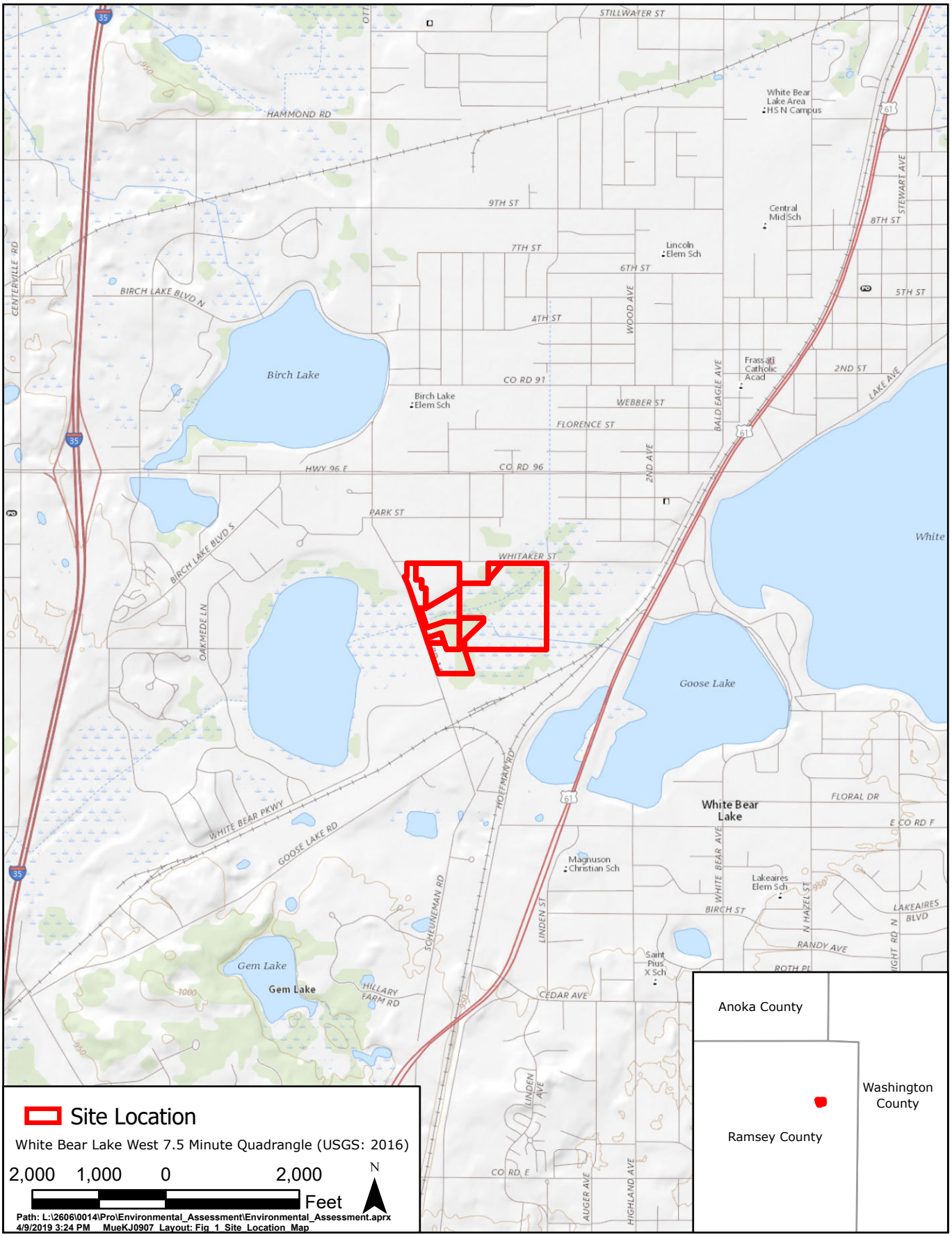
Figure 1 – Site Location Map

Figure 2 – Parcel Map

Figure 3 – Current Site Conditions Map

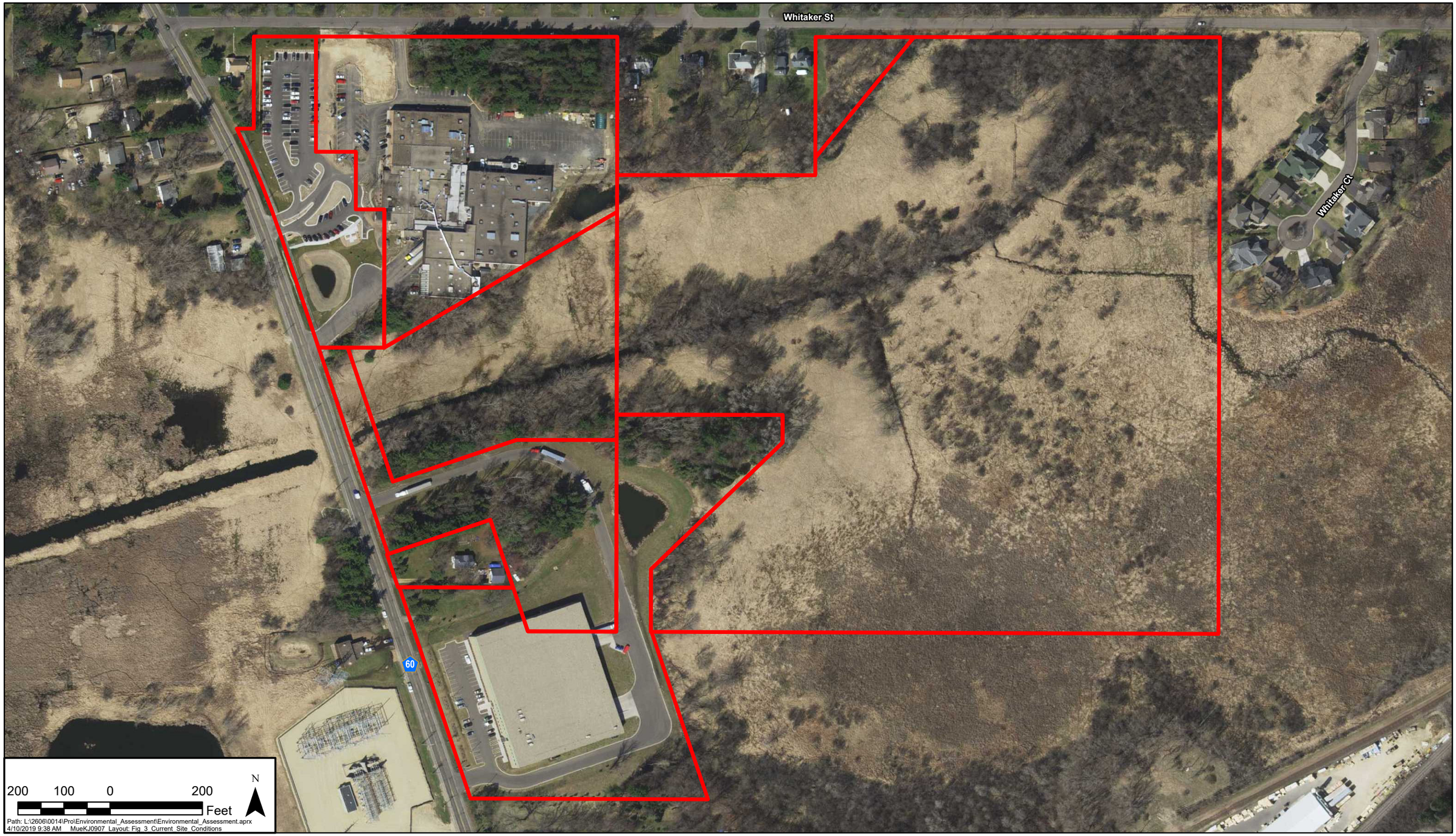
Figure 4 – Proposed Remedial Investigation Map

Figure 5 – Sub-Slab and Crawl Space Vapor Samples



WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	APR 2019
Site Location Map		Figure 1

WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	APR 2019
Parcel Map		Figure 2



WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	APR 2019
Current Site Conditions Map		Figure 3

WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	MAY 2019
Proposed Remedial Investigation Map		Figure 4

WATER GREMLIN COMPANY	WENCK Responsive partner. Exceptional outcomes.	APR 2019
Sub-Slab & Crawl Space Vapor Samples		Figure 5

Appendix A

Excerpts from Previous Environmental Reports

BRAUN[SM]
INTERTEC

Braun Intertec Corporation
1345 Northland Drive
Mendota Heights, Minnesota 55120-1141
612-683-8700 Fax: 683-8888

Engineers and Scientists Serving the Built and Natural Environments®

November 28, 1994

Project No. CMXX-94-0708

Mr. Tony Pauletti
Water Gremlin Company
1610 Whitaker Ave.
White Bear Lake, Minnesota 55110

Dear Mr. Pauletti:

Re: Environmental Soils Evaluation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.

In accordance with your authorization, Braun Intertec Corporation (Braun Intertec) conducted an environmental soils evaluation at the referenced location. The objective of this evaluation was to evaluate the concentration of lead in the soils in the drum storage area and landfilled areas in accordance with the general work scope requested by Ramsey County.

For a complete discussion of our evaluation, please refer to the attached Environmental Soils Evaluation Report.

We appreciate the opportunity to provide professional services to you for this project. If you have any questions or comments regarding this letter or the attached report, please call Tony LaBarre at (612) 683-8729 or Jon Carlson at (612) 683-8760.

Sincerely,

Anthony R. LaBarre
Geologist/Project Manager

Jon A. Carlson, CHMM
Supervisor, Environmental Site Assessments

Attachment: Environmental Soils Evaluation Report

f:\wpfiles\cmxx\94\0708\0708.r01

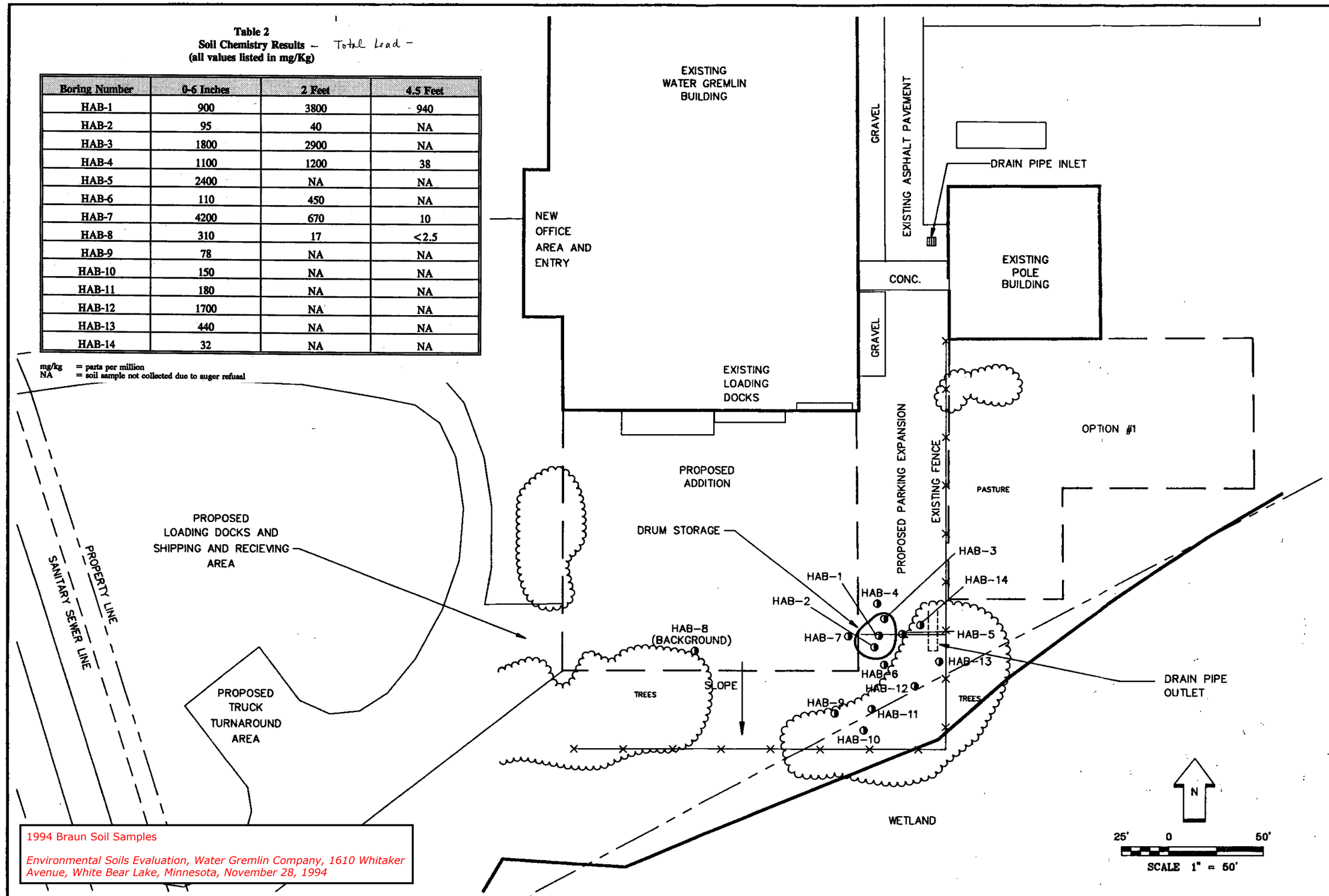
RECEIVED
JAN 0 4 95
Water
Div

Ground Water & Solid Waste Division
Site Response Section
Site Name
Category
Subcategory
Initials

Table 2
Soil Chemistry Results – Total Lead –
(all values listed in mg/Kg)

Boring Number	0-6 Inches	2 Feet	4.5 Feet
HAB-1	900	3800	940
HAB-2	95	40	NA
HAB-3	1800	2900	NA
HAB-4	1100	1200	38
HAB-5	2400	NA	NA
HAB-6	110	450	NA
HAB-7	4200	670	10
HAB-8	310	17	<2.5
HAB-9	78	NA	NA
HAB-10	150	NA	NA
HAB-11	180	NA	NA
HAB-12	1700	NA	NA
HAB-13	440	NA	NA
HAB-14	32	NA	NA

mg/kg = parts per million
NA = soil sample not collected due to auger refusal



1994 Braun Soil Samples

Environmental Soils Evaluation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, November 28, 1994

BRAUN INTERTEC

EXISTING SOIL BORING LOCATION MAP
ENVIRONMENTAL SOILS ASSESSMENT
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT		DATE
DRAWN BY:	LOL	11-15-94
APP'D BY:	ARL	11-15-94
JOB No.	CMXX-94-0708	
DWG. No.	MX40708C	SHEET 2 OF 2
SCALE	1" = 50'	

FIGURE NO. 2

BRAUN[SM]
INTERTEC

Soil Excavation Observations and Documentation Report

Water Gremlin Company
1610 Whitaker Avenue
White Bear Lake, Minnesota

Prepared For

Water Gremlin Company

Project Number CMXX-95-0401
September 26, 1995

Braun Intertec Corporation

Engineers and Scientists Serving the Built and Natural Environments

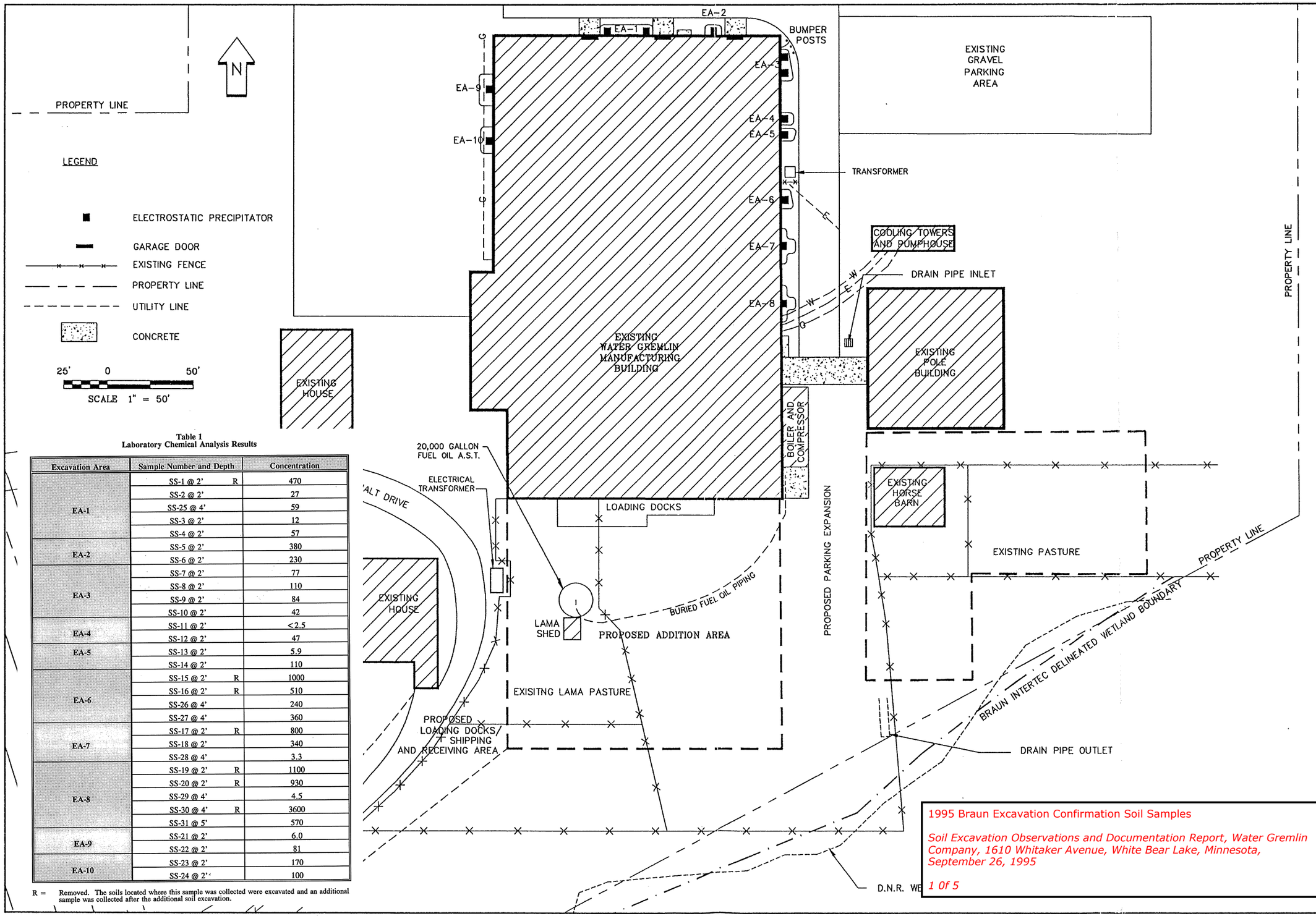


Table 1
Laboratory Chemical Analysis Results

Excavation Area	Sample Number and Depth		Concentration
EA-1	SS-1 @ 2'	R	470
	SS-2 @ 2'		27
	SS-25 @ 4'		59
	SS-3 @ 2'		12
	SS-4 @ 2'		57
EA-2	SS-5 @ 2'		380
	SS-6 @ 2'		230
EA-3	SS-7 @ 2'		77
	SS-8 @ 2'		110
	SS-9 @ 2'		84
	SS-10 @ 2'		42
EA-4	SS-11 @ 2'		<2.5
	SS-12 @ 2'		47
EA-5	SS-13 @ 2'		5.9
	SS-14 @ 2'		110
EA-6	SS-15 @ 2'	R	1000
	SS-16 @ 2'	R	510
	SS-26 @ 4'		240
	SS-27 @ 4'		360
EA-7	SS-17 @ 2'	R	800
	SS-18 @ 2'		340
	SS-28 @ 4'		3.3
EA-8	SS-19 @ 2'	R	1100
	SS-20 @ 2'	R	930
	SS-29 @ 4'		4.5
	SS-30 @ 4'	R	3600
	SS-31 @ 5'		570
EA-9	SS-21 @ 2'		6.0
	SS-22 @ 2'		81
EA-10	SS-23 @ 2'		170
	SS-24 @ 2'		100

R = Removed. The soils located where this sample was collected were excavated and an additional sample was collected after the additional soil excavation.

1995 Braun Excavation Confirmation Soil Samples

Soil Excavation Observations and Documentation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, September 26, 1995

1 Of 5

BRAUN INTERTEC

ELECTROSTATIC PRECIPITATOR LOCATION MAP
ENVIRONMENTAL SOILS ASSESSMENT
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

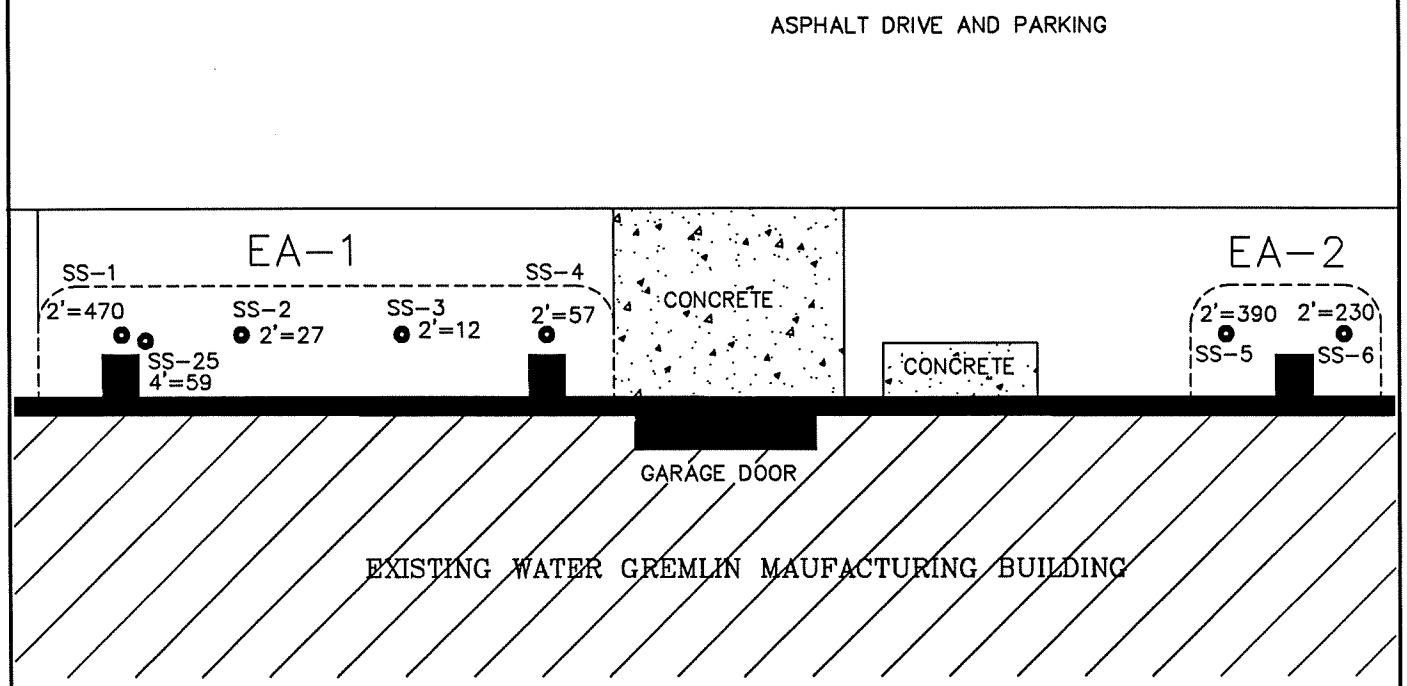
INT	DATE
DRAWN BY: LOL	09-18-95
APP'D BY: ARL	09-19-95
JOB No. CMXX-95-0591	
DWG. No. MX40708	SHEET 1 OF 1
SCALE NONE	

FIGURE NO.

1995 Braun Excavation Confirmation Soil Samples

Soil Excavation Observations and Documentation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, September 26, 1995

2 0f 5



LEGEND

⊙	SOIL SAMPLE LOCATION
■	ELECTROSTATIC PRECIPITATOR
2'=140	SOIL SAMPLE DEPTH AND TOTAL LEAD CONCENTRATION (IN PARTS PER MILLION)
▭	EXTENT OF EXCAVATION AREA

N

5' 0 10'

SCALE 1" = 10'

BRAUN INTERTEC

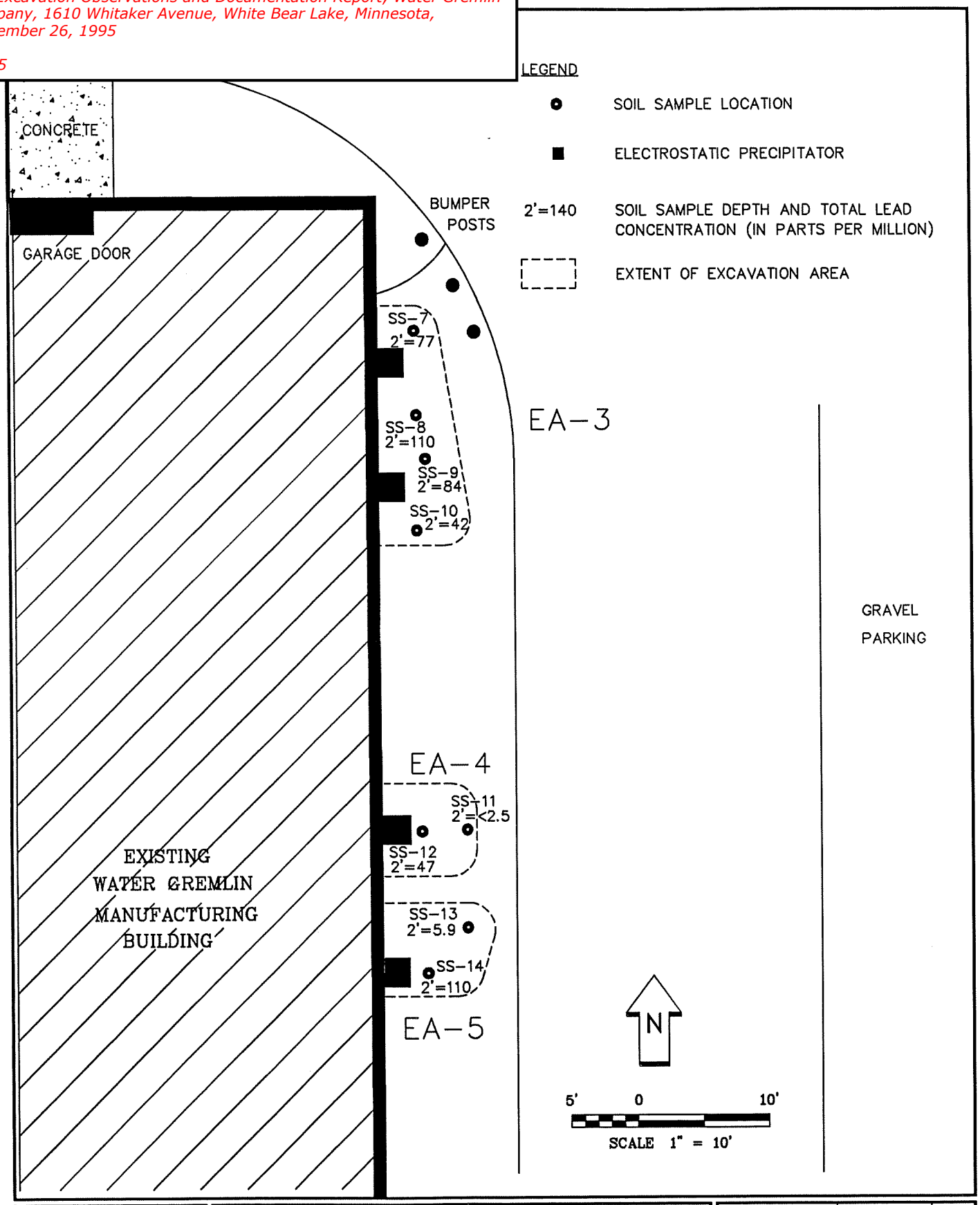
SOIL SAMPLING LOCATIONS MAP
ELECTROSTATIC PRECIPITATOR SOIL REMOVAL
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	REVISION	SHEET
DRAWN BY: LOL	09-15-95	1
APP'D BY: ARL	09-28-95	OF
JOB NO. CMXX-95-0401		1
DWG. NO. MX40708A		FIGURE NO.
SCALE 1" = 10'		3

1995 Braun Excavation Confirmation Soil Samples

Soil Excavation Observations and Documentation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, September 26, 1995

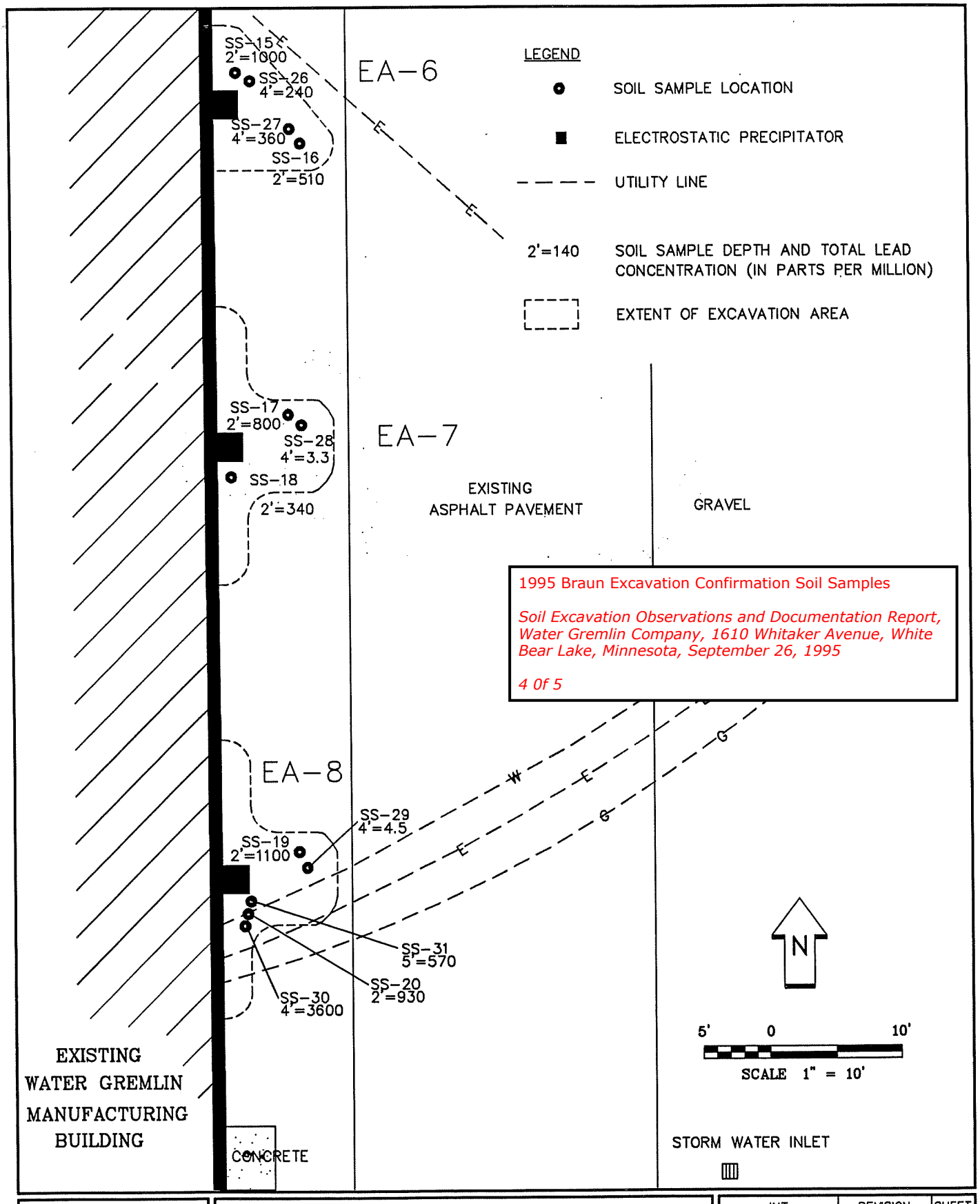
3 0f 5



BRAUN INTERTEC

SOIL SAMPLING LOCATIONS MAP
ELECTROSTATIC PRECIPITATOR SOIL REMOVAL
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	REVISION	SHEET
DRAWN BY: LOL	09-15-95	1
APP'D BY: ARL	09-28-95	OF
JOB NO. CMXX-95-0401		1
DWG. NO. MX40708A		FIGURE NO.
SCALE 1" = 10'		4



1995 Braun Excavation Confirmation Soil Samples

Soil Excavation Observations and Documentation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, September 26, 1995

4 0f 5

BRAUN™ INTERTEC

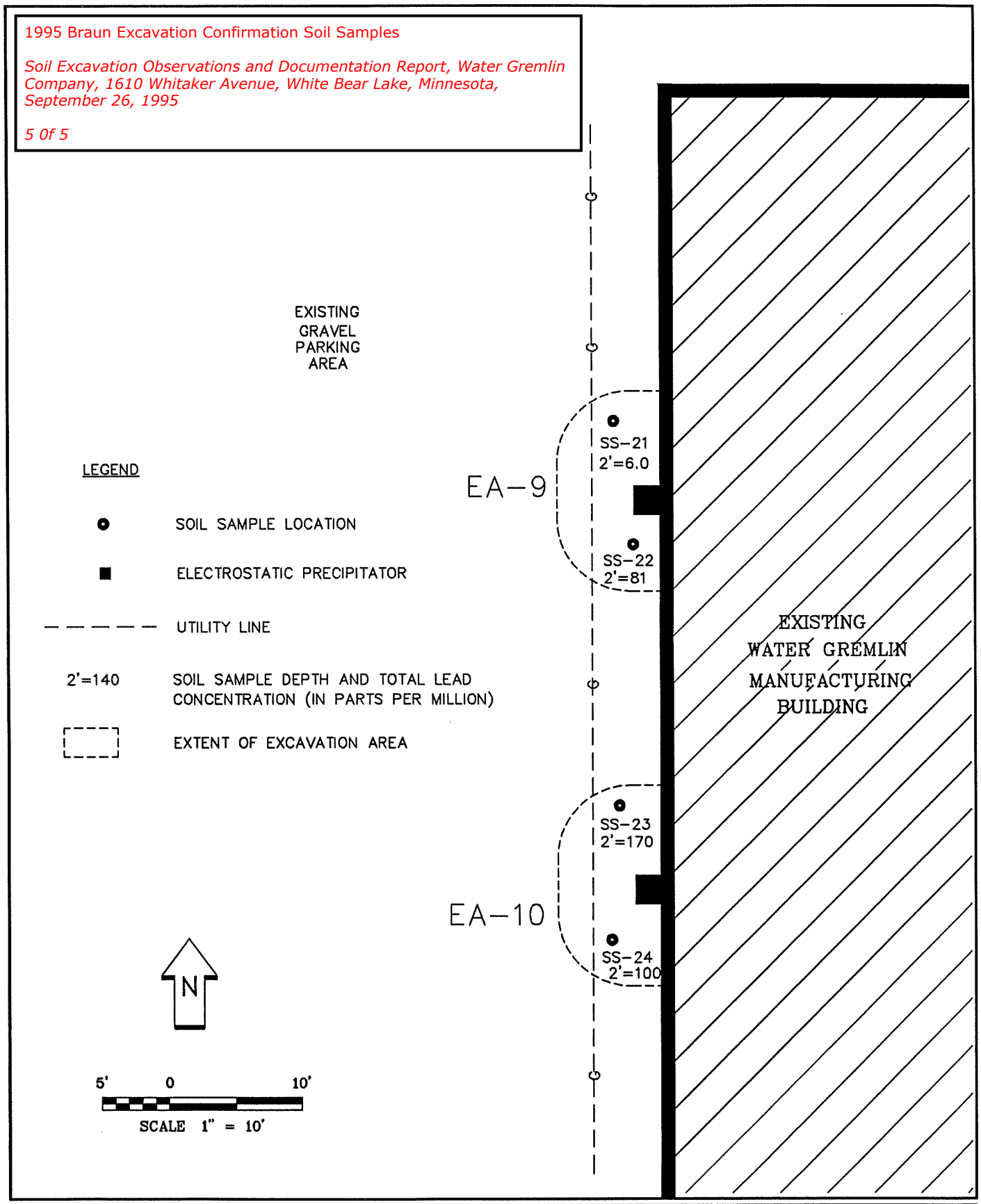
SOIL SAMPLING LOCATIONS MAP
ELECTROSTATIC PRECIPITATOR SOIL REMOVAL
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	REVISION	SHEET
DRAWN BY: LOL	09-15-95	1
APP'D BY: ARL	09-28-95	OF
JOB NO. CMXX-95-0401		1
DWG. NO. MX40708A		FIGURE NO.
SCALE 1" = 10'		5

1995 Braun Excavation Confirmation Soil Samples

Soil Excavation Observations and Documentation Report, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, September 26, 1995

5 0f 5



BRAUN INTERTEC

SOIL SAMPLING LOCATIONS MAP
ELECTROSTATIC PRECIPITATOR SOIL REMOVAL
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	REVISION	SHEET
DRAWN BY: LOL	09-15-95	1
APP'D BY: ARL	09-28-95	OF
JOB NO. CMXX-95-0401		1
DWG. NO. MX40708A		FIGURE NO.
SCALE 1" = 10'		6

BRAUN[SM]
INTERTEC

Phase II Environmental Site Assessment

Water Gremlin Company
1610 Whitaker Avenue
White Bear Lake, Minnesota

Prepared For

Water Gremlin Company

Project No. Number CMXX-95-0591
March 26, 1996

Braun Intertec Corporation

Engineers and Scientists Serving the Built and Natural Environments

1996 Braun Phase II Environmental Site Assessment

Phase II Environmental Site Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, March 26, 1996

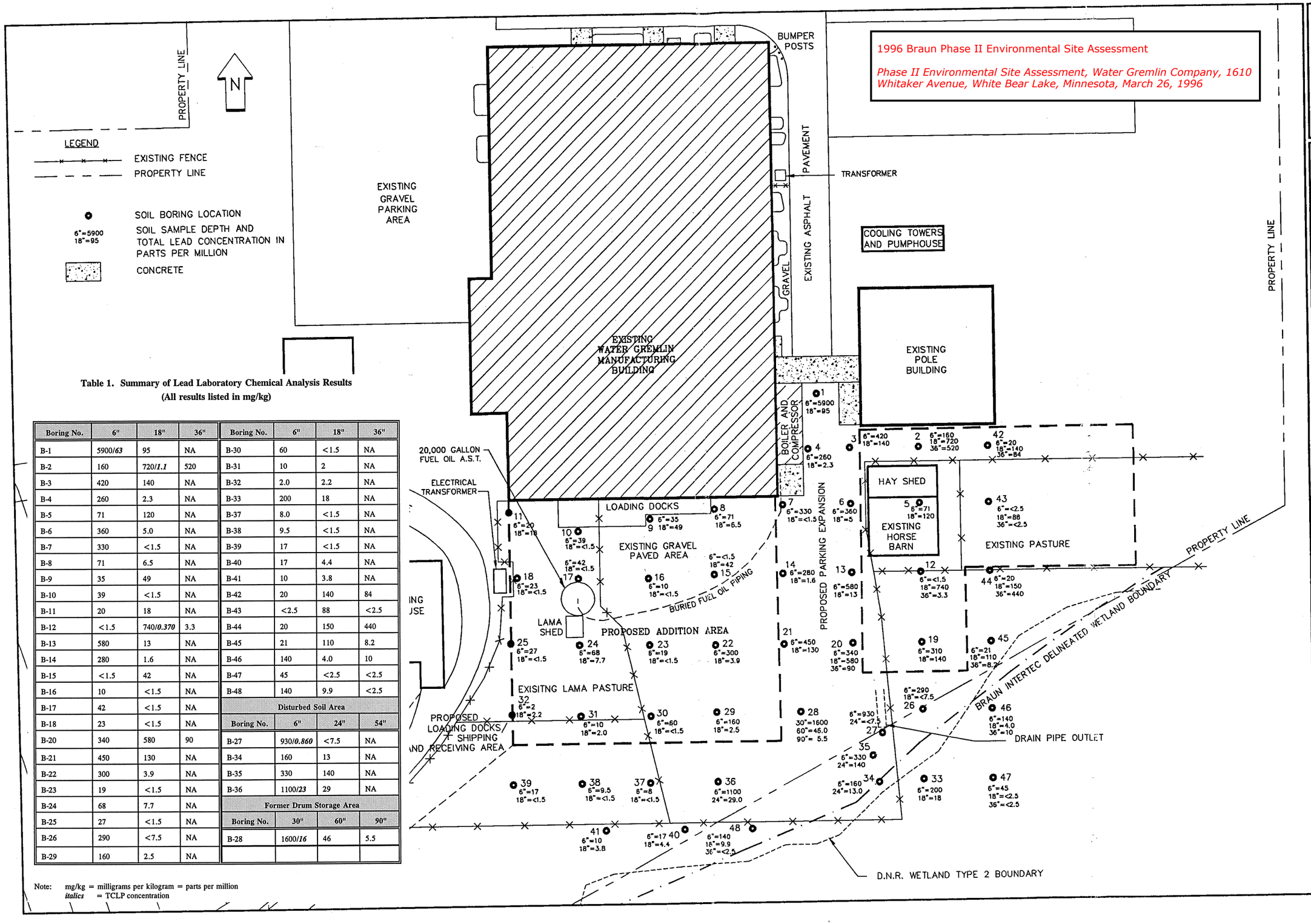


Table 1. Summary of Lead Laboratory Chemical Analysis Results
(All results listed in mg/kg)

Boring No.	6"	18"	36"
B-1	5900/*63*	95	NA
B-2	160	720/*1.1*	520
B-3	420	140	NA
B-4	260	2.3	NA
B-5	71	120	NA
B-6	360	5.0	NA
B-7	330	<1.5	NA
B-8	71	6.5	NA
B-9	35	49	NA
B-10	39	<1.5	NA
B-11	20	18	NA
B-12	<1.5	740/*0.370*	3.3
B-13	580	13	NA
B-14	280	1.6	NA
B-15	<1.5	42	NA
B-16	10	<1.5	NA
B-17	42	<1.5	NA
B-18	23	<1.5	NA
B-20	340	580	90
B-21	450	130	NA
B-22	300	3.9	NA
B-23	19	<1.5	NA
B-24	68	7.7	NA
B-25	27	<1.5	NA
B-26	290	<7.5	NA
B-29	160	2.5	NA

Boring No.	6"	18"	36"
B-30	60	<1.5	NA
B-31	10	2	NA
B-32	2.0	2.2	NA
B-33	200	18	NA
B-37	8.0	<1.5	NA
B-38	9.5	<1.5	NA
B-39	17	<1.5	NA
B-40	17	4.4	NA
B-41	10	3.8	NA
B-42	20	140	84
B-43	<2.5	88	<2.5
B-44	20	150	440
B-45	21	110	8.2
B-46	140	4.0	10
B-47	45	<2.5	<2.5
B-48	140	9.9	<2.5
Disturbed Soil Area			
Boring No.	**6"**	**24"**	**54"**
B-27	930/*0.860*	<7.5	NA
B-34	160	13	NA
B-35	330	140	NA
B-36	1100/*23*	29	NA
Former Drum Storage Area			
Boring No.	**30"**	**60"**	**90"**
B-28	1600/*16*	46	5.5

Note: mg/kg = milligrams per kilogram = parts per million
italics = TCLP concentration

BRAUN INTERTEC

SOIL BORING LOCATIONS AND TOTAL LEAD CONCENTRATIONS
PHASE II ESA
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	DATE
DRAWN BY: LOL	10-17-95
APP'D BY: ARL	10-18-95
JOB No. CMXX-95-0591	SHEET 1 OF 1
DWG. No. MX40708	
SCALE AS SHOWN	

FIGURE NO. 2

BRAUN SM
INTERTEC

Response Action Plan Implementation

Water Gremlin Company
1610 Whitaker Avenue
White Bear lake, Minnesota

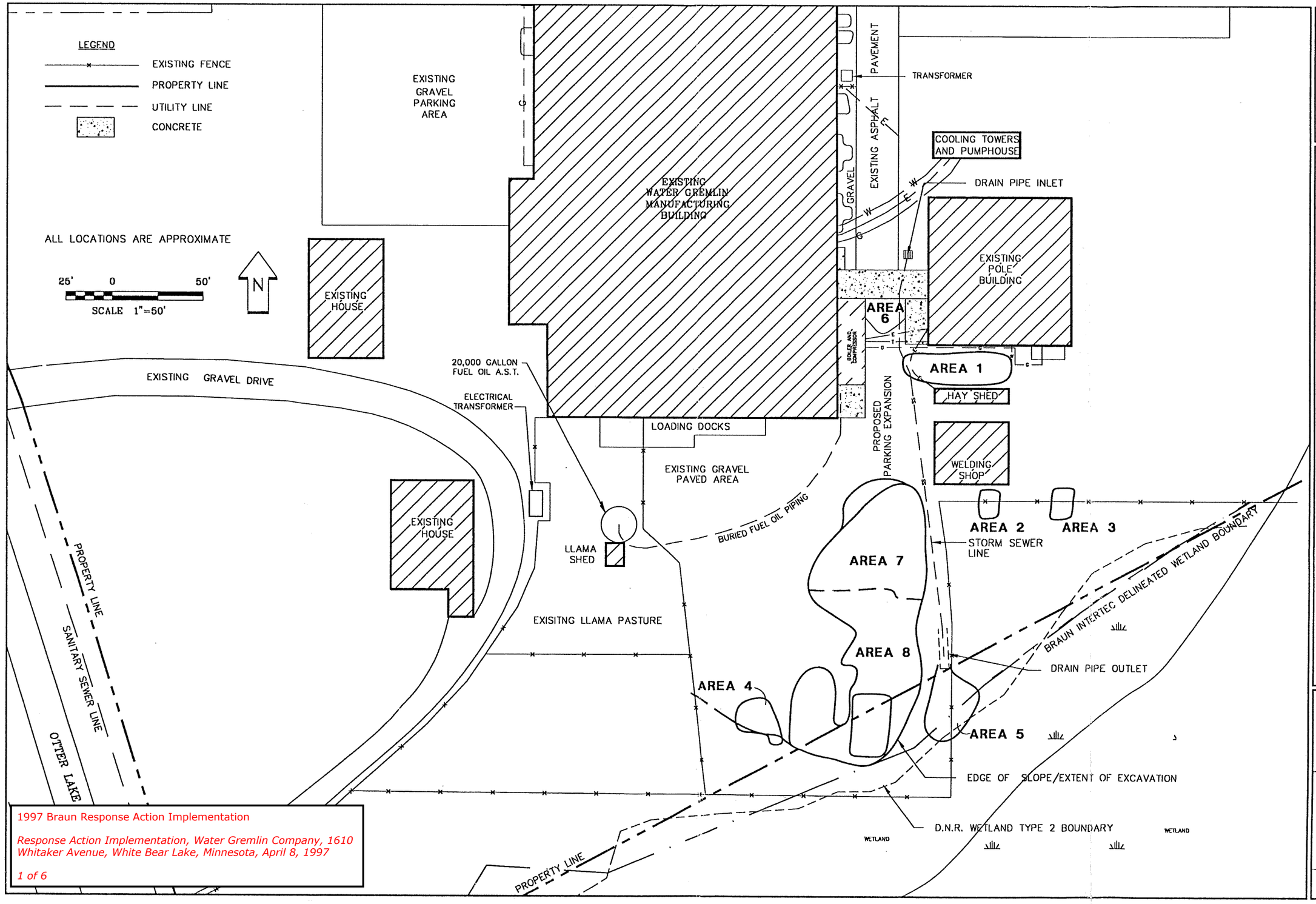
Prepared For

Water Gremlin Company

Project No. Number CMXX-95-0591
April 8, 1997

Braun Intertec Corporation

Engineers and Scientists Serving the Built and Natural Environments



1997 Braun Response Action Implementation

Response Action Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, April 8, 1997

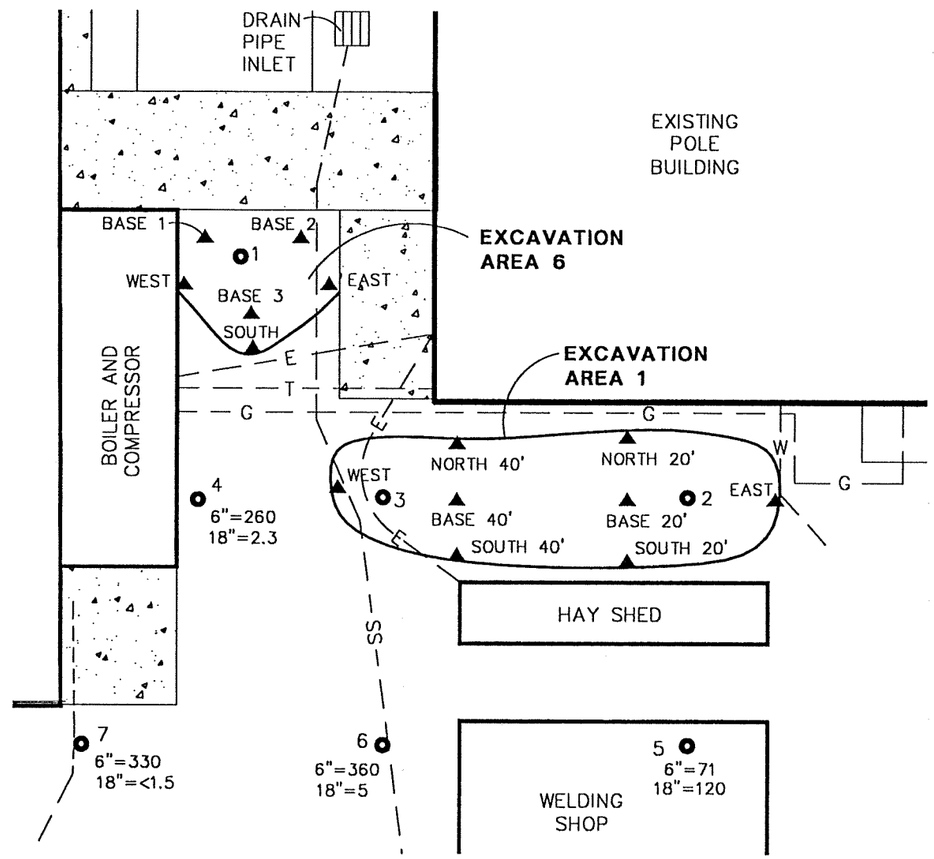
1 of 6

BRAUN INTERTEC

EXTENT OF EXCAVATION MAP
RAP IMPLEMENTATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

		DATE
INT		
DRAWN BY:	LOL	11-12-96
APP'D BY:	ARL	04-09-97
JOB No.	CMXX-95-0591	
DWG. No.	MX40708	SHEET OF
SCALE	1" = 50'	

FIGURE NO.



EXPLANATION

▲ APPROXIMATE SOIL SAMPLE LOCATION FOR XRF AND CHEMICAL ANALYSIS

43 APPROXIMATE LOCATION OF PREVIOUSLY COMPLETED SOIL BORING

6"=<2.5
18"=88
36"=<2.5
TOTAL LEAD CONCENTRATION IN ppm

— — — UNDERGROUND UTILITY LINE

N

10' 0 20'
SCALE 1"=20'

EXCAVATION AREA 1		
Sample Location	XRF Concentration	Laboratory Concentration
East Sidewall	25	36
West Sidewall	51	86
North Sidewall @ 20'	54	<6.5
North Sidewall @ 40'	30	13
South Sidewall @ 20'	11	<6.5
South Sidewall @ 40'	38	<6.5
Base @ 20'	16	10
Base @ 40'	29	6.5
R-1 @ 18"	428	460

EXCAVATION AREA 6			
Sample Location	XRF Concentration	Laboratory Concentration	Average Concentration
North	No Sample	No Sample (concrete)	--
South	404	580/1100 (utility lines)	694
East	340	1100/520 (storm drain)	653
West	21	13	--
Base-1	56	<6.5	--
Base-2	79	<6.5	--
Base-3	18	16	--

1997 Braun Response Action Implementation

Response Action Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, April 8, 1997

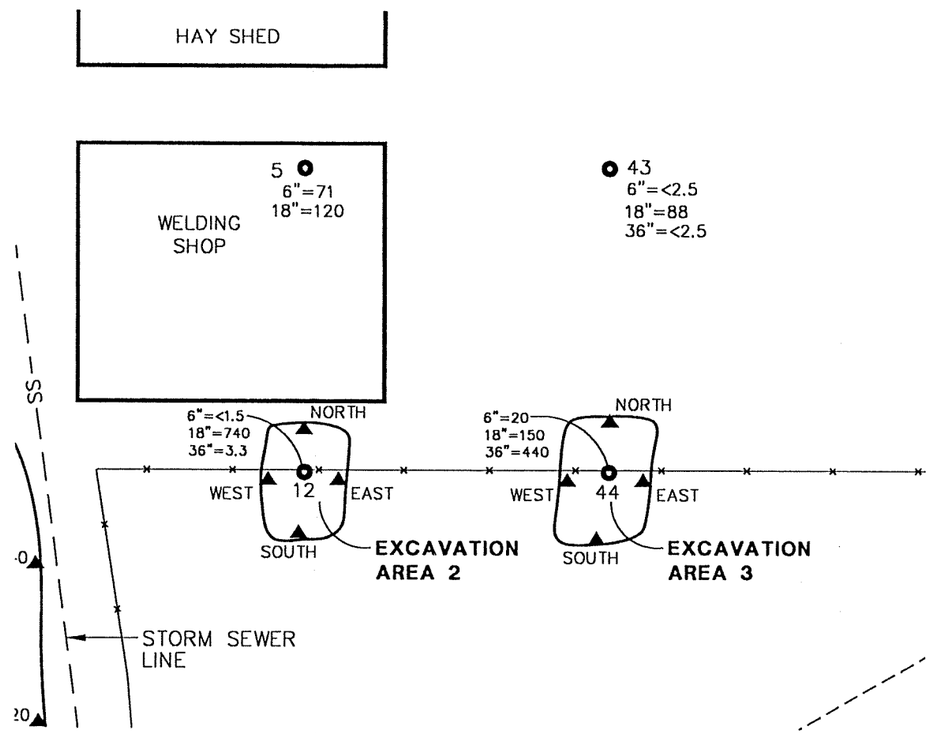
2 of 6

BRAUN INTERTEC

EXTENT OF EXCAVATION AREA 1 AND EXCAVATION AREA 6
RAP IMPLEMENTATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT		DATE
DRAWN BY:	GMG	11-13-96
APP'D BY:	ARL	04-08-97
JOB No.	CMXX-95-0591	SHEET OF
DWG. No.	MX40708	
SCALE	1"=20'	

FIGURE NO.



EXCAVATION AREA 2		
Sample Location	XRF Concentration	Laboratory Concentration
NORTH	60	<6.5
SOUTH	49	91
EAST	46	<6.5
WEST	95	440
BASE	6	<6.5

EXCAVATION AREA 3		
Sample Location	XRF Concentration	Laboratory Concentration
NORTH	6	<6.5
SOUTH	205	200
EAST	229	170
WEST	143	170
BASE	81	14

EXPLANATION

▲ APPROXIMATE SOIL SAMPLE LOCATION FOR XRF AND CHEMICAL ANALYSIS

43 APPROXIMATE LOCATION OF PREVIOUSLY COMPLETED SOIL BORING

6"=<2.5
18"=88
36"=<2.5
TOTAL LEAD CONCENTRATION IN ppm

— — — UNDERGROUND UTILITY LINE

N

10' 0 20'
SCALE 1"=20'

1997 Braun Response Action Implementation

Response Action Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, April 8, 1997

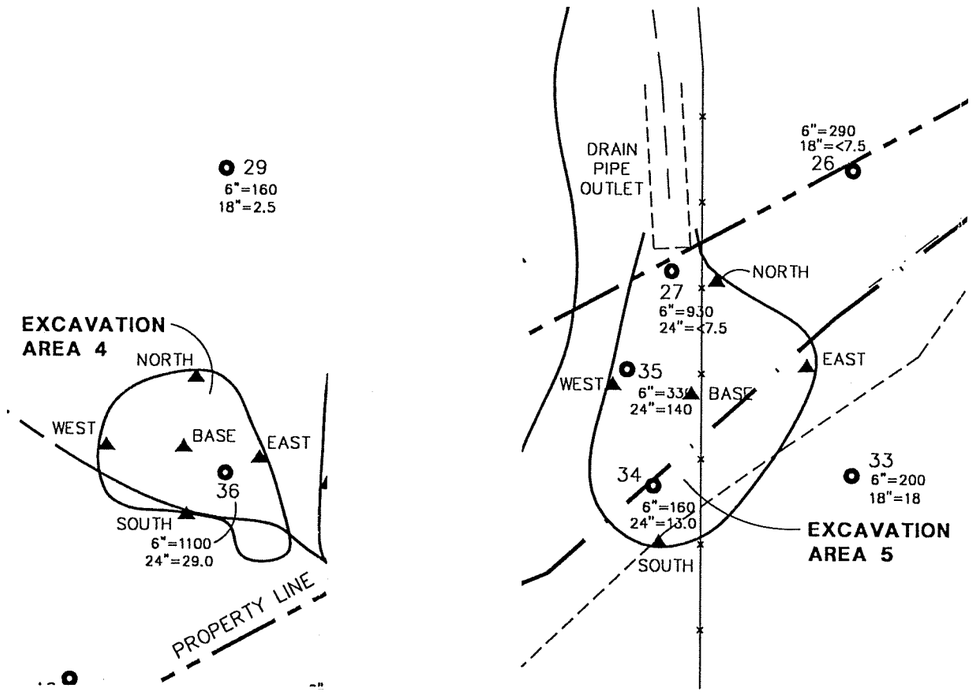
3 of 6

BRAUN™ INTERTEC

EXTENT OF EXCAVATION AREA 2 AND EXCAVATION AREA 3
RAP IMPLEMENTATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	DATE
DRAWN BY: GMG	11-13-96
APP'D BY: ARL	04-08-97
JOB No. CMXX-95-0591	
DWG. No. MX40708	SHEET OF
SCALE 1"=20'	

FIGURE NO.



EXCAVATION AREA 4		
Sample Location	XRF Concentration	Laboratory Concentration
NORTH	204	200
SOUTH	168	480
EAST	180	240
WEST	98	120
BASE	131	23

EXCAVATION AREA 5		
Sample Location	XRF Concentration	Laboratory Concentration
NORTH	59	<6.5
SOUTH	320	420
EAST	41	<6.5
WEST	347	290
BASE	25	8.3

EXPLANATION

▲ APPROXIMATE SOIL SAMPLE LOCATION FOR XRF AND CHEMICAL ANALYSIS

43 APPROXIMATE LOCATION OF PREVIOUSLY COMPLETED SOIL BORING

6"=<2.5
18"=88
36"=<2.5
TOTAL LEAD CONCENTRATION IN ppm

— — — UNDERGROUND UTILITY LINE

N

10' 0 20'
SCALE 1"=20'

1997 Braun Response Action Implementation

Response Action Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, April 8, 1997

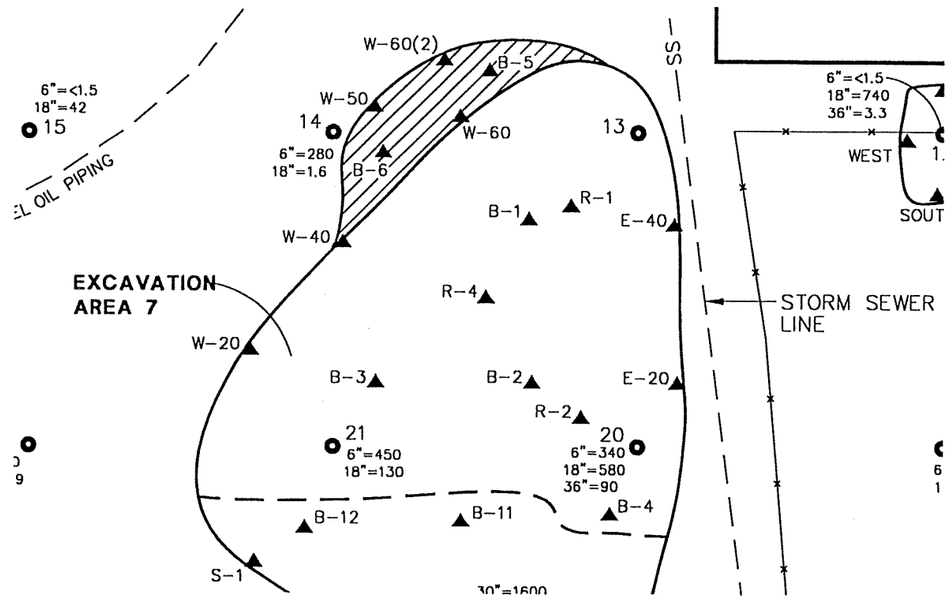
4 of 6

BRAUN INTERTEC

EXTENT OF EXCAVATION AREA 4 AND EXCAVATION AREA 5
RAP IMPLEMENTATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	DATE
DRAWN BY: GMG	11-13-96
APP'D BY: ARL	04-08-97
JOB No. CMXX-95-0591	SHEET OF
DWG. No. MX40708	
SCALE 1"=20'	

FIGURE NO.



EXCAVATION AREA 7		
Sample Location	XRF Concentration	Laboratory Concentration
EAST-20	199	70
EAST-40	350	590/340
WEST-20	270	280
WEST-40	9	77
WEST-50 (2)	ND	<6.5
WEST-60	234	950/700
WEST-60 (2)	125	89
BASE-1	136	21
BASE-2	174	<6.5
BASE-3	106	110
BASE-4	357	400
BASE-5 (2)	25	6.6
BASE-6 (2)	10	9.3
R-1	1250	1500
R-2	963	1300
R-4	897	1000

B-4 (2) XRF AND CHEMICAL ANALYSIS RESULTS OF SOIL SAMPLES COLLECTED AFTER ADDITIONAL EXCAVATION ON NOVEMBER 7, 1996

EXPLANATION

▲ APPROXIMATE SOIL SAMPLE LOCATION FOR XRF AND CHEMICAL ANALYSIS

43 APPROXIMATE LOCATION OF PREVIOUSLY COMPLETED SOIL BORING

6"=<2.5
18"=88
36"=<2.5
TOTAL LEAD CONCENTRATION IN ppm

— — — UNDERGROUND UTILITY LINE

AREA OF ADDITIONAL SOIL REMOVAL COMPLETED ON NOVEMBER 7, 1996

N

10' 0 20'
SCALE 1"=20'

1997 Braun Response Action Implementation

Response Action Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, April 8, 1997

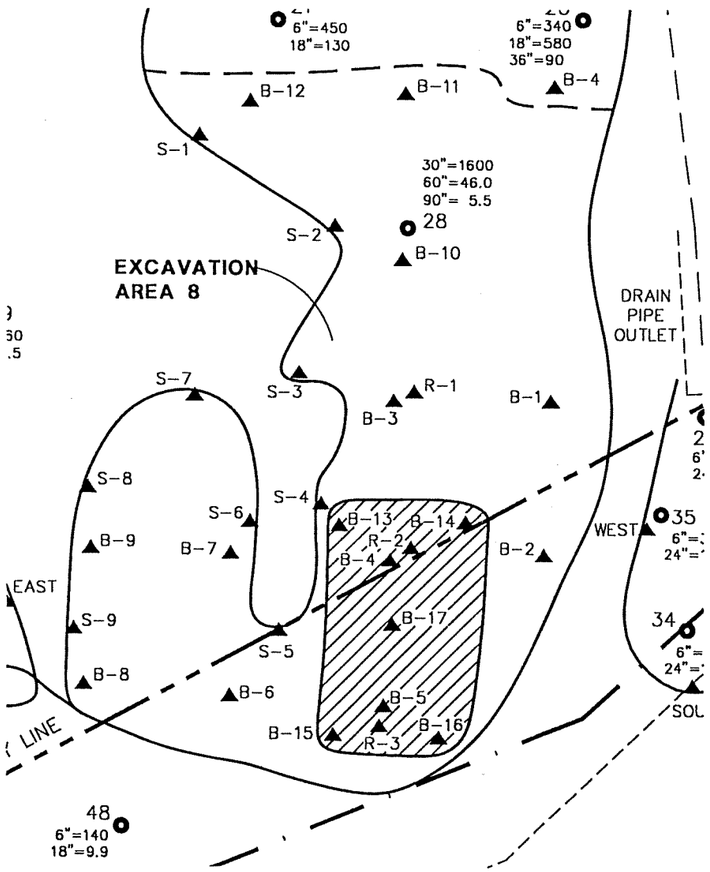
5 of 6

BRAUN™ INTERTEC

EXTENT OF EXCAVATION AREA 7
RAP IMPLEMENTATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	DATE
DRAWN BY: GMG	11-13-96
APP'D BY: ARL	04-09-97
JOB No. CMXX-95-0591	
DWG. No. MX40708	SHEET OF
SCALE 1"=20'	

FIGURE NO.



EXCAVATION AREA 8		
Sample Location	XRF Concentration	Laboratory Concentration
S-1	141	160
S-2	36	21
S-3	151	240
S-4	327	280
S-5	343	320
S-6	39	73
S-7	303	480
S-8	42	59
S-9	182	560/340
B-1	85	260
B-2	85	190
B-3	232	300
B-4	311	1200/1100
B-4 (2)	ND	<6.5
B-5	326	630/560
B-5 (2)	5	<6.5

EXCAVATION AREA 8		
Sample Location	XRF Concentration	Laboratory Concentration
B-6	226	250
B-7	238	250
B-8	180	140
B-9	108	96
B-10	89	22
B-11	64	28
B-12	30	30
B-13 (2)	ND	--
B-14 (2)	ND	--
B-15 (2)	ND	--
B-16 (2)	11	--
B-17 (2)	25	--
R-1	1012	1400
R-2	920	2200
R-3	643	2900

EXPLANATION

▲ APPROXIMATE SOIL SAMPLE LOCATION FOR XRF AND CHEMICAL ANALYSIS

43 APPROXIMATE LOCATION OF PREVIOUSLY COMPLETED SOIL BORING

6"=<2.5
18"=88
36"=<2.5
TOTAL LEAD CONCENTRATION IN ppm

— — — UNDERGROUND UTILITY LINE

AREA OF ADDITIONAL SOIL REMOVAL COMPLETED ON NOVEMBER 7, 1996

N

10' 0 20'
SCALE 1"=20'

1997 Braun Response Action Implementation

Response Action Implementation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, April 8, 1997

6 of 6

BRAUN™ INTERTEC

EXTENT OF EXCAVATION AREA 8
RAP IMPLEMENTATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	DATE
DRAWN BY: GMG	11-13-96
APP'D BY: ARL	04-09-97
JOB No. CMXX-95-0591	
DWG. No. MX40708	SHEET OF
SCALE 1"=20'	

FIGURE NO.

BRAUN[SM]
INTERTEC

Environmental Soil and Groundwater Evaluation

Water Gremlin Company
1610 Whitaker Avenue
White Bear Lake, Minnesota

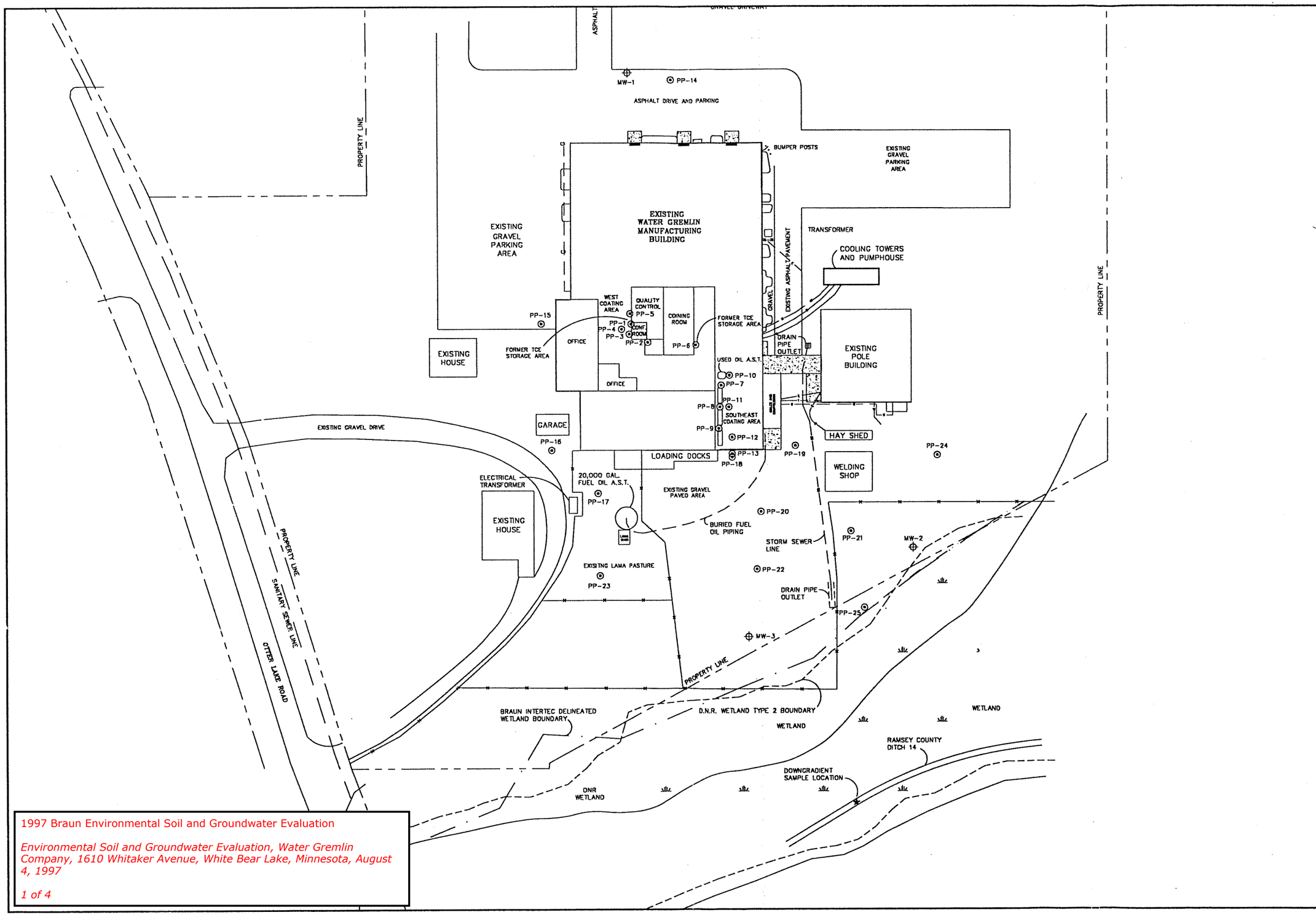
Prepared For

Water Gremlin Company

Project No. Number CMXX-97-0197
August 4, 1997

Braun Intertec Corporation

Engineers and Scientists Serving the Built and Natural Environments



1997 Braun Environmental Soil and Groundwater Evaluation

Environmental Soil and Groundwater Evaluation, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, August 4, 1997

1 of 4

BRAUN INTERTEC

SOIL AND GROUNDWATER SAMPLING LOCATIONS MAP
ENVIRONMENTAL SOIL AND GROUNDWATER EVALUATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT		DATE	
DRAWN BY:	JAG	7-30-97	
APP'D BY:	ARL	8-4-97	
JOB No.	CMXX-97-0197	SHEET	OF
DWG. No.	MX40708E		
SCALE	1" = 80'		

FIGURE NO.

Table 1: Summary of Soil Chemical Analysis (Concentrations in mg/kg)

Compound	GP-2@2'	GP-5@2'	GP-6@2'	GP-9@6"	GP-10@2'
1,1,2-Trichloroethylene	0.68	0.06	0.12	0.27	0.20

mg/kg = parts per million

Table 2: Summary of Groundwater Chemical Analysis, PP-1 through PP-12 (Interior) (Concentrations in μg/l)

Compound	PP-1	PP-3	PP-5	PP-6	PP-7	PP-9	PP-10	HRL
Acetone	<20	<20	<20	<20	27	<20	<20	700
Chloroethane	<2.0	<2.0	<2.0	<2.0	<2.0	3.9	<2.0	-
1,1-Dichloroethane	<1.0	<1.0	<1.0	5.0	6.8	31	7.0	70
1,2-Dichloroethane	<0.3	<0.3	<0.3	<0.3	<0.3	0.3	<0.3	4
1,1-Dichloroethylene	<1.0	<1.0	<1.0	<1.0	<1.0	2.4	<1.0	6
cis1,2-Dichloroethylene	0.9	1.2	3.7	0.6	19	760	17	70
trans 1,2-Dichloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	4.9	1.1	100
Methylene Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	50
1,1,1-Trichloroethane	1.1	0.8	1.2	1.5	1.2	4.6	0.7	600
1,1,2-Trichloroethylene	220	280	350	14	64	560	23	30
Vinyl Chloride	<1.0	<1.0	<1.0	2.6	<1.0	<1.0	<1.0	0.2

μg/l = parts per billion
Shaded cells = detected above the Minnesota Department of Health Risk Limits (HRL) for Private Drinking Water Supplies

Table 3. Summary of Groundwater Chemical Analysis, PP-13 through PP-23 (Exterior) (Concentrations in μg/l)

Compound	PP-13	PP-14S	PP-14D	PP-15	PP-16	PP-17	PP-18D	PP-19	PP-20	PP-21	PP-22	PP-22D	PP-23	HRL
Acetone	300	<20	<20	<20	<20	<20	<20	<40	520	80	29	<20	<20	700
Benzene	2.1	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	10
Chloroethane	12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	230	4.0	<1.0	<1.0	-
Chloroform	<100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.0	<2.0	<2.0	<1.0	<1.0	<1.0	60
Chloromethane (Methyl chloride)	<5.0	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<5.0	<5.0	<5.0	<2.5	<2.5	<2.5	—
1,4-Dichlorobenzene	0.6	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.4	2.9	1.3	0.4	<0.2	<0.2	10
1,1-Dichloroethane	970	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	6.5	980	69	230	<1.0	<1.0	70
1,2-Dichloroethane	24	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	2.7	12	4.5	8.0	<0.3	<0.3	4
1,1-Dichloroethylene	2000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	13	390	14	76	<1.0	<1.0	6
cis-1,2-Dichloroethylene	3800	<0.2	<0.2	<0.2	<0.2	<0.2	9.0	46	370	960	270	<0.2	<0.2	70
Trans 1,2-Dichloroethylene	5.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.4	1.4	5.3	1.2	<0.2	<0.2	100
Dichlorodifluoro methane	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	99	97	18	13	<2.5	<2.5	1000
Dichlorofluoro-methane	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	18	<0.5	<0.5	<0.5	<0.5	-
Ethyl Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	700
Methyl Ethyl Ketone	130	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	100	20	6.1	<5.0	<5.0	4000
Methyl Isobutyl Ketone	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10	29	21	<5.0	<5.0	<5.0	300
MTBE	<10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	2.9	<1.0	<1.0	<1.0	<1.0	-
Methylene Chloride	21	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<4.0	7.9	<2.0	<2.0	<2.0	<2.0	50
Tetrachloro-ethylene	11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	11	23	<1.0	<1.0	<1.0	<1.0	7
Tetrahydrofuran	58	<5.0	<5.0	<5.0	<5.0	<5.0	5.9	79	51	180	29	<5.0	<5.0	100
Toluene	95	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	120	<1.0	2.9	<1.0	<1.0	1,000
1,1,1-Trichloroethane	32,000	<0.5	<0.5	0.6	<0.5	<0.5	0.6	140	4300	<0.5	100	<0.5	<0.5	600
1,1,2-Trichloroethane	7.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.4	4.3	<1.0	<1.0	<1.0	<1.0	3
1,1,2-Trichloroethylene	97	<0.5	0.7	8.2	<0.5	<0.5	<0.6	4300	18	160	21	<0.5	<0.5	30
1,2,4-Trimethylbenzene	<1.0	2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	-
Vinyl Chloride	2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	9.4	3.1	<1.0	<1.0	<1.0	0.2
Total Xylenes	<1.0	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	12.0	<2.0	<1.0	<1.0	<1.0	10,000
n-Butylbenzene	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	-
Napthalene	<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	300

ug/l = parts per billion
Shaded cells = detected above MDH HRLs for private drinking water supplies

Table 4. Groundwater Chemical Analysis Results for PP-24, PP-25 and MW-1 through MW-3 (Concentrations in μg/l)

Compound	PP-24	PP-25	MW-1		MW-2		MW-3		MDH/HRL
Date Collected	4/22/97	4/22/97	5/5/97	5/19/97	5/5/97	5/19/97	5/5/97	5/19/97	
Bromodichloromethane	<0.3	<0.3	1.3	<0.3	<0.3	<0.3	<0.3	<0.3	6
Chloroethane (Methylene Chloride)	28	<1.0	<1.0	<1.0	<1.0	<1.0	24	<1.0	50
Chloroform	<1.0	<1.0	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	60
1,1-Dichloroethane	32	1.5	<1.0	<1.0	3.4	3.3	600	640	70
1,2-Dichloroethane	2.7	<0.3	<0.3	<0.3	<0.3	<0.3	12	10	4
1,1-Dichloroethylene	2.6	<1.0	<1.0	<1.0	<1.0	<1.0	54	42	6
cis-1,2-Dichloroethylene	30	<0.2	<0.2	<0.2	0.4	<0.2	17	16	70
trans-1,2-Dichloroethylene	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.4	100
Dichlorodifluoromethane	43	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	1000
Methyl Isobutyl Ketone	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	7.2	7.1	300
Tetrahydrofuran	110	<5.0	<5.0	<5.0	<5.0	<1.0	46	<1.0	100 RAL
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.3	2.2	1000
1,1,1-Trichloroethane	<0.5	2.0	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	600
1,1,2-Trichloroethylene	1.6	<0.5	<0.5	<0.5	1.3	1.3	2.1	1.9	30
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.6	2.5	0.2

μg/l = parts per billion (MDH)
Shaded cells = detected above the Minnesota Department of Health Risk Limits for Private Drinking Water Supplies
RAL = MDH Recommended Allowable Limit

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Environmental Soil and Groundwater Evaluation Report 2

Water Gremlin Company
1610 Whitaker Avenue
White Bear Lake, Minnesota

Prepared For

Water Gremlin Company

Project No. Number CMXX-97-0197
January 6, 1998

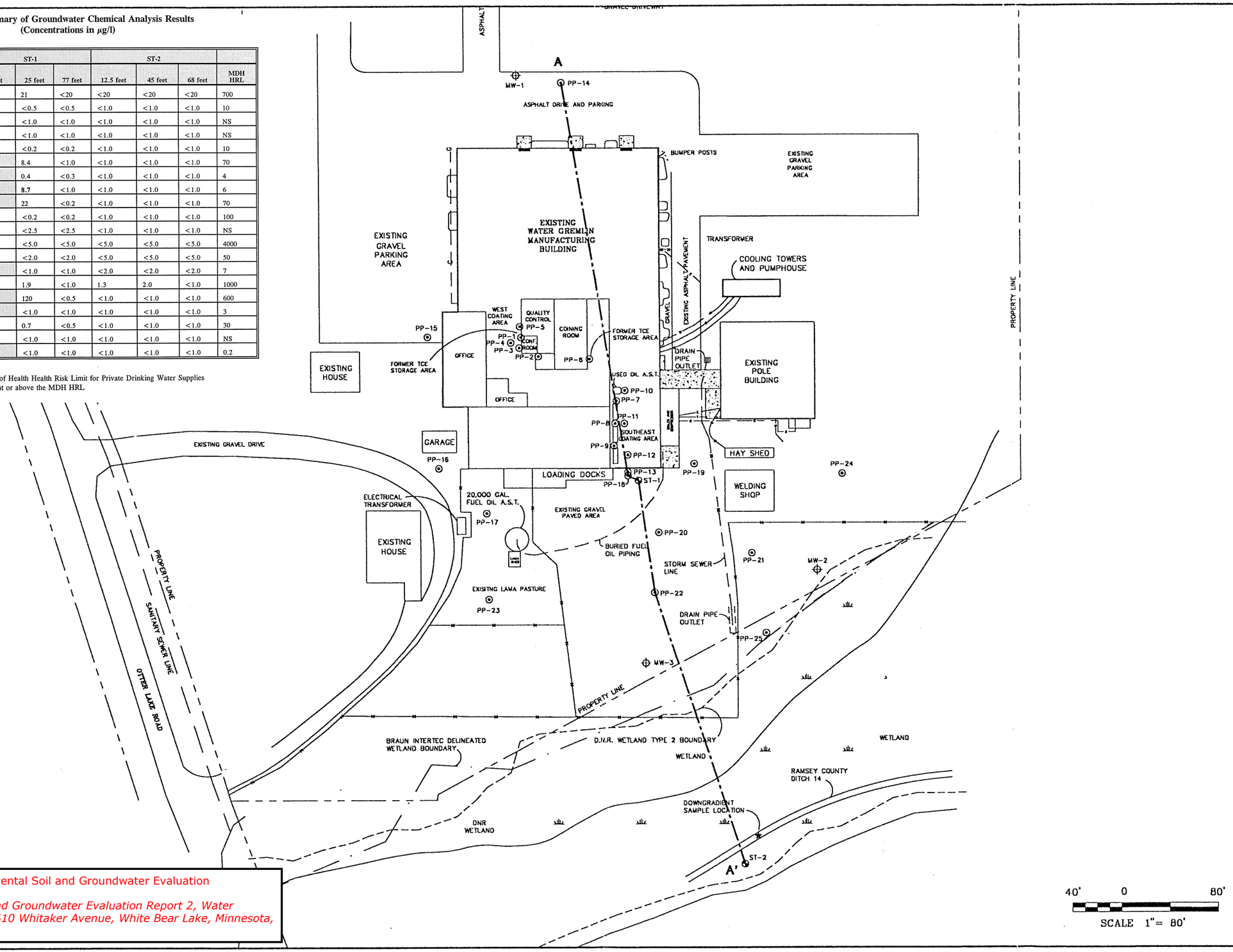
Braun Intertec Corporation

Engineers and Scientists Serving the Built and Natural Environments

Table 1. Summary of Groundwater Chemical Analysis Results
(Concentrations in µg/l)

Compound	ST-1			ST-2			
Depth	10 feet	25 feet	77 feet	12.5 feet	45 feet	68 feet	MDH HRL
Acetone	<20	21	<20	<20	<20	<20	700
Benzene	0.7	<0.5	<0.5	<1.0	<1.0	<1.0	10
n-Butylbenzene	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	NS
tert-Butylbenzene	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	NS
1,4-Dichlorobenzene	5.2	<0.2	<0.2	<1.0	<1.0	<1.0	10
1,1-Dichloroethane	1400	8.4	<1.0	<1.0	<1.0	<1.0	70
1,2-Dichloroethane	44	0.4	<0.3	<1.0	<1.0	<1.0	4
1,1-Dichloroethylene	1400	8.7	<1.0	<1.0	<1.0	<1.0	6
cis-1,2-Dichloroethylene	11000	22	<0.2	<1.0	<1.0	<1.0	70
trans-1,2-Dichloroethylene	12	<0.2	<0.2	<1.0	<1.0	<1.0	100
Dichlorodifluoromethane	6.3	<2.5	<2.5	<1.0	<1.0	<1.0	NS
Methyl Ethyl Ketone	410	<5.0	<5.0	<5.0	<5.0	<5.0	4000
Methylene Chloride	7.1	<2.0	<2.0	<5.0	<5.0	<5.0	50
Tetrachloroethylene	19	<1.0	<1.0	<2.0	<2.0	<2.0	7
Toluene	240	1.9	<1.0	1.3	2.0	<1.0	1000
1,1,1-Trichloroethane	8200	120	<0.5	<1.0	<1.0	<1.0	600
1,1,2-Trichloroethane	10	<1.0	<1.0	<1.0	<1.0	<1.0	3
1,1,2-Trichloroethylene	21	0.7	<0.5	<1.0	<1.0	<1.0	30
1,2,4-Trimethylbenzene	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	NS
Vinyl Chloride	11	<1.0	<1.0	<1.0	<1.0	<1.0	0.2

µg/l= parts per billion
MDH HRL= Minnesota Department of Health Health Risk Limit for Private Drinking Water Supplies
Shaded areas = Compound detected at or above the MDH HRL
NS= No Standard



1997 Braun Environmental Soil and Groundwater Evaluation

Environmental Soil and Groundwater Evaluation Report 2, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, January 6, 1998

BRAUN™ INTERTEC

GEOLOGIC CROSS SECTION
ENVIRONMENTAL SOIL AND GROUNDWATER EVALUATION
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	DATE
DRAWN BY: JAG	7-30-97
APP'D BY: ARL	12-19-97
JOB No. CMXX-97-0197	SHEET OF
DWG. No. MX4070BE	
SCALE 1"= 80'	

FIGURE NO. 3

Environmental Soil and Groundwater Evaluation Report 3

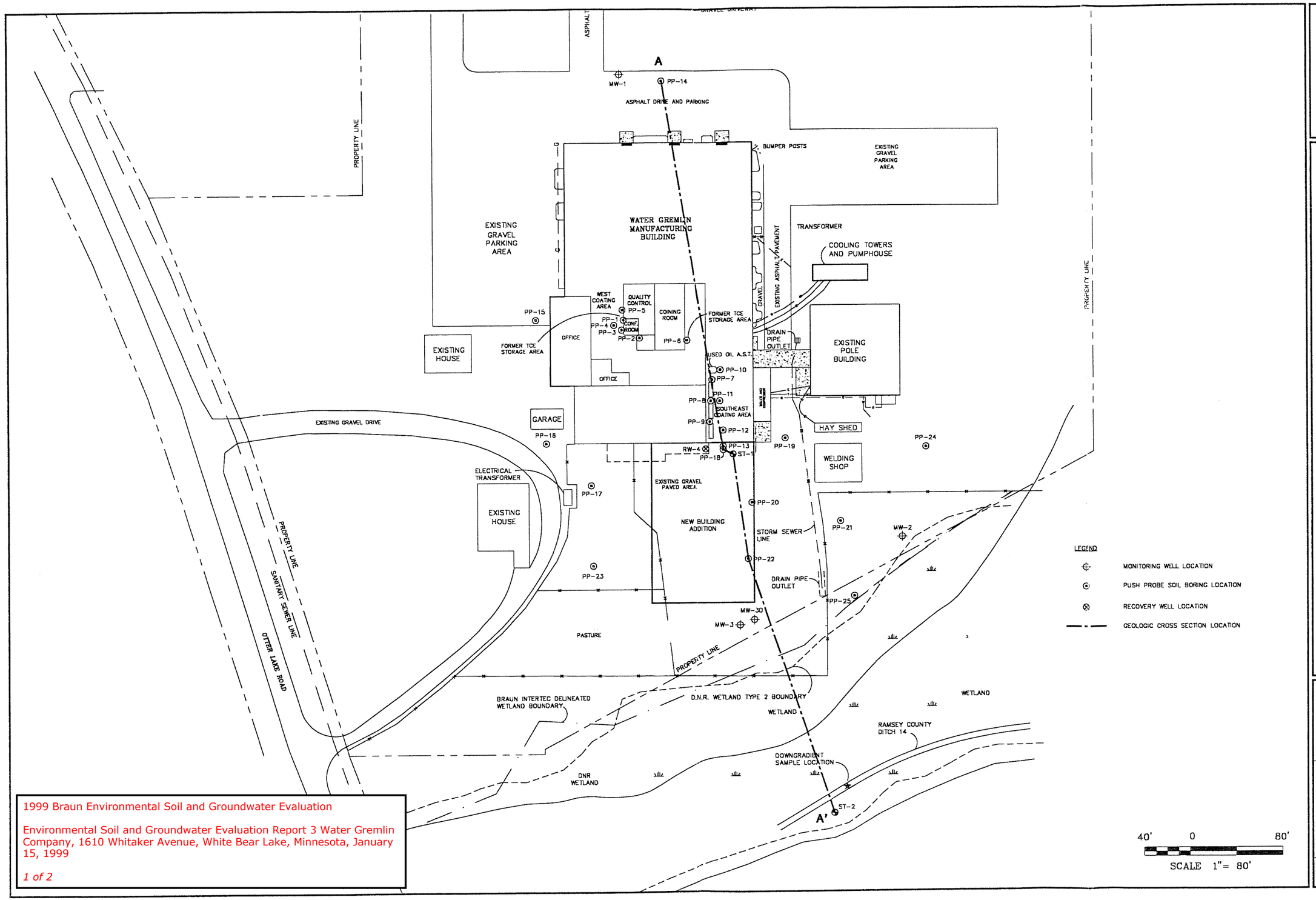
Water Gremlin Company
1610 Whitaker Avenue
White Bear Lake, Minnesota

Prepared For

Water Gremlin Company

Project No. Number CMXX-97-0197
January 15, 1999

Braun Intertec Corporation



1999 Braun Environmental Soil and Groundwater Evaluation

Environmental Soil and Groundwater Evaluation Report 3 Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, January 15, 1999

1 of 2

BRAUN INTERTEC

SITE MAP
ADDITIONAL GROUNDWATER ASSESSMENT
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT		DATE	
DRAWN BY:	KMR	7-30-95	
APP'D BY:	ERD	7-22-98	
JOB No.	CMXX-97-0197		
DWG. No.	MX40708E	SHEET	OF
SCALE	1"= 80'		

FIGURE NO. 2

Table 1. Summary of Groundwater Chemical Analysis Results
(Concentrations in μg/l)

Compound	MW-1				MW-2				MW-3				MW-3D		MW-4/RW-1		
Date	05/05/97	05/19/97	06/24/98	09/02/98	05/05/97	05/19/97	06/24/98	09/02/98	05/05/97	05/19/97	06/24/98	09/02/98	06/24/98	09/02/98	06/24/98	09/02/98	MDH HRL
Acetone	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	22	700
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.2	<0.5	<0.5	<0.5	<0.5	<0.5	10
Bromodichloromethane	1.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	6
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	24.0	<1.0	34	45	<1.0	<1.0	4.7	3.7	50
Chloroform	1.5	<1.0	<1.0	<1.0	3.4	3.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	60
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<0.3	<0.3	3.2	4.8	600	640	620	630	<1.0	<1.0	40	36	70
1,2-Dichloroethane (1,2-DCA)	<0.3	<1.0	<0.3	<0.3	<1.0	<1.0	<0.3	<0.3	12	10	13	14	<0.3	<0.3	<0.3	<0.3	4
1,1-Dichloroethylene (1,1-DCE)	<1.0	<0.2	<1.0	<1.0	<1.0	<0.2	<1.0	1.5	54	42	52	120	<1.0	<1.0	38	38	6
cis-1,2-Dichloroethylene (cis-1,2-DCE)	<0.2	<0.2	<0.3	<0.3	0.4	<0.2	<0.3	0.5	17	16	19	29	<0.3	<0.3	110	190	70
trans-1,2-Dichloroethylene (trans-1,2-DCE)	<0.2	<2.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	1.4	1.2	2.5	<0.2	<0.2	<02	0.9	100
Dichlorodifluoromethane	<2.5	<1.0	<2.5	<2.5	<2.5	<2.5	9.3	3.6	<2.5	<2.5	<2.5	4.6	<2.5	<2.5	32	16	1000
Ethylene Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1	<1.0	<1.0	700
Methyl Ethyl Ketone			<5.0	<5.0	<5.0	<5.0	<5.0	<5.0			<5.0	<5.0	<5.0	<5	<5	12	4000
Methyl Isobutyl Ketone (MIK)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	7.2	7.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	300
Tetrahydrofuran	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	46	<1.0	55	49	<5.0	<5.0	<5.0	<5.0	100 RAL
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.3	2.2	5.3	5.9	<1.0	<1.0	3.6	2.4	1000
1,1,1-Trichloroethane (1,1,1-TCA)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	180	140	600
1,1,2-Trichloroethane (1,1,2-TCE)	<0.5	<0.5	<0.5	<0.5	1.3	1.3	<0.5	0.6	2.1	1.9	<1.0	2.3	<1.0	<0.5	96	58	30
Trichlorofluoromethane (Freon 11)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	2000
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.6	2.5	8.2	3.6	<1.0	<1.0	<1.0	<1.0	0.2
m,p-Xylene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.0	<1.0	<1.0	<1.0	<1.0	<1.0	10000*

μg/l= parts per billion
MDH HRL= Minnesota Department of Health Health Risk Limit for Private Drinking Water Supplies
Shaded areas = Compound detected at or above the MDH HRL
NS= No Standard

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1999 Braun Environmental Soil and Groundwater Evaluation

Environmental Soil and Groundwater Evaluation Report 3, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, January 15, 1999

Environmental Groundwater Evaluation Report 4

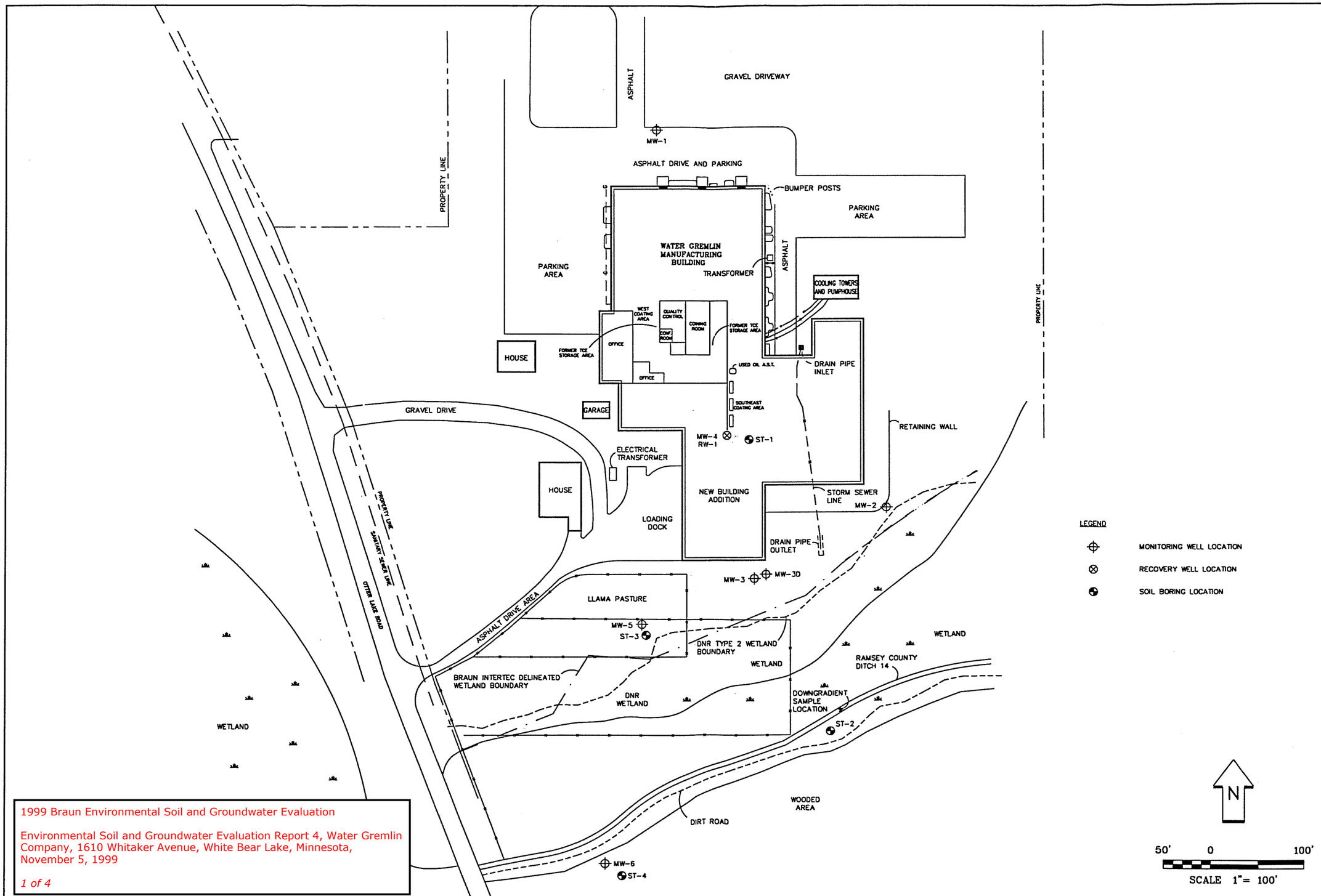
Water Gremlin Company
1610 Whitaker Avenue
White Bear Lake, Minnesota

Prepared For

Water Gremlin Company

Project No. Number CMXX-97-0197
November 5, 1999

Braun Intertec Corporation



1999 Braun Environmental Soil and Groundwater Evaluation

Environmental Soil and Groundwater Evaluation Report 4, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, November 5, 1999

1 of 4

BRAUN INTERTEC

SITE MAP
ADDITIONAL GROUNDWATER ASSESSMENT
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT		DATE
DRAWN BY:	KMR	7-30-95
APP'D BY:	ARL	11-12-99
JOB No.	CMXX-97-0197	
DWG. No.	MX40708E	SHEET OF
SCALE	1"= 100'	

FIGURE NO. 2

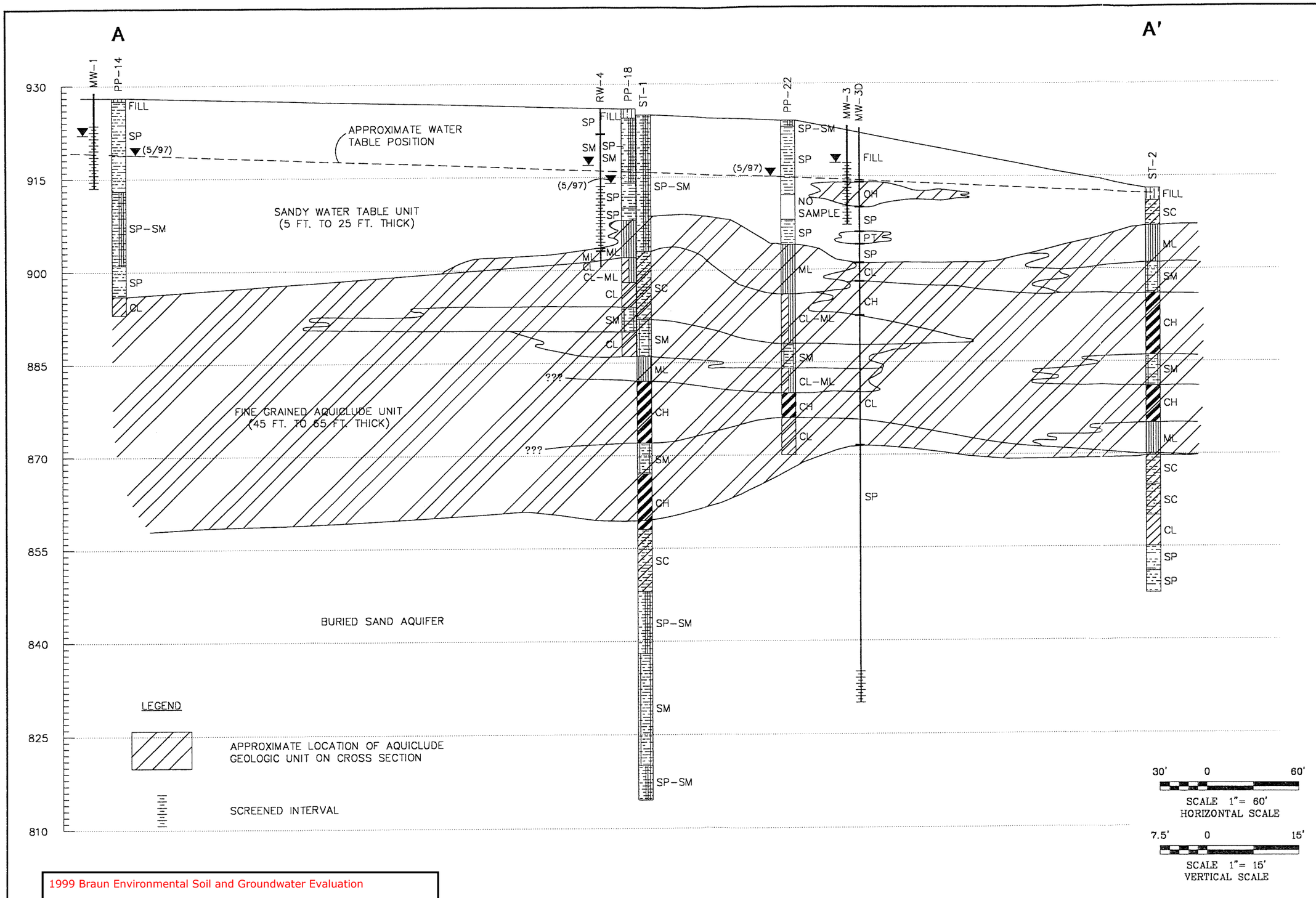
Table 1. Summary of Groundwater Chemical Analysis Results
(Concentrations in µg/l)

Compound	MW-1							MW-2							MW-3							MDH
Date	05/05/97	05/19/97	06/24/98	09/02/98	01/20/99	04/07/99	07/13/99	05/05/97	05/19/97	06/24/98	09/02/98	01/22/99	04/07/99	07/09/99	05/05/97	05/19/97	06/24/98	09/02/98	01/20/99	04/07/99	07/13/99	HRL
Acetone	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	700
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	4.2	<0.5	<0.5	<1.0	<1.0	10
Bromodichloro-methane	1.3	<0.3	<0.3	<0.3	<0.3	<1.0	<1.0	<0.3	<0.3	<0.3	<0.3	<0.3	<1.0	<1.0	<0.3	<0.3	<0.3	<0.3	<0.3	<1.0	<1.0	6
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	24	<1.0	34	45	27	21	7.2	50
Chloroform	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.4	3.3	<1.0	<1.0	<1.0	<1.0	2.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	60
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.3	<0.3	3.2	4.8	2.4	2.4	<1.0	600	640	620	630	570	450	580	70
1,2-Dichloroethane (1,2-DCA)	<0.3	<1.0	<0.3	<0.3	<0.3	<1.0	<1.0	<1.0	<1.0	<0.3	<0.3	<0.3	<1.0	<1.0	12	10	13	14	12	11	13	4
1,1-Dichloroethylene (1,1-DCE)	<1.0	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.2	<1.0	1.5	<1	<1.0	<1.0	54	42	52	120	65	51	89	6
cis-1,2-Dichloroethylene (cis-1,2-DCE)	<0.2	<0.2	<0.3	<0.3	<0.3	<1.0	<1.0	0.4	<0.2	<0.3	0.5	<0.5	<1.0	2.9	17	16	19	29	36	34	54	70
trans-1,2-Dichloroethylene (trans-1,2-DCE)	<0.2	<2.5	<0.2	<0.2	<0.2	<1.0	<1.0	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<1.0	<0.2	1.4	1.2	2.5	1.4	1.1	1.8	100
Dichlorodifluoro-methane	<2.5	<1.0	<2.5	<2.5	<2.5	<1.0	<1.0	<2.5	<2.5	9.3	3.6	5.6	13	<1.0	<2.5	<2.5	<2.5	4.6	5.6	5.8	3.7	1000
Ethylene Benzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	700
Methyl Ethyl Ketone	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<5.0			<5.0	<5.0	<5.0	<1.0	<10	4000
Methyl Isobutyl Ketone (MIK)	<5.0	<5.0	<5.0	<5.0	<5.0	<50	<50	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<1.0	7.2	7.1	<5.0	<5.0	<5.0	<5.0	<5.0	300
Tetrahydrofuran	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	46	<1.0	55	49	54	48	45	100 RAL
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.3	2.2	5.3	5.9	4.3	2.9	4.3	1000
1,1,1-Trichloroethane (1,1,1-TCA)	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	0.6	<0.5	<0.5	<0.5	<1.0	<1.0	600
Trichloroethene	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	1.3	1.3	<0.5	0.6	<0.5	<1.0	<1.0	2.1	1.9	<1.0	2.3	1.5	<1.0	1.6	30
Trichlorofluoro-methane (Freon 11)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2	<1.0	<1.0	<1.0	<1.0	2000
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.6	2.5	8.2	3.6	20	<1.0	1.2	0.2
m,p-Xylene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4	<1.0	<1.0	<1.0	<1.0	10000*

µg/l= parts per billion
MDH HRL= Minnesota Department of Health Health Risk Limit for Private Drinking Water Supplies
Shaded areas = Compound detected at or above the MDH HRL
NS= No Standard

Table 1. Summary of Groundwater Chemical Analysis Results
(Concentrations in µg/l)
(Continued)

Compound	MW-3D					MW-4/RW-1					MW-5	MW-6	MDH
Date	06/24/98	09/02/98	01/20/99	04/07/99	07/09/99	06/24/98	09/02/98	01/20/99	04/07/99	07/09/99	07/09/99	07/09/99	HRL
Acetone	<20	<20	<20	<20	<20	<20	22	<20	<20	<20	<20	<20	700
Benzene	<0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	10
Bromodichloro-methane	<0.3	<0.3	<0.3	<1.0	<1.0	<0.3	<0.3	<0.3	<1.0	<1.0	<1.0	<1.0	6
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	4.7	3.7	2.4	<1.0	<1.0	<1.0	<1.0	50
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	60
1,1-Dichloroethane (1,1-DCA)	<1.0	<1.0	<1.0	<1.0	<1.0	40	36	33	12	7.8	1	<1.0	70
1,2-Dichloroethane (1,2-DCA)	<0.3	<0.3	<0.3	<1.0	<1.0	<0.3	<0.3	<0.3	<1.0	<1.0	<1.0	<1.0	4
1,1-Dichloroethylene (1,1-DCE)	<1.0	<1.0	<1.0	<1.0	<1.0	38	38	14	2.8	2.7	<1.0	<1.0	6
cis-1,2-Dichloroethylene (cis-1,2-DCE)	<0.3	<0.3	<0.3	<1.0	<1.0	110	190	340	150	44	<1.0	<1.0	70
trans-1,2-Dichloroethylene (trans-1,2-DCE)	<0.2	<0.2	<0.2	<1.0	<1.0	<02	0.9	2.2	1.2	<1.0	<1.0	<1.0	100
Dichlorodifluoromethane	<2.5	<2.5	<2.5	<1.0	<1.0	32	16	3.5	8.5	10	<1.0	<1.0	1000
Ethylene Benzene	<1.0	<1	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	700
Methyl Ethyl Ketone	<5.0	<5	<5	<1.0	<1.0	<5	12	<5	<10	<10	<10	<1.0	4000
Methyl Isobutyl Ketone (MIK)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5.0	<5.0	<5.0	300
Tetrahydrofuran	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5.0	7.8	<5.0	100 RAL
Toluene	<1.0	<1.0	3.5	<1.0	<1.0	3.6	2.4	2	<1.0	<1.0	<1.0	<1.0	1000
1,1,1-Trichloroethane (1,1,1-TCA)	<0.5	<0.5	<0.5	<1.0	<1.0	180	140	48	7	7.7	1.2	<1.0	600
Trichloroethene	<1.0	<0.5	<0.5	<1.0	<1.0	96	58	310	230	77	<1.0	<1.0	30
Trichlorofluoromethane (Freon 11)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2000
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4.1	<1.0	<1.0	<1.0	<1.0	0.2
m,p-Xylene	<1.0	<1.0	5.9	<1.0	<1.0	<1.0	<1.0	<1	<1.0	<1.0	<1.0	<1.0	10000*



BRAUN INTERTEC

GEOLOGIC CROSS SECTION A-A'
ADDITIONAL GROUNDWATER ASSESSMENT
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT		DATE	7-30-97
DRAWN BY:	JAG		
APP'D BY:	ERD		7-22-98
JOB NO.	CMXX-97-0197		
DWG. NO.	MX40708F	SHEET	OF
SCALE	AS SHOWN		

FIGURE NO.

1999 Braun Environmental Soil and Groundwater Evaluation

Environmental Soil and Groundwater Evaluation Report 4, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota, November 5, 1999

4 of 4

BRAUN
INTERTEC

May 6, 2004

Project CMXX-97-0197

Mr. David Zinschlag
Water Gremlin Company
1610 Whitaker Avenue
White Bear Lake, MN 55110

Dear Mr. Zinschlag:

Re: Additional Groundwater Monitoring Assessment, Water Gremlin Company, 1610 Whitaker Avenue, White Bear Lake, Minnesota.

In accordance with your verbal authorization, Braun Intertec Corporation (Braun Intertec) conducted an additional groundwater monitoring event at the referenced site on April 23, 2004. Our results are provided in the following letter report. The results are consistent with previous sampling events in that the contaminant concentrations are generally decreasing.

A. Introduction

As you requested, Braun Intertec collected groundwater samples from the groundwater monitoring wells at the Water Gremlin Company facility located at 1610 Whitaker Avenue in White Bear Lake, Minnesota (site). A site location map is attached as Figure 1.

This sampling event was the fifth monitoring event since the site was approved by the Minnesota Pollution Control Agency (MPCA) for a reduced monitoring frequency of once per year (MPCA letter dated April 4, 2000). The sampling event was conducted in general accordance with the MPCA-approved Groundwater Monitoring and Contingency Plan (Monitoring Plan) dated January 3, 2001, and the Annual Ground Water Monitoring Report Approval Letter from the MPCA VIC Program dated April 2, 2004.

B. Scope of Services

The following tasks were conducted following the methods described in the Monitoring Plan.

- Collection of one round of groundwater samples on April 23, 2004, from the seven on-site groundwater monitoring wells (MW-1 through MW-3, MW-3D, MW-4, MW-5 and MW-6) shown in Figure 2.
- Laboratory analysis of the samples for MDH Method 465E list volatile organic compounds (VOCs) by GC/MS.
- Measurement of water levels to evaluate the groundwater flow direction at the site.

C. Results

C.1. Groundwater Quality

Results of the VOC analysis for monitoring wells MW-2, MW-3, MW-4 and MW-5 are summarized in Table 1 along with historical data. No VOCs were detected during the current sampling event in wells

MW-1, MW-5, MW-5 duplicate or MW-6. Of these wells, only MW-5 has contained chlorinated VOCs historically, and those VOCs were detected only during the 1999 monitoring event. Each of the VOCs detected during the most recent sampling event were detected at concentrations below or similar to the most recent sampling events, and in most cases, the recently detected concentrations were the lowest ever measured. No VOCs were detected in the field blank or trip blank.

None of the wells sampled at the site had any VOC concentrations in excess of the Minnesota Department of Health (MDH) Health Risk Limits (HRLs). Vinyl chloride, which was detected in MW-3 during the 2001 sampling event at an atypically high concentration, was not detected in MW-3 during the 2002 or 2003 sampling event, nor was it detected during this sampling event in any of the wells. Chloroethane is a product of vinyl chloride degradation under reducing conditions, and the higher concentrations detected in 2001, 2002 and 2003 were likely related to the higher vinyl chloride concentration observed in MW-3 during the 2001 sampling event. The 2004 sampling event shows that the concentration of chloroethane has again decreased and vinyl chloride was not detected for the third consecutive sampling event. The relationship between chloroethane concentrations and vinyl chloride concentrations in MW-3 is depicted in the attached graph. An HRL has not been established for chloroethane.

Graphs of selected contaminant concentrations over time for MW-3 and MW-4 are attached. All of the graphed contaminant concentrations for the two wells have decreased significantly over the monitoring period beginning in 1997. The laboratory report for the current sampling event is also attached.

During the 2003 full monitoring event, 1,1-dichloroethane was detected in monitoring well MW-3D at a concentration of 2.2 ppb, which is less than the HRL of 70 ppb. On January 13, 2004, monitoring well MW-3D was re-sampled according to the contingency criteria established by the MPCA. No VOCs were detected in the January 2004 sample at concentrations above the method detection limits. During the most recent sampling event performed on April 23, 2004, no VOCs were detected in MW-3D at concentrations above the method detection limits.

C.2. Groundwater Flow

Groundwater elevations calculated from the water levels measured during groundwater sampling are provided along with historical water level data in Table 2. Figure 3 shows a water table contour map for the April 23, 2004 water level data. At that time, groundwater was flowing southward, which is consistent with previous data. As illustrated by the attached hydrograph, the water levels have slightly increased since the last sampling event in November 24, 2003, with the exception of MW-3D, which has slightly decreased.

D. Conclusions and Recommendations

Based on the results of the groundwater sampling conducted to date, the contaminant concentrations show an overall decreasing trend. The only unexpected result obtained during the 2003 sampling event was the detection of the chlorinated solvent compound 1,1-dichloroethane in MW-3D at a concentration of 2.2 ppb, which is less than the HRL of 70 ppb. Groundwater samples collected from MW-3D on January 13 and April 23, 2004, did not detect any VOCs above the method detection limits. Therefore, since the most recent sampling events are consistent with the overall trend of decreasing contaminant concentrations in all of the wells and no VOCs have been detected in any of the wells at concentrations greater than the HRLs during the two most recent sampling events, Braun Intertec will request, on behalf of Water Gremlin, that the MPCA issue a No Further Action Determination.

E. Assessment Limitations

The analyses and conclusions submitted in this report are based on our field observations and the results of laboratory chemical analyses of groundwater samples collected from the monitoring wells completed for this project. In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the same location. No other warranty is made or intended.

We appreciate the opportunity to provide our professional services to you for this project. If you have any questions or comments, please call Mary Rivard at (952) 995-2484 or Jon Carlson at (952) 995-2440.

Sincerely,

BRAUN INTERTEC CORPORATION

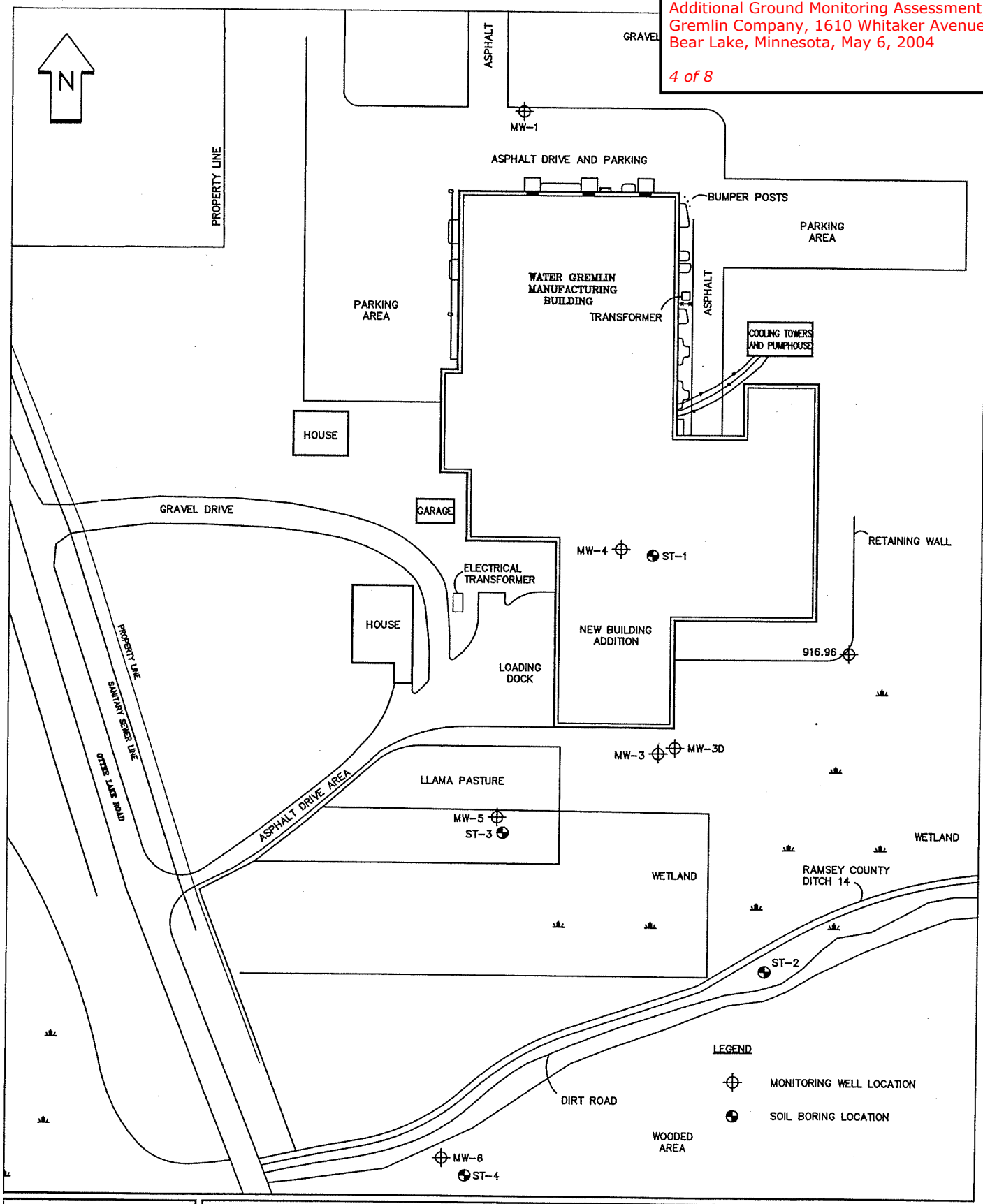
Mary P. Rivard, PG
Project Engineer

FOR

Jon A. Carlson, CHMM, PG
Vice President

Attachments:
Figure 1 - Site Location Map
Figure 2 - Site Map
Figure 3 - Water Table Contour Map (4/23/04)
Table 1 - Summary of Groundwater Chemical Analytical Results
Table 2 - Water Level Data
Groundwater Elevations Hydrograph
Graphs of Specific Analytical Parameters
Laboratory Analytical Report

c: Mr. Richard Jolley, VIC Program, MPCA



BRAUN INTERTEC

SITE MAP
WATER GREMLIN COMPANY
WHITE BEAR LAKE, MINNESOTA

INT	REVISION	SHEET
DRAWN BY: JAG	7-30-97	
APP'D BY: MR	4-26-04	OF
JOB NO. CMXX-97-0197		
DWG. NO. MX40708E		FIGURE NO.
SCALE 1"= 50'		2

Table 1. Summary of Groundwater Chemical Analysis Results
Concentrations in µg/l
Page 1 of 3

Compound	MW-2												MDH HRL
	05/05/97	05/19/97	06/24/98	09/02/98	01/22/99	04/07/99	07/09/99	11/07/00	11/15/01	11/19/02	11/24/03	04/23/04	
Acetone	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	< 20	< 20	700
Benzene	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	10
Chloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	NE
Chloroform	**3.4**	**3.3**	<1.0	<1.0	<1.0	<1.0	**2.3**	<1.0	<1.0	<1.0	< 1.0	< 1.0	60
1,1-Dichloroethane (1,1-DCA)	<0.3	<0.3	**3.2**	**4.8**	**2.4**	**2.4**	<1.0	**1.8**	**1.7**	**1.4**	**1.1**	**1.4**	70
1,2-Dichloroethane (1,2-DCA)	<1.0	<1.0	<0.3	<0.3	<0.3	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	4
1,1-Dichloroethylene (1,1-DCE)	<1.0	<0.2	<1.0	**1.5**	<1	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	6
cis-1,2-Dichloroethylene (cis-1,2-DCE)	**0.4**	<0.2	<0.3	**0.5**	<0.5	<1.0	**2.9**	<1.0	<1.0	<1.0	< 1.0	< 1.0	70
trans-1,2-Dichloroethylene (trans-1,2-DCE)	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	100
Dichlorodifluoromethane	<2.5	<2.5	**9.3**	**3.6**	**5.6**	**13**	<1.0	**8.6**	**6.6**	**4.5**	**3.6**	**5.7**	1,000
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	700
Methyl Ethyl Ketone	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<5.0	<5.0	<5.0	<5.0	< 10	< 10	4,000
Methyl Isobutyl Ketone	<5.0	<5.0	<5.0	<5.0	<5.0	<10	<1.0	<1.0	<1.0	<1.0	< 5.0	< 5.0	300
Tetrahydrofuran	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0	< 5.0	< 5.0	NE
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	1,000
1,1,1-Trichloroethane (1,1,1-TCA)	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	600
Trichloroethene	**1.3**	**1.3**	<0.5	0.6	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	30
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	2,000
Vinyl Chloride	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	0.2
m,p-Xylenes	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	10,000

MDH HRL = Minnesota Department of Health Health Risk Limit
Shaded areas = Compound detected at or above the MDH HRL
NE = Not Established
*Duplicate results above reporting limits in parentheses.

Table 1. Summary of Groundwater Chemical Analysis Results
Concentrations in µg/l
Page 2 of 3

Compound	MW-3												MDH HRL
	05/05/97	05/19/97	06/24/98	09/02/98	01/20/99	04/07/99	07/13/99	11/07/00	11/15/01	11/19/02	11/24/03	04/23/04	
Acetone	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	< 20	< 20	700
Benzene	<0.5	<0.5	4.2	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	10
Chloroethane	24	<1.0	34	45	27	21	7.2	27	130	240	210	190	NE
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	60
1,1-Dichloroethane (1,1-DCA)	600	640	620	630	570	450	580	250	220	83	48	43	70
1,2-Dichloroethane (1,2-DCA)	12	10	13	14	12	11	13	7.2	4.3	<1.0	< 1.0	< 1.0	4
1,1-Dichloroethylene (1,1-DCE)	54	42	52	120	65	51	89	39	<1.0	<1.0	< 1.0	< 1.0	6
cis-1,2-Dichloroethylene (cis-1,2-DCE)	17	16	19	29	36	34	54	67	6.3	<1.0	< 1.0	< 1.0	70
trans-1,2-Dichloroethylene (trans-1,2-DCE)	<0.2	1.4	1.2	2.5	1.4	1.1	1.8	1.3	<1.0	<1.0	< 1.0	< 1.0	100
Dichlorodifluoromethane	<2.5	<2.5	<2.5	4.6	5.6	5.8	3.7	7.1	6.1	4.2	3.2	2.9	1000
Ethylbenzene	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	700
Methyl Ethyl Ketone	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<10	<10	<10	< 10	< 10	< 10	4000
Methyl Isobutyl Ketone	7.2	7.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	< 5.0	< 5.0	300
Tetrahydrofuran	46	<1.0	55	49	54	48	45	35	22	24	11	9.8	NE
Toluene	3.3	2.2	5.3	5.9	4.3	2.9	4.3	1.8	4.6	5.5	4.8	3.6	1000
1,1,1-Trichloroethane (1,1,1-TCA)	<0.5	0.6	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	600
Trichloroethene	2.1	1.9	<1.0	2.3	1.5	<1.0	1.6	<1.0	<1.0	<1.0	< 1.0	< 1.0	30
Trichlorofluoromethane	<1.0	<1.0	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	2000
Vinyl Chloride	2.6	2.5	8.2	3.6	20	<1.0	1.2	3.7	390	<1.0	< 1.0	< 1.0	0.2
m,p-Xylenes	<1.0	<1.0	4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	10000

MDH HRL = Minnesota Department of Health Health Risk Limit
Shaded areas = Compound detected at or above the MDH HRL
NE = Not Established
*Duplicate results above reporting limits in parentheses.

Table 1. Summary of Groundwater Chemical Analysis Results
Concentrations in µg/l
Page 3 of 3

Compound	MW-4/RW-1										MW-5						MDH HRL
	06/24/98	09/02/98	01/20/99	04/07/99	07/09/99	11/7/00*	11/15/01	11/19/02	11/24/03	04/23/04	07/09/99	11/07/00	11/15/01	11/19/02	11/24/03	04/23/04	
Acetone	<20	22	<20	<20	<20	<20	<20	<20	< 20	< 20	<20	<20	<20	<20	<20	<20 (<20)	700
Benzene	<0.5	<0.5	<0.5	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	10
Chloroethane	4.7	3.7	2.4	<1.0	<1.0	<1.0	1.4	1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	NE
Chloroform	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	60
1,1-Dichloroethane (1,1-DCA)	40	36	33	12	7.8	16 (16)	34	28	8.2	5.5	1	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	70
1,2-Dichloroethane (1,2-DCA)	<0.3	<0.3	<0.3	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	4
1,1-Dichloroethylene (1,1-DCE)	38	38	14	2.8	2.7	3.6 (4.0)	2.4	2.2	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	6
cis-1,2-Dichloroethylene (cis-1,2-DCE)	110	190	340	150	44	10 (11)	3.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	70
trans-1,2-Dichloroethylene (trans-1,2-DCE)	<02	0.9	2.2	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	100
Dichlorodifluoromethane	32	16	3.5	8.5	10	9.1 (9.2)	2.2	<1.0	<1.0	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	1000
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	700
Methyl Ethyl Ketone	<5	12	<5	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10 (<10)	4000
Methyl Isobutyl Ketone	<5.0	<5.0	<5	<5.0	<5.0	<5.0	<5.0	<5.0	< 5.0	< 5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0 (<5.0)	300
Tetrahydrofuran	<5.0	<5.0	<5	<5.0	<5.0	<5.0	<5.0	<5.0	< 5.0	< 5.0	7.8	<5.0	<5.0	<5.0	<5.0	<5.0 (<5.0)	NE
Toluene	3.6	2.4	2	<1.0	<1.0	1.2 (1.2)	4.1	<1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	1000
1,1,1-Trichloroethane (1,1,1-TCA)	180	140	48	7	7.7	22 (24)	57	2.7	< 1.0	< 1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	600
Trichloroethene	96	58	310	230	77	2.8 (2.7)	<1.0	<1.0	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	30
Trichlorofluoromethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	2000
Vinyl Chloride	<1.0	<1.0	4.1	<1.0	<1.0	7.6 (7.9)	5.1	<1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	0.2
m,p-Xylenes	<1.0	<1.0	<1	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0 (<1.0)	10000

MDH HRL = Minnesota Department of Health Health Risk Limit
Shaded areas = Compound detected at or above the MDH HRL
NE = Not Established
*Duplicate results above reporting limit in parentheses.

Table 2
Groundwater Elevation Data
Water Gremlin Site
CMXX-97-0197

Well	MW-1	MW-2	MW-3	MW-3D	MW-4	MW-5	MW-6
TOR Elevation	**932.61**	**926.90**	**923.21**	**925.96**	**931.92**	**919.69**	**916.84**
05/05/97	922.91	916.96	915.70				
05/19/97	922.69	917.08	915.51				
06/23/98	922.65	917.50	915.58	901.62	921.58		
09/02/98	922.63	917.13	915.86	900.82	921.16		
01/20/99	920.79	916.79	915.27	901.41	919.44		
04/07/99	921.25	916.96	916.20	902.27	919.68		
07/09/99	922.63	917.13	915.86	900.82	921.16	915.53	911.63
11/18/99	920.92	916.78	915.31	902.64	919.44	914.93	909.76
01/11/00	920.37	916.58	914.98	902.21	918.99	914.42	909.92
11/07/00	920.06	916.89	915.17	899.96	918.67	914.71	909.48
11/15/01	920.43	916.68	915.03	898.17	918.89	914.09	908.62
11/19/02	922.70	917.30	916.03	903.39	920.64	915.20	910.71
11/24/03	920.08	916.73	915.05	901.69	918.73	914.16	907.97
04/23/04	920.48	916.96	915.83	900.69	919.03	915.28	910.26

All elevations in feet above mean sea level.

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Appendix B

Soil Boring Logs

WENCK ASSOCIATES
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Wenck Associates, Inc.
1802 Wooddale Drive, Suite 100
Woodbury, MN 55125
Telephone: 651-294-4580
Fax: 651-228-1969

WELL NUMBER GP-1

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/14/19 **COMPLETED** 6/14/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 8.0 ft / Elev 922.0 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 8.0 ft / Elev 922.0 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION		PID (ppm)	WELL DIAGRAM
0	GMC 1	48	FILL		0.6 TOPSOIL, fine grained silty sand with organics, black, moist, loose	929.4	19.6, 9.6	
			FILL		0.8	929.2		
			FILL		1.0 SAND (SP), fine grained with trace gravel, brown, moist	929.0		
			FILL		1.5 LEAN CLAY (CL), brown, moist, stiff	928.5		
			FILL		4.0 SAND (SP), poorly graded, fine grained, brown, moist	926.0		
5	GMC 2	43	SP-SM		SILTY SAND (SM) with traces of gravel, black, moist, traces of brick, piece of slag debris at 3.5'		6.4, 7.4	
					SAND with little Silt, poorly graded, very fine grained, light brown, moist, dense (7.5') Color change to pale brown, very moist to wet			
					8.0	922.0		
10	GMC 3	43	SP-SM		SAND with some Silt, poorly graded, fine grained, light brown, wet, dense		21.2, 6.9	SP-15 Stainless Steel Discrete Sampler; (7-11) VOC Analytical Sample
15	GMC 4	43			15.0	915.0	11.0, 4.1	
			SM		16.0 SILTY SAND, poorly graded, fine grained, gray-brown, wet, frequent silt lenses (0.5 to 1 cm thickness)	914.0		
	GMC 5	43	SM		SILTY SAND, poorly graded, very fine grained, gray-brown, wet, dense		2.3, 3.9	SP-15 Stainless Steel Discrete Sampler; (16-18) VOC Analytical Sample
					18.0	912.0		
20			ML		SANDY SILT, poorly graded, very fine grained, gray-brown, wet, dense			
					20.0	910.0		
	GMC 6	43	ML		SANDY SILT, very fine grained, gray, wet, soft, frequent interbedded clayey lenses (1 to 2 cm thickness)		1.8, 7.4	
					23.0	907.0		
			SC		24.0 CLAYEY SAND with Silt, very fine grained, gray, wet, very soft/loose	906.0		SP-15 Stainless Steel Discrete Sampler; (23-25) VOC Analytical Sample
25	GMC 7	38	ML		SANDY SILT with some Clay, very fine grained, gray, wet, soft, frequent interbedded clayey lenses		4.3, 11.8	
					28.0	902.0		
	GMC 8	48	CH		FAT CLAY with some Sand, fine to medium grained sand, gray, very moist, very soft		6.6, 59.2	
30					29.5	900.5		
			CH		FAT CLAY, little very fine grained sand, dark gray, moist to very moist, very soft (31.5-32) Increasing sand content, very fine to fine grained			
					32.0	898.0		
35	GMC 9	43	CH		FAT CLAY, little very fine grained sand, gray, very moist to moist, soft to medium stiff, becoming more lean with depth		50.1, 33.8	
					36.0	894.0		
					E.O.B. @ 36.0 ' BGS.			

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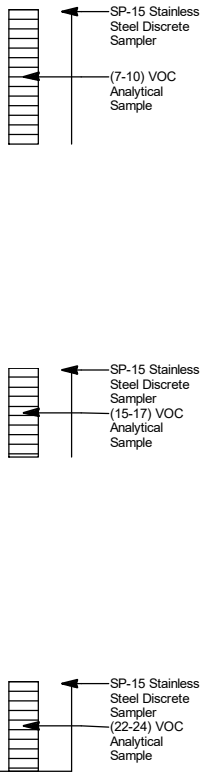
Woodbury, MN 55125
Telephone: 651-294-4580
Fax: 651-228-1969

WELL NUMBER GP-2

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/17/19 **COMPLETED** 6/17/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 7.8 ft / Elev 922.2 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 8.9 ft / Elev 921.1 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)
0	GMC 1	43	SM	0.5 TOPSOIL, silty sand with traces of gravel and organics (roots), fine grained, black, moist	929.5	5.3, 3.3
			FILL	SAND with Silt (SM), fine grained, light brown, slightly moist		
5	GMC 2	48		6.5	923.5	3.2, 2.4
			SM	SILTY SAND, fine to medium grained, orange-brown, moist, dense, slight oxidation staining		
	GMC 3	48		9.2	920.8	1.1, 2.4
10			SP-SM	SAND, some to little Silt, trace gravel, poorly graded, fine to medium grained, brown, very moist, very dense		
	GMC 4	48		13.5	916.5	2.9, 2.6
			SM	SILTY SAND, very fine grained, light brown, wet, high dilatency, medium dense		
15				15.6	914.4	
	GMC 5	48	SP-SM	16.5 SAND with Silt, fine to medium grained, brown, wet, thinly interbedded silt lenses	913.5	5.9, 4.8
			ML	SILT with Sand, poorly graded, fine grained, gray-brown, wet, very soft		
20				19.6	910.4	
	GMC 6	48	SP	SAND, little Silt, trace gravel, fine to medium grained, light gray, wet, medium dense		4.5, 17.3
				21.7	908.3	
			SM	22.5 SILTY SAND, poorly graded, fine grained, gray, wet, loose to medium dense	907.5	
			CL	23.6 SANDY LEAN CLAY with Silt, gray, wet, soft	906.4	
			SP	24.5 SAND, little Silt, trace gravel, fine to medium grained, light gray, wet, dense	905.5	
25	GMC 7	43	CL	LEAN CLAY, gray, very moist to moist, medium stiff, occassional fine grained sand lenses		11.8, 11.2
				28.0	902.0	
				E.O.B. @ 28.0 ' BGS.		

WELL DIAGRAM



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Telephone: 651-294-4580
Fax: 651-228-1969

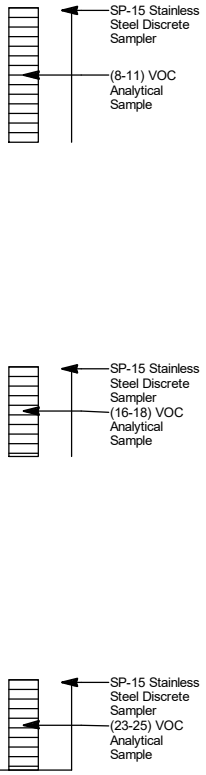
WELL NUMBER GP-3

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/17/19 **COMPLETED** 6/17/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 8.0 ft / Elev 922.0 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 6.5 ft / Elev 923.5 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)
0				0.5 ASPHALT Surface	929.5	
	GMC 1	43	FILL	1.0 SILTY SAND (SM), few gravel, well graded, dark brown, dry to slightly moist, loose	929.0	248.7, 186.7
			SP	SAND with some Silt, poorly graded, fine grained, brown, moist, dense	926.0 (4.0)	
5	GMC 2	43	SP-SM	SAND with some Silt, poorly graded, fine grained, brown to light brown, very moist to wet, dense, oxidation staining	922.0 (8.0)	95.7, 104.6
10	GMC 3	43	SM	SILTY SAND, poorly graded, fine grained, light brown to gray, wet, loose	920.0 (10.0)	88.9, 84.2
			SP	11.0 SAND with little Silt, poorly graded, fine grained, brown, wet, medium dense	919.0	
			SP-SM	12.0 SAND with some Silt, poorly graded, fine to medium grained, brown, wet, dense	918.0	
15	GMC 4	43	SM	SILTY SAND, poorly graded, very fine grained, brown, wet, loose 12-14' Fine to medium grained, medium dense	914.0 (16.0)	75.2, 101.5
	GMC 5	43	SM	SILTY SAND, poorly graded, fine to medium grained, gray-brown, wet, loose	912.5 (17.5)	62.4, 35.6
20			SM	SANDY SILT, poorly graded, very fine to fine grained, gray-brown, wet, medium dense, frequent interbedded silt lenses	910.0 (20.0)	
	GMC 6	43	ML	SANDY SILT, low plasticity, very fine grained, gray, wet, soft	908.5 (21.5)	56.8, 9.8
			ML	SANDY SILT with Clay, low plasticity, fine to medium grained, gray, wet, soft to medium stiff	907.0 (23.0)	
25			SC-SM	SANDY CLAY with Silt, low plasticity, very fine grained, gray, wet, soft 24-25.5' Fine to medium grained, very moist	904.5 (25.5)	
	GMC 7	34	CL	LEAN CLAY with little Sand and Silt, moderate plasticity, moist, soft to medium stiff, becoming more stiff with depth, interbedded lenses (1 cm thickness) of fine to medium grained clayey sand at 27.5' and 27.8'	902.0 (28.0)	39.1, 23.7

E.O.B. @ 28.0 ' BGS.

WELL DIAGRAM



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WELL NUMBER GP-4

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/17/19 **COMPLETED** 6/17/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 8.0 ft / Elev 922.0 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 5.0 ft / Elev 925.0 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)	WELL DIAGRAM
0				0.7 ASPHALT Surface	929.3		
	GMC 1	33	FILL	GRAVELLY SAND (GP), some Silt, well graded, dark brown, slightly moist, loose to moderately dense, traces of brick and slag debris	926.9	22.5, 30.7	
5	GMC 2	43	SP-SM	SAND with Silt, few gravel, fine to medium grained, brown, very moist, dense, oxidation staining, occasional interbedded silt lenses	922.0	16.9, 16.3	SP-15 Stainless Steel Discrete Sampler (5-7) VOC Analytical Sample
10	GMC 3	48	SP-SM	SAND with Silt, poorly graded, fine to medium grained, light brown, wet, medium dense, occasional silty lenses (13.5-14.1') SILTY SAND lens, fine grained		7.2, 4.0	
15	GMC 4	48			914.6	2.1, 0.5	SP-15 Stainless Steel Discrete Sampler (12-14) VOC Analytical Sample
			SM	16.0 SILTY SAND, few Gravel, fine to medium grained, light brown, wet	914.0		
20	GMC 5	43	SM	SILTY SAND, poorly graded, fine grained, tan, wet, very loose, high dilatency, occasional clayey sand lenses		1.7, 0.4	SP-15 Stainless Steel Discrete Sampler (19-21) VOC Analytical Sample
	GMC 6	31			906.5	0.2, 2.6	
			SP-SM	24.5 SAND with Silt, poorly graded, fine to medium grained, gray, wet, medium dense to dense	905.5		
25	GMC 7	38	SM	SILTY SAND, poorly graded, fine grained, gray, wet, loose	903.0	0.5, 1.8	SP-15 Stainless Steel Discrete Sampler (26-28) VOC Analytical Sample
			ML-SM	27.9 SANDY SILT, poorly graded, fine grained, gray, wet, soft	902.1		
			SP-SM	29.0 SAND with Silt, poorly graded, fine to medium grained, gray, very moist, medium dense	901.0		
30	GMC 8	43	SM	30.0 SILTY SAND, poorly graded, light gray, very moist, high dilatency	900.0	0.4, 0.6	
			CL	LEAN CLAY, traces of Sand, gray, moist, medium stiff, (31.2'-31.3') SILTY SAND lens, fine grained	898.0		
				32.0 E.O.B. @ 32.0 ' BGS.			

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BORING NUMBER GP-5

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/17/19 **COMPLETED** 6/17/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 4.0 ft / Elev 926.0 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 4.8 ft / Elev 925.2 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0					0.5 Gravel Surfacing (Class 5) — 929.5	
	GMC 1	43	FILL		SAND with Silt (SP-SM), little gravel, well graded, black and brown, slightly moist, dense, traces of slag and brick debris — 4.0 / 926.0	10.2, 7.1
5	GMC 2	43	SP-SM		SAND with Silt, poorly graded, fine to medium grained, light brown, wet, dense, occasional thinly banded silty lenses, oxidation staining SILTY SAND lenses at 9.1-9.7' and 10.2-10.5'	1.9, 2.9
10	GMC 3	48				2.4, 2.1
	GMC 4	38			14.5 / 915.5	5.8, 2.1
15	GMC 5	43	SM		SILTY SAND, few gravel, poorly graded, fine to medium grained, tan, wet, medium dense to loose (16-20') High dilantency, loose (19.6-19.9') SAND lens, fine to medium grained	0.9, 0.8
20	GMC 6	33	SP-SM		21.0 / 909.0 SAND with Silt, trace gravel, fine to medium grained, light brown, wet, medium dense — 23.5 / 906.5	7.7, 6.3
25	GMC 7	48	SM		SILTY SAND, poorly graded, gray, wet, dense, occasional clay lenses — 26.3 / 903.7	3.3, 2.8
			SC		CLAYEY SAND, gray, wet to very moist, dense, occasional silty sand pockets — 29.2 / 900.8	
30	GMC 8	44	CL		LEAN CLAY with Sand, gray, very moist to moist, medium stiff, occasional interbedded silty sand lenses — 32.0 / 898.0	1.4, 3.6
					E.O.B. @ 32.0 ' BGS.	

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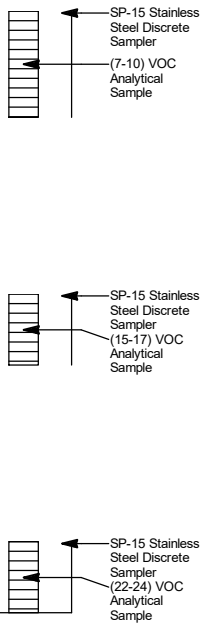
WELL NUMBER GP-6

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/18/19 **COMPLETED** 6/18/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 7.5 ft / Elev 922.5 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 6.8 ft / Elev 923.2 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)
0	GMC 1	43	FILL	Gravel Surfacing (Class 5)	929.0	57.6, 11.2
				1.0 SILTY SAND with Gravel, well Graded, dark brown, moist, loose	928.5	
			FILL	SILTY SAND (SM), traces of gravel, black, slight petroleum odor, moist, traces of concrete debris		
				4.0 SILTY SAND (SM), few gravel, dark brown to black, moist, dense (3') Green staining (4.5') Wood chip debris, slight petroleum odor	926.0	
5	GMC 2	43	SM	SILTY SAND, poorly graded, fine grained, dark brown, organic odor, very moist to wet, dense (7.5-8') Green/gray staining		111.6, 42.3
				8.0	922.0	
10	GMC 3	43	SM	SILTY SAND, poorly graded, fine to medium grained, gray, organic odor, wet, dense, some oxidation staining		10.3, 9.6
				10.0	920.0	
			SM	SILTY SAND with some Clay, poorly graded, fine to medium grained, gray, slight organic odor, wet, dense, some oxidation staining		
				12.0	918.0	
15	GMC 4	34	SM	SILTY SAND, poorly graded, fine grained, light brown, wet, dense, occasional clayey lenses		37.4, 34.3
				13.5	916.5	
			SC-SM	SILTY SAND, few Clay, poorly graded, fine to medium grained, light brown, wet, dense, frequent clayey lenses		
				16.0	914.0	
20	GMC 5	38	SM	SILTY SAND, poorly graded, fine grained, light brown, wet, loose, clay content increasing with depth		25.6, 117.8
				19.5	910.5	
	GMC 6	38	SC	CLAYEY SAND, fine grained, brown, wet, very soft		10.8, 6.5
				22.5	907.5	
25	GMC 7	48	SC	SANDY CLAY, slightly plastic, fine to medium grained, wet, very soft, becoming more lean with depth, occassional sandy lenses		
				26.0	904.0	
			CH	FAT CLAY with some Sand, fine grained, gray, very moist, very soft		3.1, 6.3
				28.0	902.0	
30	GMC 8	43	CL	CLAY, little Sand, gray, very moist, becoming more lean with depth, few sandy lenses		9.9, 2.2
				31.7	898.3	
			SC	32.0 CLAYEY SAND, fine to medium grained, gray, very moist, medium dense	898.0	
35	GMC 9	48	CL	LEAN CLAY, little Sand, gray, moist, soft to medium stiff, occasional sand lenses - moist to very moist		2.5, 4.5
				36.0	894.0	
				E.O.B. @ 36.0 ' BGS.		

WELL DIAGRAM



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WELL NUMBER GP-7

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/18/19 **COMPLETED** 6/18/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 6.0 ft / Elev 924.0 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 7.2 ft / Elev 922.8 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0	GMC 1	38	SM		GRASS/GRAVEL Surface SILTY SAND, some gravel, well graded, fine to medium grained, dark brown, slightly moist 3.0 927.0	3.9, 5.0	
5	GMC 2	38	FILL		SILTY SAND (SM), poorly graded, fine grained, reddish-brown, moist, medium dense (4-8') Oxidation staining (7-8') Very moist to wet, dense 8.0 922.0	2.8, 2.6	SP-15 Stainless Steel Discrete Sampler (6-9) VOC Analytical Sample
10	GMC 3	38	SC		CLAYEY SAND, fine to medium grained, reddish-brown, very moist, medium dense to dense (10.5-12') Wet, loose, color change to gray-brown (12-15) Clay content increasing with depth, occassional clayey lenses, loose to medium dense	8.8, 19.5	
15	GMC 4				15.0 915.0	11.3, 22.5	SP-15 Stainless Steel Discrete Sampler (14-16) VOC Analytical Sample
			SC		SANDY CLAY, fine grained, gray-brown, wet, medium stiff 16.0 914.0		
20	GMC 5		CH		FAT CLAY, little Sand, fine grained dark gray, very moist, soft, occasional sand partings 20.0 910.0	13.5, 2.7	
	GMC 6	38	CL		LEAN CLAY, little Sand, fine grained, drak gray, moist, medium stiff, occasional sand lenses increasing with depth (23-24) Frequent laminations of very fine sand and silt (varved) 24.0 906.0	0.3, 0.6	SP-15 Stainless Steel Discrete Sampler (21-23) VOC Analytical Sample
					E.O.B. @ 24.0 ' BGS.		

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WELL NUMBER GP-8

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/18/19 **COMPLETED** 6/18/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING ---
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 5.3 ft / Elev 924.8 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION		PID (ppm)	WELL DIAGRAM
0					0.5 ASPHALT Surface	929.5		
	GMC 1	48	FILL		1.5 SILTY SAND with Gravel (SM), well graded, dark brown, moist, traces of concrete debris	928.5	1.1, 3.8	
			SP		SAND, some Silt, poorly graded, fine grained, brown, moist, medium dense	926.0		
5	GMC 2	38	SM		4.0 SILTY SAND, little clay, poorly graded, fine grained, light brown, moist, very dense, oxidation staining	924.0	0.9, 8.8	SP-15 Stainless Steel Discrete Sampler (5-7) VOC Analytical Sample
			SC		6.0 CLAYEY SAND, poorly graded, fine to medium grained, light brown, moist, stiff to medium stiff, oxidation staining	922.0		
10	GMC 3	0			8.0 No Recovery	918.0	--	
15	GMC 4	0			12.0 No Recovery	914.0	--	SP-15 Stainless Steel Discrete Sampler (12-14) VOC Analytical Sample
20	GMC 5	43	SC		16.0 SANDY CLAY, fine to medium grained, gray-brown, wet, soft (16-18') Traces of gravel	910.0	4.6, 9.1	SP-15 Stainless Steel Discrete Sampler (19-21) VOC Analytical Sample
	GMC 6	43	SC		20.0 SANDY CLAY, fine grained, dark gray, wet to very moist, soft, frequent sand lenses (1-2 cm thickness) (23-24') Frequent sand laminations, very moist (24-28') Becoming more lean with depth, frequent laminations of silt and very fine sand (varved), moist		12.2, 7.9	
25	GMC 7	43			28.0	902.0	0.4, 0.4	
					E.O.B. @ 28.0 ' BGS.			

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WELL NUMBER GP-9

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/18/19 **COMPLETED** 6/18/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 7.8 ft / Elev 922.2 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 6.3 ft / Elev 923.7 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION		PID (ppm)	WELL DIAGRAM
0					ASPHALT Surface	929.2		
	GMC 1	33	FILL		SAND with Silt (SM), some to little gravel, fine to medium grained, dark brown to brown, slightly moist, medium dense (1.1-1.5') Traces of brick and slag debris (3.2') Woven geotextile material	924.8	15.4, 2.2	
5	GMC 2	38	FILL		GRAVELLY SAND with Silt (SM), well graded, dark brown, very moist, some slag, traces of brick, concrete and ash debris	922.9	24, 29.2	SP-15 Stainless Steel Discrete Sampler (6-8) VOC Analytical Sample
10	GMC 3	48	SP-SM		SAND with Silt, few gravel, poorly graded, fine grained, orangish-brown, very moist, dense (8-12.5') Wet (9.8-10.4') Sand lens, very fine grained (11.3-11.4) Clayey sand lens	917.5	11.9, 6.7	
15	GMC 4	43	SM		SILTY SAND, poorly graded, fine grained, brown, wet, loose, high dilatency, traces of gravel	913.6	17.5, 15.1	SP-15 Stainless Steel Discrete Sampler (13-15) VOC Analytical Sample
	GMC 5	38	CL		LEAN CLAY with Sand, gray, wet, medium stiff to soft, occasional silty sand partings	911.8	10.4, 4.8	
			SM		SILTY SAND, poorly graded, very fine to fine grained, gary, wet, loose	910.5		
20			SC		SANDY CLAY, gray, wet, soft, occasional silt partings	909.0		
	GMC 6	29	CL		LEAN CLAY with some Sand, few gravel, gray, slightly moist, medium stiff, frequent fine grained sand lenses, occasional silt partings	906.0	3.8, 4.4	SP-15 Stainless Steel Discrete Sampler (20-22) VOC Analytical Sample
					E.O.B. @ 24.0 ' BGS.			

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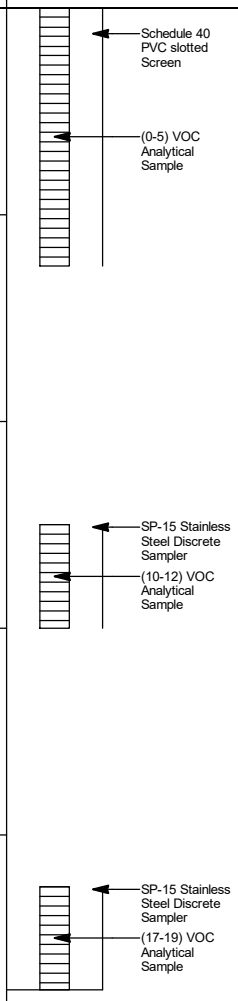
WELL NUMBER GP-10

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 5.5 ft / Elev 924.5 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 3.9 ft / Elev 926.1 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)
0				0.6 ASPHALT Surface	929.4	
	GMC 1	38	FILL	GRAVELLY SAND with Silt (SP-SM), well graded, dark brown, slightly moist, medium dense, traces of brick, concrete and slag debris, geotextile at 1.8'	928.2	2.8, 1.4
			FILL	SAND with Silt (SP-SM), poorly graded, fine to medium grained, brown, slightly moist, medium dense	926.0	
5	GMC 2	43	SM	SILTY SAND, poorly graded, fine to medium grained, brown to tan, very moist, medium dense to loose, slight oxidation staining	922.5	1.3, 1.4
			SM	SANDY SILT, poorly graded, very fine grained, light brown, very moist to wet, soft, trace peat lenses	922.0	
10	GMC 3	48	SP-SM	SAND with Silt, trace gravel, fine to medium grained, brown, wet, medium dense, thinly banded	920.3	1.1, 0.6
			SM	SILTY SAND, fine grained, light brown, wet, loose, high dilantency, frequent clayey silt partings (11.7') Color change to gray-brown	918.0	
15	GMC 4	43	SP-SM	SAND with Silt, fine to medium grained, gray-brown, wet, medium dense, occasional silt partings	917.2	1.5, 1.0
			ML	SANDY SILT, poorly graded, very fine grained, gray-brown, wet, soft	914.7	
	GMC 5	38	SC	SANDY CLAY, gray, wet, medium stiff, occasional silt lenses (varved) (16.5-16.8') Sand lens, fine to medium grained	912.7	1.8, 1.7
20			CL	LEAN CLAY, few gravel, gray, very moist to moist, medium stiff, occasional silty sand lenses and silt partings (20-24') Slightly moist, frequent sand lenses and silt seams (varved) (22.5-22.7') Clayey sand lens, fine to medium grained, moist		
	GMC 6	28			906.0	4.5, 2.4
				E.O.B. @ 24.0 ' BGS.		

WELL DIAGRAM



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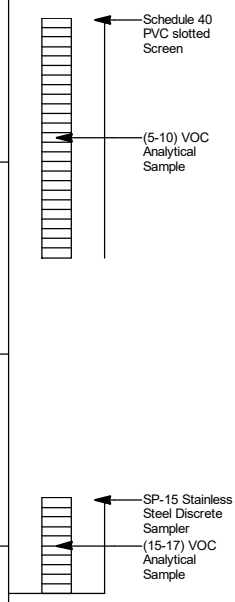
WELL NUMBER GP-11

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/21/19 **COMPLETED** 6/21/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 7.0 ft / Elev 923.0 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 7.8 ft / Elev 922.2 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION		PID (ppm)
0					0.5 Gravel Surface (Class 5)	929.5	
	GMC 1	34	FILL		SAND with Silt (SP-SM), fine to medium grained, dark brown, slightly moist, loose to medium dense traces of ogranics (roots), traces of brick and slag debris	927.6	0.0, 0.0
					2.8 Buried concrete, coarse grained aggregate	927.2	
			FILL		SAND with Silt (SP-SM), trace gravel, fine to medium grained, brown, moist to very moist, medium dense	924.2	
5	GMC 2	38	SP-SM		SAND with Silt, poorly graded, fine grained, orangish-brown, very moist to wet, medium dense, occasional silt seams, trace peat lenses	922.5	0.0, 0.3
			SM		SILTY SAND, light brown, wet	920.5	
10	GMC 3	38	SC		CLAYEY SAND, very fine grained, light brown, wet, dense, occasional silt partings	919.0	0.3, 0.5
			CL		LEAN CLAY with Sand, trace gravel, light brown, wet, medium stiff	918.0	
15	GMC 4	0			No Recovery	914.0	--
	GMC 5	48	ML		SILT with interbedded Clay, low plasticity, gray, very moist, soft, occasional silt partings	911.3	0.4, 0.4
20			CL		LEAN CLAY, trace sand, gray, very moist, medium stiff to soft, occasional silt lenses	910.0	
	GMC 6	48	SC-SM		SANDY SILT with interbedded Clay, gray, slightly moist, soft	909.2	0.1, 0.2
			CL		LEAN CLAY, gray, slightly moist, medium stiff, frequent fine sand lenses, few silty seams	906.0	
					E.O.B. @ 24.0 ' BGS.		

WELL DIAGRAM



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WELL NUMBER GP-12

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/21/19 **COMPLETED** 6/21/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 7.7 ft / Elev 922.3 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 6.9 ft / Elev 923.1 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION	PID (ppm)	WELL DIAGRAM
0	GMC 1	43	FILL	Gravel Surfacing (Class 5) SILTY SAND (SM), few gravel, poorly graded, fine grained, dark brown, moist, traces of slag debris 3.5 926.5	0.0, 0.2	
			FILL	4.0 926.0 SILTY SAND with Gravel, well graded, medium to coarse grained, brown, moist, traces of concrete debris		
5	GMC 2	43	FILL	SILTY SAND with Gravel (SM), well graded, fine to coarse grained, brown, moist to very moist, concrete and traces of slag debris, traces of glass and plastic debris (5-7') 7.7 922.3	0.3, 0.3	SP-15 Stainless Steel Discrete Sampler (7-10) VOC Analytical Sample
			FILL	8.0 922.0 SILTY SAND (SM), poorly graded, fine to medium grained, gray-brown, moist to very moist, medium dense		
10	GMC 3	48	SM	9.5 920.5 SILTY SAND, poorly graded, fine grained, brown, sulfur odor, very moist to wet, dense	0.5, 0.4	
			SM	SILTY SAND, poorly graded, very fine grained, wet, medium dense, trace organics (11-12') Few silty lenses 13.0 917.0		
15	GMC 4	43	ML	14.0 916.0 SANDY SILT, poorly graded, very fine grained, gray, wet, very loose	0.1, 0.1	
			SM	SILTY SAND, poorly graded, fine to medium grained, gray, wet, dense 15.5 914.5		SP-15 Stainless Steel Discrete Sampler (15-17) VOC Analytical Sample
			SC	16.0 914.0 CLAYEY SAND with Silt, very fine grained, gray, wet, soft, trace organics		
20	GMC 5	43	SC	CLAY with some Sand, very fine grained, gray, slight organic odor, wet, very soft, frequent sand lenses (0.5-1.5 cm thickness) 20.0 910.0	0.1, 0.3	
	GMC 6	33	SC	SANDY CLAY, fine to medium grained, gray, wet, very soft 21.5 908.5		
			CL	LEAN CLAY, some Sand, very fine grained, gray, very moist, very soft to soft, few sandy lenses, becoming more lean with depth (23-24) Less sand, trace sandy lenses, moist, soft 24.0 906.0	0.3, 0.3	SP-15 Stainless Steel Discrete Sampler (22-24) VOC Analytical Sample
25	GMC 7	48	CL	LEAN CLAY, trace very fine grained sand, gray, moist, soft, becoming more lean and stiff with depth, trace sand lenses (1 cm thickness), fine to medium grained at 24.5', 26' and 27.5' 28.0 902.0	0.4, 0.5	
				E.O.B. @ 28.0 ' BGS.		

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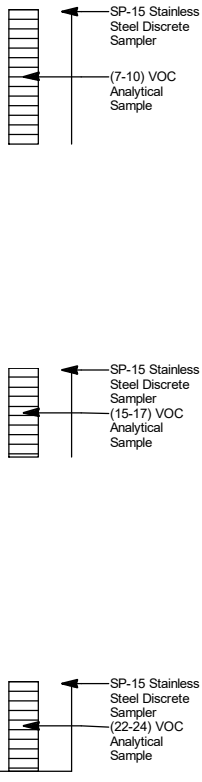
WELL NUMBER GP-13

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/21/19 **COMPLETED** 6/21/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 8.0 ft / Elev 922.0 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 7.2 ft / Elev 922.8 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION	PID (ppm)
0				0.5 Gravel Surfacing (Class 5) 929.5	
	GMC 1	33	FILL	SAND with Silt (SP-SM), trace gravel, well graded, fine to medium grained, brown, slightly moist, medium dense, some woodchip, slag and trace brick debris	0.0, 0.1
				3.8 926.2	
			FILL	4.0 LEAN CLAY with Sand (CL), little gravel, gray-brown, slightly moist, stiff, trace organics (roots) 926.0	
5	GMC 2	38	FILL	SILTY SAND (SM), trace gravel, fine to medium grained, tan to brown, slightly moist, medium dense, some wood chips, piece of styrofoam debris at 7.3'	0.1, 0.1
				7.5 922.5	
	GMC 3	43	SM	SILTY SAND, poorly graded, fine grained, dark brown to black, organic odor, moist, medium dense, traces of organics (roots, wood fragments) and peat	0.3, 0.3
10				11.0 919.0	
			SP-SM	12.0 SAND with Silt, poorly graded, fine grained, gray-brown, moist, dense, occasional silt lenses 918.0	
	GMC 4	43	SM	SILTY SAND, poorly graded, very fine grained, gray, wet, dense, interbedded silt lenses, occasional clayey lenses	0.2, 0.2
				14.5 915.5	
15			SC	SANDY LEAN CLAY, gray, very moist to moist, medium stiff, occasional silt partings, trace fine grained sand seams	
				16.0 914.0	
	GMC 5	48	ML	SILT with interbedded LEAN CLAY, light gray, wet, soft, frequent fine grained sand lenses (17.5-17.8) LEAN CLAY lens (21-21.4) SILTY SAND lens, fine grained	0.3, 0.2
20					
	GMC 6	48			0.2, 0.2
				23.0 907.0	
			CL	24.0 LEAN CLAY, gray, slightly moist, soft to medium stiff, frequent sand lenses 906.0	
			SC	24.5 SANDY CLAY with Silt, gray, wet, soft 905.5	
25	GMC 7	48	CL	LEAN CLAY, gray, very moist to moist, medium stiff to stiff, occasional fine grained sand lenses	0.2, 0.1
				28.0 902.0	
				E.O.B. @ 28.0 ' BGS.	

WELL DIAGRAM



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WELL NUMBER GP-14

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/24/19 **COMPLETED** 6/24/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 10.0 ft / Elev 920.0 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 13.0 ft / Elev 917.0 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION		PID (ppm)	WELL DIAGRAM
0	GMC 1	33	FILL		Gravel Surfacing (Class 5) SILTY SAND with Gravel (SM), well graded, fine to coarse grained, dark brown, moist, traces of slag, concrete and brick debris	2.5 / 927.5	0.1, 0.5	
			FILL		SILTY SAND (SM), poorly graded, fine grained, black, moist, dense	4.0 / 926.0		
5	GMC 2	38	FILL		(3-4') Color change to dark brown, traces of gravel and wood chips	6.0 / 924.0	0.7, 1.7	
					SILTY SAND (SM), trace gravel, poorly graded, dark brown to black, very moist, dense (5.5-6') Traces of wood chips	6.7 / 923.3		
			FILL		Buried Concrete			
10	GMC 3	38			SILTY SAND (SM), poorly graded, fine to medium grained, gray-brown, very moist to wet, medium dense	10.0 / 920.0	0.7, 4.4	Schedule 40 PVC slotted Screen
			FILL		(8-10) Few gravel and concrete debris	10.5 / 919.5		
			FILL		SILTY SAND with Gravel (SM), well graded, fine to coarse grained, gray-brown, very moist, medium dense, concrete debris	11.5 / 918.5		(9-14) VOC Analytical Sample
			FILL			12.0 / 918.0		
15	GMC 4	48	SM		SILTY SAND (SM), poorly graded, fine to medium grained, dark brown, very moist, dense, plastic debris at 10.5'	13.5 / 916.5	2.8, 0.4	
			SC		SILTY SAND with Clay (SM), poorly graded, fine grained, black, slight organic odor, very moist, dense, trace organics			
					SILTY SAND with Clay, poorly graded, fine grained, gray-brown, very moist, dense (13') Peat / wood fragment layer, 3-in thick			
20	GMC 5	48			SANDY CLAY, some Silt, fine grained, gray-brown, slight organic odor, very moist to wet, soft to medium stiff, trace organics	18.5 / 911.5	0.2, 0.1	
			CL		(16-18.5') Becoming more lean with depth, less sand			
					LEAN CLAY with some Sand, little silt, fine grained, dark-gray, moist, medium stiff, frequesnt fine sand and silt laminations (varved)	20.0 / 910.0		SP-15 Stainless Steel Discrete Sampler (19-21) VOC Analytical Sample
25	GMC 6	43	CL		LEAN CLAY, little sand, fine grained, gray, very moist, soft, trace sand lenses (22-24) Frequent sand lenses, fine to medium grained, trace organics	24.0 / 906.0	0.1, 0.0	
	GMC 7	48	CL		LEAN CLAY, little silt and sand, fine grained, gray, very moist, soft to medium stiff, frequent sand lenses 2cm thickness, very moist to wet, frequent silt partings (varved)	28.0 / 902.0	0.2, 0.3	SP-15 Stainless Steel Discrete Sampler (26-28) VOC Analytical Sample
30	GMC 8	0			No Recovery	32.0 / 898.0	--	
	GMC 9	48	CH		FAT CLAY, gray, moist, soft, traces of silt and fine grained sand partings	34.0 / 896.0	0.3, 0.3	
35			CH-CL		LEAN CLAY, gray, moist, medium stiff, trace silt partings	36.0 / 894.0		
					E.O.B. @ 36.0 ' BGS.			

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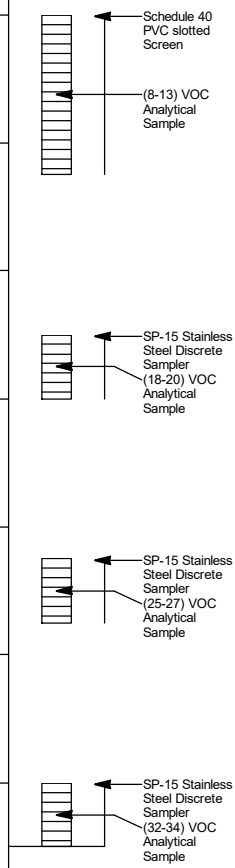
WELL NUMBER GP-15

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/24/19 **COMPLETED** 6/24/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 10.0 ft / Elev 920.0 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 10.3 ft / Elev 919.7 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION	PID (ppm)
0	GMC 1		FILL	0.4 Gravel Surfacing (Class 5) 929.6 GRAVELLY SAND with Silt (GW), well graded, fine to coarse grained, dark brown, slightly moist, loose, common concrete and slag debris, trace slag debris 2.5 927.5	0.5, 0.6
5	GMC 2		FILL	SILTY SAND (SM), trace gravel, poorly graded, fine to medium grained, brown, moist, dense, trace concrete and wood debris 6.8 923.2	0.3, 0.7
			FILL	7.8 CLAY (CL), trace gravel and silt, gray, moist, medium stiff, traces of organics (roots) 922.2	
10	GMC 3		FILL FILL FILL PT	8.8 SAND with Silt (SP-SM), poorly graded, fine grained, dark gray, wet, dense 921.2 10.5 CLAYEY SAND (SC), fine grained, gray, wet, medium dense, trace organics (roots & wood chips), trace concrete debris 919.5 12.5 PEAT, some fine sand, trace clay, black, wet, very stiff 917.5	1.1, 0.5
15	GMC 4		SM SP-SM	14.1 SILTY SAND with PEAT, poorly graded, fine grained, dark gray to black, very moist to wet, dense, trace clayey lenses 915.9 SAND with Silt, trace gravel, gray, wet, dense, occasional peat lenses 16.0 914.0	0.7, 0.4
20	GMC 5		SC CL ML-SM	16.7 CLAYEY SAND, very fine to fine grained, gray, wet, medium dense 913.3 LEAN CLAY, gray, wet, soft, frequent sand seams and silt partings (varved) 19.5 910.5 SILT with Sand, trace gravel, high clay content, gray, wet, soft 21.0 909.0	0.1, 0.2
25	GMC 6		ML CL	SILT, some Sand, fine grained, gray, wet, soft, high dilatency, frequent sand lenses 23.2 906.8 24.0 LEAN CLAY, gray, wet, soft, frequent sand lenses and silt partings 906.0	0.1, 0.2
	GMC 7		ML CL	SILT with Clay, gray, slightly moist, soft, frequent fine sand lenses, wet sand lense 21-21.2' 25.5 904.5 LEAN CLAY, gray, slightly moist, medium soft, frequent interbedded silt and fine to medium grained sand lenses, occasional peat lenses 28.0 (prominent varved texture) 902.0	0.6, 0.5
30	GMC 8		ML CL	SILT with Clay, gray, wet, very soft, frequent sand lenses (varved) 30.0 900.0 LEAN CLAY, gray, slightly moist, soft, frequent silt and sand laminations (varved) 32.0 898.0	0.7, 0.7
35	GMC 9		CH SC	32.5 FAT CLAY, little sand, gray, wet, very soft 897.5 SANDY LEAN CLAY, gray, wet, medium soft, frequent sand lenses, fine grained SILTY SAND lenses (33.4-33.6') and (34-34.3') 36.0 894.0	0.3, 0.1
40	GMC 10		CL CH	LEAN CLAY, light to dark gray, slightly moist, medium stiff, frequent silt seams and partings (prominent varved texture) 39.4 890.6 40.0 FAT CLAY, high plasticity, gray, slightly moist, medium stiff to stiff, occasional silt lenses 890.0	0.4, 0.2

E.O.B. @ 40.0 ' BGS.

WELL DIAGRAM



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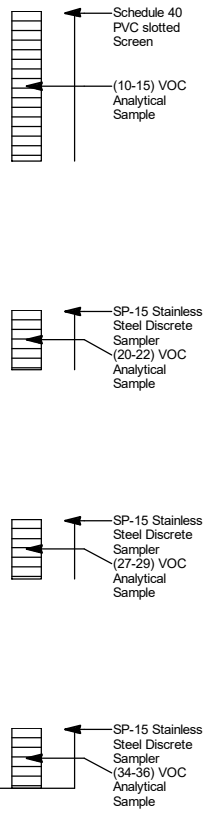
WELL NUMBER GP-16

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/24/19 **COMPLETED** 6/26/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 10.0 ft / Elev 920.0 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 10.7 ft / Elev 919.3 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)
0	GMC 1	29	FILL	Gravel Surafcing SILTY SAND with Gravel (SM), well graded, fine to coarse grained, dark brown to black, slightly moist, medium dense (0-3.5') Trace brick, concrete and slag debris (3.5-5.5') Trace gravel and wood chips		1.5, 4.5
5	GMC 2	38	FILL	5.5 SAND (SP), poorly graded, medium grained, light brown, very dense 8.0 (7.5') Buried Concrete	924.5 922.0	2.4, 1.2
10	GMC 3	38	FILL	SILTY SAND (SM), poorly graded, fine grained, dark brown, very moist, dense, trace organics (roots) 11.0	919.0	3.8, 2.9
			PT	12.0 PEAT with Sand and Clay, black, slight organic odor, very moist, dense	918.0	
15	GMC 4	43	SC	CLAYEY SAND, fine to medium grained, black, organic odor, very moist to wet, dense to very dense 16.0	914.0	1.2, 1.2
20	GMC 5	48	SC	CLAYEY SAND, fine to medium grained, gray, wet, soft/loose, trace organics 18.0	912.0	1.8, 1.1
			SC	19.0 SANDY CLAY, little silt, very fine to fine grined, gray, wet, medium stiff, few organics	911.0	
			SC	20.0	910.0	
25	GMC 6	48	SC	CLAYEY SAND, fine to medium grained, gray, slight organics odor, wet, dense SANDY CLAY with Silt, very fine to fine grained, gray, wet, very soft, fequent sandy lenses, trace organics (26.5-28) Increasing SILT, medium stiff, frequent silt and fine sand laminations (varved)		1.9, 2.3
	GMC 7	43		28.0	902.0	0.9, 1.8
30	GMC 8	48	CH	FAT CLAY, gray, moist, soft to medium stiff, frequent silt and very fine sand laminations (varved) 32.0	898.0	0.6, 1.0
35	GMC 9	48	CL-ML	LEAN CLAY with Silt and Sand, very fine grained, gray, very moist, soft, frequent silt and wet sand lenses 36.0	894.0	1.4, 1.1
40	GMC 10	48	SC	37.0 SANDY CLAY with Silt, fine to medium grained, gray, very moist to wet, very dense, frequent silt and clay lenses	893.0	0.9, 1.1
			CH	FAT CLAY, gray, very moist to wet, soft, frequent silt and sand lenses, wet 39.8	890.2	
			ML	40.0 SILT, little sand and clay, gray, very moist to wet, soft	890.0	
	GMC 11	48	CH	FAT CLAY, gray, moist, stiff, few silt laminations 44.0	886.0	1.2, 0.8
				E.O.B. @ 44.0 ' BGS.		

WELL DIAGRAM



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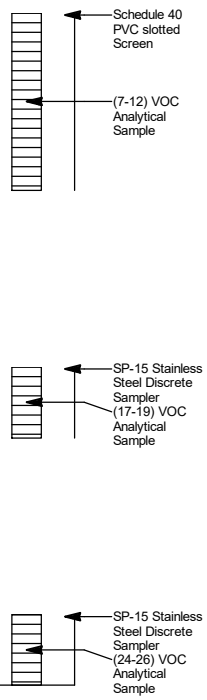
WELL NUMBER GP-17

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/26/19 **COMPLETED** 6/26/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 10.5 ft / Elev 919.5 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 8.1 ft / Elev 922.0 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)
0	GMC 1	48	FILL	Gravel Surfacing (Class 5)	929.0	0.8, 0.9
			FILL	SILTY SAND with organics (buried TOPSOIL), trace gravel, fine to medium grained, black, slightly moist, medium dense		
				SILTY SAND (SM), trace organics, poorly graded, dark brown, dense, trace brick and concrete debris	926.3	
			FILL	CLAY with Sand (CL), trace gravel, brown, slightly moist, very stiff	926.1	
5	GMC 2	43	FILL	SAND with Silt (SP-SM), trace gravel, poorly graded, fine grained, light brown, slightly moist, medium dense, occasional concrete debris	923.5	1.2, 1.3
			FILL	SILTY SAND (SM), poorly graded, fine to medium grained, light brown, moist, medium dense, trace organics (peat, roots and wood), common concrete debris	922.8	
10	GMC 3	48	FILL	SILTY SAND (SM), few gravel, poorly graded, fine grained, dark brown, moist, medium dense, trace organics, few concrete debris	920.8	0.9, 0.1
			PT	PEAT, trace sand and silt, black, very moist to wet, medium stiff, common roots and wood	918.3	
15	GMC 4	48	SM	SILTY SAND, poorly graded, very fine to fine grained, light gray, organic odor, wet, dense, trace organics	917.5	0.6, 1.4
			SM	SILTY SAND, poorly graded, very fine grained, dark brown to black, wet, very loose, high dilatency	914.7	
			SP-SM	SAND with Silt, poorly graded, fine grained, gray, wet, dense, trace organics, occasional silt partings	914.0	
20	GMC 5	48	ML	SANDY SILT, gray, wet, soft, frequent fine sand lenses and occasional clay lenses (varved)	911.5	0.9, 0.6
			SC	SANDY LEAN CLAY, gray, wet, soft, frequent interbedded silt and fine sand laminations (varved)	910.0	
	GMC 6	43	CL	LEAN CLAY, gray, slightly moist, medium stiff, frequent sand lenses, occasional silt partings	906.0	1.1, 1.1
25	GMC 7	33	CL	SILT, gray, very moist, very soft, frequent interbedded fine sand, occasional clay and silt interbeds with high plasticity	904.9	0.9, 0.9
			CL	LEAN CLAY, gray, very moist, soft, frequent sand lenses, occasional silt partings	901.3	
30	GMC 8	48	ML	SANDY SILT, low plasticity, gray, moist, very soft, frequent fat clay interbeds (27.1-27.3') SILTY SAND lens	898.4	1.3, 1.3
			CL	LEAN CLAY, gray, moist, medium soft, occasional interbedded silt and fat clay	898.0	
35	GMC 9	48	CH	FAT CLAY, gray, very moist to moist, trace fine sand interbeds, occassional lean clay lenses, becoming more stiff with depth	894.0	0.7, 0.8

E.O.B. @ 36.0 ' BGS.

WELL DIAGRAM



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Woodbury, MN 55125
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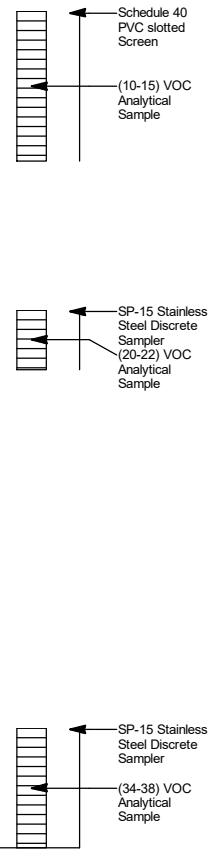
Fax: 651-228-1969

WELL NUMBER GP-18

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/26/19 **COMPLETED** 6/26/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Geoprobe with 4' Macro-Core
AT START OF DRILLING 10.0 ft / Elev 920.0 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 10.5 ft / Elev 919.5 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER	SAMPLE RECOVERY (in)	U.S.C.S.	MATERIAL DESCRIPTION		PID (ppm)
0	GMC 1	43	FILL	Gravel Surfacing (Class 5) SILTY SAND (SM), poorly graded, fine to medium grained, brown, moist, dense (2.5-4') Little clay, traces of gravel and organics (roots), traces of slag debris, organic odor	4.0 / 926.0	1.9, 3.1
5	GMC 2	48	FILL	SILTY SAND with Gravel (SM), little clay, well graded, brown, moist, medium dense, common concrete debris (4-7') Blue staining, traces of slag	7.0 / 923.0	5.8, 2.7
			FILL	SANDY LEAN CLAY with Gravel (SC), mottled gray, tan and green, moist, very stiff, traces of concrete debris	8.0 / 922.0	
10	GMC 3	48	FILL	CLAYEY SAND (SC), some silt, fine grained, black, moist, medium dense, traces of concrete debris	9.0 / 921.0	3.3, 3.8
15	GMC 4	48	SM	SILTY SAND, poorly graded, fine grained, dark gray, very moist to wet, dense (16-17') Increasing clay content, trace organics, slight organic odor, wet	17.0 / 913.0	2.9, 1.8
20	GMC 5	48	SC	SANDY CLAY with Silt, fine grained, gray, wet, soft, frequent silt lenses, trace organics	24.0 / 906.0	1.5, 2.5
	GMC 6	5				--
25	GMC 7	48	CH	FAT CLAY, gray, very moist, soft, few sand and silt lenses (27-28) Increasing silt laminations (prominent varved texture)	28.0 / 902.0	2.6, 2.7
			SC	CLAYEY SAND with Silt, very fine grained, gray, very moist, soft	29.0 / 901.0	
30	GMC 8	48	CH	FAT CLAY with Silt and very fine Sand, gray, very moist, very soft, frequent sand and silt lenses	32.0 / 898.0	3.0, 2.9
35	GMC 9	48	CL	LEAN CLAY, gray, moist, medium stiff, frequent sand lenses and silt partings, becoming more stiff with depth	34.5 / 895.5	3.6, 3.2
			CL-ML	LEAN CLAY, gray, moist, medium stiff, frequent sand and silt interbeds (prominent varved texture)	36.0 / 894.0	
40	GMC 10	48	SM	SILTY SAND, some clay, fine grained, gray, wet, dense (37-39) Increasing clay content	39.0 / 891.0	1.8, 2.2
			ML	SILT, gray, very moist to moist, perdominantly silt with frequent sand partings and clay lenses	40.0 / 890.0	
	GMC 11	48	CL-ML	LEAN CLAY with Silt, low plasticity, gray, moist, medium stiff, frequent sand partings	42.0 / 888.0	3.1, 3.8, 2.9
			CH	FAT CLAY, gray, moist, stiff, trace silt partings	44.0 / 886.0	
				E.O.B. @ 44.0 ' BGS.		

WELL DIAGRAM



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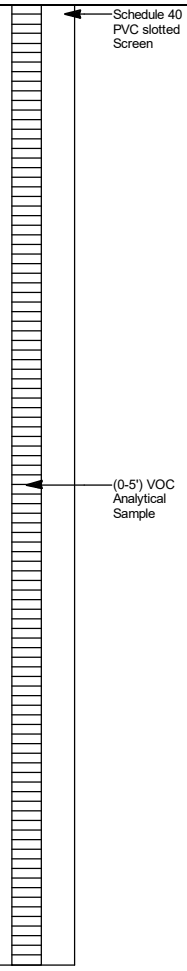
1802 Wooddale Drive, Suite 100
Woodbury, MN 55125
Telephone: 651-294-4580
Fax: 651-228-1969

WELL NUMBER HA-1

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 920 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT START OF DRILLING 0.3 ft / Elev 919.7 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 0.5 ft / Elev 919.5 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0.0	GS 1		PT		Grass Surface PEAT with roots and organics, black, very moist to wet, soft 1.0 919.0	0.3
	GS 2		PT		PEAT, trace organics, black, wet, very soft 2.0 918.0	0.3
2.0	GS 3		PT		PEAT, traces of brown silt and sand, black, wet, soft 3.0 917.0	0.2
	GS 4		PT		PEAT, trace sand and silt, black, wet, soft 4.0 916.0	0.1
4.0	GS 5		SM		SILTY SAND, some PEAT, trace clay, very fine to fine grained, dark gray, wet, soft 5.0 915.0	0.0
	GS 6		CL		LEAN CLAY, some sand, fine grained, greenish-gray, very moist to moist, soft, occasional silt partings 6.5 913.5	0.1
6.0					E.O.B. @ 6.5 ' BGS.	

WELL DIAGRAM



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Fax: 651-228-1969

BORING NUMBER HA-2

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 920 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT START OF DRILLING 0.5 ft / Elev 919.5 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 0.5 ft / Elev 919.5 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0						
	GS 1		PT		Grass Surface PEAT with organics, dark brown to black, very moist to wet, soft	0.0
1					1.0 919.0	
	GS 2		PT		PEAT, black, wet, very soft	0.2
2						
	GS 3					0.3
3					3.0 917.0	
					E.O.B. @ 3.0 ' BGS.	

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Fax: 651-228-1969

BORING NUMBER HA-3

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 920 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT START OF DRILLING 0.5 ft / Elev 919.5 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 0.5 ft / Elev 919.5 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0					Grass Surface PEAT with organics (roots), black, wet, very soft	
1	GS 1					0.3
2	GS 2		PT			0.3
3	GS 3					0.3
					3.5 916.5 E.O.B. @ 3.5 ' BGS.	

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BORING NUMBER HA-4

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 920 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT START OF DRILLING 0.5 ft / Elev 919.5 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 0.5 ft / Elev 919.5 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0					Grass Surface PEAT with organics (roots), black, wet, very soft	
1	GS 1		PT			0.1
2	GS 2					0.0
3	GS 3				3.0 917.0	0.3
					E.O.B. @ 3.0 ' BGS.	

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Fax: 651-228-1969

BORING NUMBER HA-5

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 920 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT START OF DRILLING 0.5 ft / Elev 919.5 ft
LOGGED BY KJJ **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 0.5 ft / Elev 919.5 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0					Grass Surface PEAT, with organics, dark brown to black, wet, very soft	
1	GS 1		PT			0.6
2	GS 2					0.2
3	GS 3					0.5
					3.0 917.0	
					E.O.B. @ 3.0 ' BGS.	

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BORING NUMBER HA-6

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT START OF DRILLING 0.0 ft / Elev 930.0 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 0.0 ft / Elev 930.0 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0					Landscape Gravel Surface	
	GS 1		SP-SM		SAND with Silt, poorly graded, fine grained, trace medium grained sand & gravel, light brown, slightly moist, medium dense	0.2
	GS 2					0.6
1						
	GS 3					1.1
	GS 4					0.5
2						
	GS 5					1.0
3					3.0 927.0	
					E.O.B. @ 3.0 ' BGS.	

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1802 Wooddale Drive, Suite 100
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Telephone: 651-294-4580
Fax: 651-228-1969

BORING NUMBER HA-7

CLIENT Water Gremlin
PROJECT NAME Remedial Investigation
PROJECT NUMBER 2606-0016
PROJECT LOCATION 4400 Otter Lake Road, White Bear Twp., MN 55110
DATE STARTED 6/19/19 **COMPLETED** 6/19/19
GROUND ELEVATION 930 ft **HOLE SIZE** 2.25
DRILLING CONTRACTOR Bergerson Caswell
GROUND WATER LEVELS:
DRILLING METHOD Hand Auger
AT START OF DRILLING 0.0 ft / Elev 930.0 ft
LOGGED BY B Kramka, EIT **CHECKED BY** S Waterman, P.G.
AT END OF DRILLING 0.0 ft / Elev 930.0 ft
NOTES
AFTER DRILLING ---

DEPTH (ft)	SAMPLE TYPE NUMBER SAMPLE	RECOVERY (in)	U.S.C.S.	GRAPHIC LOG	MATERIAL DESCRIPTION	PID (ppm)
0					Landscape Gravel Surface	
	GS 1		SP-SM		SAND with Silt, poorly graded, fine grained, trace medium grained sand & gravel, light brown, slightly moist, medium dense	1.0
	GS 2					0.8
1						
	GS 3					1.2
	GS 4					0.7
2						
	GS 5					0.9
3					3.0 927.0	
					E.O.B. @ 3.0 ' BGS.	

Appendix C

Soil Vapor Sampling Forms

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Responsive partner. Exceptional outcomes.

Subslab Vapor Sampling Form

Purge 2 volumes (min.) to 5 volumes (recommended)	
Tubing Diam. (ID)	Volume (ml) / foot
.06 (1/16) inch	0.56
.12 (1/8) inch	2.22
.19 (3/16) inch	5.58
.25 (1/4) inch	9.65
.31 (3/8) inch	14.84

Project Name: Water Gremlin RI

Project Number: 2606-0016

Project Location: North Campus Building

Field Technician: Kelly Jaworski & Alison Creeger

Contractor: Wenck

Typical Tubing Diam.

Sample ID	SS-7	SS-4	SS-6	SS-5	SS-3
MPCA LUI #	GS00685	GS00686	GS00688	GS00687	GS00689
Location	Paula's Office, southwest office area	Bruce's Office, adjacent to west of main coating area	Open office/cubicles in southwest portion of office area	Tom's Cubicle, eastern portion of office area	Vacant Office
Sampling Method, i.e. vapor pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin
Temporary or permanent?	Permanent	Permanent	Permanent	Permanent	Permanent
Flow Restrictor Set Time	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes
Flow Restrictor Number	6039	6517	6107	5594	4677
Summa Canister Number	6423	5912	6298	6279	5873
Summa Canister Size	1-Liter	1-Liter	1-Liter	1-Liter	1-Liter
Purge Method	Syringe	Syringe	Syringe	Syringe	Syringe
Tubing Length (ft.)	2 feet	2 feet	2 feet	2 feet	2 feet
Tubing Volume (ml)	180 ml	180 ml	180 ml	180 ml	180 ml
Volume Purged (ml)	300 ml	300 ml	300 ml	300 ml	300 ml
Sample Date	6/11/2019	6/11/2019	6/11/2019	6/11/2019	6/11/2019
Sample Collection Time	7:47-7:54	8:03-8:07	8:21-8:28	8:40-8:48	9:13-9:18
Can. Pressure Start (inHg)	-25	-29	-29.5	-29	-30
Can. Pressure end (inHg)	-2	-2	-1	-4	-2
PID Reading (ppm)	34.2	38.8	33.6	15.4	24.3
Additional Notes	Indoor air reading as measured on top of slab = approximately 32 ppm	Indoor air reading as measured on top of slab = approximately 37.5 ppm	Indoor air reading as measured on top of slab = approximately 31.9 ppm	Water dam test Fluctuating indoor air reading as measured on top of slab = between 24 and 25 ppm	Water dam test Indoor air reading as measured on top of slab = approximately 24.1 ppm

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Subslab Vapor Sampling Form

Purge 2 volumes (min.) to 5 volumes (recommended)	
Tubing Diam. (ID)	Volume (ml) / foot
.06 (1/16) inch	0.56
.12 (1/8) inch	2.22
.19 (3/16) inch	5.58
.25 (1/4) inch	9.65
.31 (3/8) inch	14.84

Project Name: Water Gremlin RI

Project Number: 2606-0016

Project Location: North Campus Building

Field Technician: Kelly Jaworski & Alison Creeger

Contractor: Wenck

Typical Tubing Diam.

Sample ID	SS-2	061119-A	SS-1	SS-8	SS-9
MPCA LUI #	GS00690	SS-2 Duplicate	GS00699	GS00700	GS00701
Location	Office Lunch Room	Office Lunch Room	North Conference Room	Quality Control Office area (west side)	Quality Control Office area (east side)
Sampling Method, i.e. vapor pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin
Temporary or permanent?	Permanent	Permanent	Permanent	Permanent	Permanent
Flow Restrictor Set Time	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes
Flow Restrictor Number	4900	4485	6037	6373	6289
Summa Canister Number	6413	6240	6436	4664	3722
Summa Canister Size	1-Liter	1-Liter	1-Liter	1-Liter	1-Liter
Purge Method	Syringe	Syringe	Syringe	Syringe	Syringe
Tubing Length (ft.)	2 feet	2 feet	2 feet	2 feet	2 feet
Tubing Volume (ml)	180 ml	180 ml	180 ml	180 ml	180 ml
Volume Purged (ml)	300 ml	300 ml	300 ml	300 ml	300 ml
Sample Date	6/11/2019	6/11/2019	6/11/2019	6/11/2019	6/11/2019
Sample Collection Time	9:32-9:37	9:39-9:44	11:35-11:40	12:02-12:09	12:16-12:23
Can. Pressure Start (inHg)	-26	-26	-24.5	-24	-28
Can. Pressure end (inHg)	-2	-1	-2.5	-2	-2
PID Reading (ppm)	2.3	3.7	50	142	320
Additional Notes	Fluctuating indoor air reading as measured on top of slab = between 29.6 - 31.1 ppm	Fluctuating indoor air reading as measured on top of slab = between 29.6 - 31.1 ppm	Water dam test Fluctuating indoor air reading as measured on top of slab = approximately 150 ppm	Water dam test Fluctuating indoor air reading as measured on top of slab = approximately 150 ppm	Fluctuating indoor air reading as measured on top of slab = approximately 157 ppm

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Subslab Vapor Sampling Form

Purge 2 volumes (min.) to 5 volumes (recommended)	
Tubing Diam. (ID)	Volume (ml) / foot
.06 (1/16) inch	0.56
.12 (1/8) inch	2.22
.19 (3/16) inch	5.58
.25 (1/4) inch	9.65
.31 (3/8) inch	14.84

Project Name: Water Gremlin RI

Project Number: 2606-0016

Project Location: North Campus Building

Field Technician: Kelly Jaworski & Alison Creeger

Contractor: Wenck

Typical Tubing Diam.

Sample ID	SS-11	SS-12	SS-13	SS-15	SS-14
MPCA LUI #	GS00702	GS00703	GS00704	GS00705	GS00706
Location	Main Coating, eastern area	Main Coating, south-central area	Main Coating, southwestern area	Main Coating, northern area	Main Coating, western area
Sampling Method, i.e. vapor pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin
Temporary or permanent?	Permanent	Permanent	Permanent	Permanent	Permanent
Flow Restrictor Set Time	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes
Flow Restrictor Number	6402	6088	6498	6530	5598
Summa Canister Number	3599	4953	8499	4389	3814
Summa Canister Size	1-Liter	1-Liter	1-Liter	1-Liter	1-Liter
Purge Method	Syringe	Syringe	Syringe	Syringe	Syringe
Tubing Length (ft.)	2 feet	2 feet	2 feet	2 feet	2 feet
Tubing Volume (ml)	180 ml	180 ml	180 ml	180 ml	180 ml
Volume Purged (ml)	300 ml	300 ml	300 ml	300 ml	300 ml
Sample Date	6/11/2019	6/11/2019	6/11/2019	6/11/2019	6/11/2019
Sample Collection Time	12:51-12:56	13:02-13:08	13:12-13:18	13:23-13:30	13:29-13:35
Can. Pressure Start (inHg)	-29	-26.5	-30	-28	-30
Can. Pressure end (inHg)	-2	-2	-3	-2.5	-2
PID Reading (ppm)	84	780	58.3	35.1	210
Additional Notes	Water dam test Fluctuating indoor air reading as measured on top of slab = between 79 - 82 ppm	Fluctuating indoor air reading as measured on top of slab = between 90 - 130 ppm	Fluctuating indoor air reading as measured on top of slab = 370 - 385 ppm	Water dam test Fluctuating indoor air reading as measured on top of slab = 720 ppm	Fluctuating indoor air reading as measured on top of slab = 509 ppm

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Subslab Vapor Sampling Form

Purge 2 volumes (min.) to 5 volumes (recommended)	
Tubing Diam. (ID)	Volume (ml) / foot
.06 (1/16) inch	0.56
.12 (1/8) inch	2.22
.19 (3/16) inch	5.58
.25 (1/4) inch	9.65
.31 (3/8) inch	14.84

Project Name: Water Gremlin RI

Project Number: 2606-0016

Project Location: North Campus Building

Field Technician: Kelly Jaworski & Alison Creeger

Contractor: Wenck

Typical Tubing Diam.

Sample ID	SS-16	SS-17	SS-18	061119-B	SS-19
MPCA LUI #	GS00707	GS00708	GS00709	SS-18 Duplicate	GS00710
Location	Main Die Cast, south end of hallway	Shipping and Receiving, west side of scale	Shipping and Receiving, east side	Shipping and Receiving, east side	Coating 2, north side of coating room
Sampling Method, i.e. vapor pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin
Temporary or permanent?	Permanent	Permanent	Permanent	Permanent	Permanent
Flow Restrictor Set Time	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes
Flow Restrictor Number	6095	6028	6163	6545	4715
Summa Canister Number	3817	6453	4662	6363	4926
Summa Canister Size	1-Liter	1-Liter	1-Liter	1-Liter	1-Liter
Purge Method	Syringe	Syringe	Syringe	Syringe	Syringe
Tubing Length (ft.)	2 feet	2 feet	2 feet	2 feet	2 feet
Tubing Volume (ml)	180 ml	180 ml	180 ml	180 ml	180 ml
Volume Purged (ml)	300 ml	300 ml	300 ml	300 ml	300 ml
Sample Date	6/11/2019	6/11/2019	6/11/2019	6/11/2019	6/11/2019
Sample Collection Time	14:19-14:24	14:29-14:36	14:41-14:47	14:48-14:53	15:00-15:05
Can. Pressure Start (inHg)	-25	-29	-30	-20	-25
Can. Pressure end (inHg)	-3	-4	-3	-10	-2
PID Reading (ppm)	6.3	4.7	5.4	5.4	39.6
Additional Notes	Water dam test Indoor air reading as measured on top of slab = approximately 1.1 - 1.4 ppm	Indoor air reading as measured on top of slab = 1.6 ppm	Water dam test Indoor air reading as measured on top of slab = 2.4	Indoor air reading as measured on top of slab = 2.4	Fluccuating indoor air reading as measured on top of slab = between 76 - 102 ppm

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Subslab Vapor Sampling Form

Purge 2 volumes (min.) to 5 volumes (recommended)	
Tubing Diam. (ID)	Volume (ml) / foot
.06 (1/16) inch	0.56
.12 (1/8) inch	2.22
.19 (3/16) inch	5.58
.25 (1/4) inch	9.65
.31 (3/8) inch	14.84

Project Name: Water Gremlin RI

Project Number: 2606-0016

Project Location: North Campus Building

Field Technician: Kelly Jaworski & Alison Creeger

Contractor: Wenck

Typical Tubing Diam.

Sample ID	SS-20	SS-10	061219	SS-21	SS-23
MPCA LUI #	GS00711	GS00712	SS-10 Duplicate	GS00713	GS00714
Location	Coating 2, south side	Coating 3	Coating 3	Cold Forming, eastern area	Cold Forming, northern area
Sampling Method, i.e. vapor pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin	Vapor Pin
Temporary or permanent?	Permanent	Permanent	Permanent	Permanent	Permanent
Flow Restrictor Set Time	5 minutes	6 minutes	7 minutes	8 minutes	9 minutes
Flow Restrictor Number	5326	6366	4675	5960	6370
Summa Canister Number	6281	5891	4850	4854	4958
Summa Canister Size	1-Liter	1-Liter	1-Liter	1-Liter	1-Liter
Purge Method	Syringe	Syringe	Syringe	Syringe	Syringe
Tubing Length (ft.)	2 feet	2 feet	2 feet	2 feet	2 feet
Tubing Volume (ml)	180 ml	180 ml	180 ml	180 ml	180 ml
Volume Purged (ml)	300 ml	300 ml	300 ml	300 ml	300 ml
Sample Date	6/11/2019	6/12/2019	6/12/2019	6/12/2019	6/12/2019
Sample Collection Time	15:02-15:06	10:31-10:36	10:37-10:42	10:54-11:00	10:57-11:02
Can. Pressure Start (inHg)	-22	-26	-28	-30	-30
Can. Pressure end (inHg)	-1.5	-2	-3	-3	-2
PID Reading (ppm)	9.5	400	400	2.7	72.3
Additional Notes	Fluccuating indoor air reading as measured on top of slab = between 76 - 102 ppm	Fluccuating indoor air reading as measured on top of slab = between 1,200 - 1,400 ppm	Fluccuating indoor air reading as measured on top of slab = between 1,200 - 1,400 ppm	Indoor air reading as measured on top of slab = 2.4 ppm	Water dam test Indoor air reading as measured on top of slab = 3.2 ppm

WENCK ASSOCIATES

Responsive partner. Exceptional outcomes.

Subslab Vapor Sampling Form

Purge 2 volumes (min.) to 5 volumes (recommended)	
Tubing Diam. (ID)	Volume (ml) / foot
.06 (1/16) inch	0.56
.12 (1/8) inch	2.22
.19 (3/16) inch	5.58
.25 (1/4) inch	9.65
.31 (3/8) inch	14.84

Project Name: Water Gremlin RI

Project Number: 2606-0016

Project Location: North Campus Building

Field Technician: Kelly Jaworski & Alison Creeger

Contractor: Wenck

Typical Tubing Diam.

Sample ID	SS-22	SS-24	SS-25		
MPCA LUI #	GS00715	GS00716	GS00717		
Location	Cold Forming, west side	Chemical Storage Room, south side	Chemical Storage Room, north side		
Sampling Method, i.e. vapor pin	Vapor Pin	Vapor Pin	Vapor Pin		
Temporary or permanent?	Permanent	Permanent	Permanent		
Flow Restrictor Set Time	5 minutes	6 minutes	7 minutes		
Flow Restrictor Number	6339	5952	5597		
Summa Canister Number	3810	3598	6415		
Summa Canister Size	1-Liter	1-Liter	1-Liter		
Purge Method	Syringe	Syringe	Syringe		
Tubing Length (ft.)	2 feet	2 feet	2 feet		
Tubing Volume (ml)	180 ml	180 ml	180 ml		
Volume Purged (ml)	300 ml	300 ml	300 ml		
Sample Date	6/12/2019	6/12/2019	6/12/2019		
Sample Collection Time	11:11-11:18	11:27-11:35	12:37-12:46		
Can. Pressure Start (inHg)	-28	-30	-25		
Can. Pressure end (inHg)	-4	-3	-3		
PID Reading (ppm)	3	Fluctuating 100 - 1,000 ppm	24.5		
Additional Notes	Indoor air reading as measured on top of slab = 3.1 ppm	Water dam test Fluccuating indoor air reading as measured on top of slab = between 66 - 130 ppm	Water dam test Fluccuating indoor air reading as measured on top of slab = between 9.6 - 20 ppm		

Appendix D

Laboratory Reports (Level 2) and Chain-of Custody Documentation

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
Tel: (802)660-1990

Laboratory Job ID: 200-49156-1
Laboratory Sample Delivery Group: 200-49156-1
Client Project/Site: Water Gremlin

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Kathryn Kelly

Authorized for release by:
6/20/2019 1:42:11 PM

Kathryn Kelly, Project Manager II
(802)923-1021
kathryn.kelly@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 15
QC Association Summary 17
Lab Chronicle 18
Certification Summary 21
Method Summary 22
Sample Summary 23
Chain of Custody 24
Receipt Checklists 27
Clean Canister Certification 28
Pre-Ship Certification 28
Clean Canister Data 30

Definitions/Glossary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Qualifiers

Air - GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 200-49156-1

Laboratory: Eurofins TestAmerica, Burlington

Narrative

CASE NARRATIVE

Client: Wenck Associates, Inc

Project: Water Gremlin

Report Number: 200-49156-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 06/12/2019; the samples arrived in good condition.

VOLATILE ORGANIC COMPOUNDS
Samples GS00685, GS00686, GS00688, GS00687, GS00689, GS00690, GS00699, GS00700, GS00701, GS00702, GS00703, GS00704, GS00705, GS00706, GS00707, GS00708, GS00709, GS00710, GS00711, 061119 A and 061119 B were analyzed for Volatile Organic Compounds in accordance with EPA Method TO-15. The samples were analyzed on 06/14/2019, 06/15/2019, 06/18/2019 and 06/19/2019.

Samples GS00685[260X], GS00686[400X], GS00688[350X], GS00687[40X], GS00689[310X], GS00690[100X], GS00699[390X], GS00700[390X], GS00701[4200X], GS00702[6300X], GS00703[7300X], GS00704[386X], GS00705[260X], GS00706[2000X], GS00707[40X], GS00708[40X], GS00709[30X], GS00710[20X], GS00711[50X], 061119 A[100X] and 061119 B[10X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00685 — Lab Sample ID: 200-49156-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	22000		210	76	ug/m3	260		TO-15	Total/NA

Client Sample ID: GS00686 — Lab Sample ID: 200-49156-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	22000		320	120	ug/m3	400		TO-15	Total/NA
Trichloroethene	290	J	430	64	ug/m3	400		TO-15	Total/NA

Client Sample ID: GS00688 — Lab Sample ID: 200-49156-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	20000		280	100	ug/m3	350		TO-15	Total/NA

Client Sample ID: GS00687 — Lab Sample ID: 200-49156-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	3200		32	12	ug/m3	40		TO-15	Total/NA
Trichloroethene	1100		43	6.4	ug/m3	40		TO-15	Total/NA

Client Sample ID: GS00689 — Lab Sample ID: 200-49156-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	16000		250	91	ug/m3	310		TO-15	Total/NA
Trichloroethene	260	J	330	50	ug/m3	310		TO-15	Total/NA

Client Sample ID: GS00690 — Lab Sample ID: 200-49156-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	7600		79	29	ug/m3	100		TO-15	Total/NA
Trichloroethene	3400		110	16	ug/m3	100		TO-15	Total/NA

Client Sample ID: GS00699 — Lab Sample ID: 200-49156-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	23000		310	110	ug/m3	390		TO-15	Total/NA
Trichloroethene	560		420	63	ug/m3	390		TO-15	Total/NA

Client Sample ID: GS00700 — Lab Sample ID: 200-49156-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	19000		310	110	ug/m3	390		TO-15	Total/NA
Trichloroethene	3900		420	63	ug/m3	390		TO-15	Total/NA

Client Sample ID: GS00701 — Lab Sample ID: 200-49156-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	320000		3300	1200	ug/m3	4200		TO-15	Total/NA
Trichloroethene	55000		4500	680	ug/m3	4200		TO-15	Total/NA

Client Sample ID: GS00702 — Lab Sample ID: 200-49156-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	410000		5000	1800	ug/m3	6300		TO-15	Total/NA
Trichloroethene	39000		6800	1000	ug/m3	6300		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00703 — Lab Sample ID: 200-49156-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	530000		5800	2100	ug/m3	7300		TO-15	Total/NA
Trichloroethene	70000		7800	1200	ug/m3	7300		TO-15	Total/NA

Client Sample ID: GS00704 — Lab Sample ID: 200-49156-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	110	J	520	76	ug/m3	386		TO-15	Total/NA
trans-1,2-Dichloroethene	60000		310	110	ug/m3	386		TO-15	Total/NA
Trichloroethene	38000		410	62	ug/m3	386		TO-15	Total/NA

Client Sample ID: GS00705 — Lab Sample ID: 200-49156-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	180	J	350	51	ug/m3	260		TO-15	Total/NA
trans-1,2-Dichloroethene	11000		210	76	ug/m3	260		TO-15	Total/NA
Trichloroethene	23000		280	42	ug/m3	260		TO-15	Total/NA
cis-1,2-Dichloroethene	300		210	38	ug/m3	260		TO-15	Total/NA

Client Sample ID: GS00706 — Lab Sample ID: 200-49156-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	150000		1600	590	ug/m3	2000		TO-15	Total/NA
Trichloroethene	23000		2100	320	ug/m3	2000		TO-15	Total/NA

Client Sample ID: GS00707 — Lab Sample ID: 200-49156-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	99		44	15	ug/m3	40		TO-15	Total/NA
1,1-Dichloroethane	17	J	32	4.2	ug/m3	40		TO-15	Total/NA
trans-1,2-Dichloroethene	3400		32	12	ug/m3	40		TO-15	Total/NA
Trichloroethene	88		43	6.4	ug/m3	40		TO-15	Total/NA

Client Sample ID: GS00708 — Lab Sample ID: 200-49156-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	470		44	15	ug/m3	40		TO-15	Total/NA
trans-1,2-Dichloroethene	3500		32	12	ug/m3	40		TO-15	Total/NA
Trichloroethene	170		43	6.4	ug/m3	40		TO-15	Total/NA

Client Sample ID: GS00709 — Lab Sample ID: 200-49156-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	630		33	11	ug/m3	30		TO-15	Total/NA
Tetrachloroethene	7.2	J	41	5.9	ug/m3	30		TO-15	Total/NA
1,1-Dichloroethane	15	J	24	3.2	ug/m3	30		TO-15	Total/NA
trans-1,2-Dichloroethene	2400		24	8.8	ug/m3	30		TO-15	Total/NA
Trichloroethene	1200		32	4.8	ug/m3	30		TO-15	Total/NA

Client Sample ID: GS00710 — Lab Sample ID: 200-49156-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	1100		22	7.4	ug/m3	20		TO-15	Total/NA
Tetrachloroethene	30		27	3.9	ug/m3	20		TO-15	Total/NA
1,1-Dichloroethane	18		16	2.1	ug/m3	20		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00710 (Continued) — Lab Sample ID: 200-49156-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	1600		16	5.9	ug/m3	20		TO-15	Total/NA
Trichloroethene	3800		21	3.2	ug/m3	20		TO-15	Total/NA

Client Sample ID: GS00711 — Lab Sample ID: 200-49156-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	230		55	19	ug/m3	50		TO-15	Total/NA
trans-1,2-Dichloroethene	3800		40	15	ug/m3	50		TO-15	Total/NA
Trichloroethene	830		54	8.1	ug/m3	50		TO-15	Total/NA

Client Sample ID: 061119 A — Lab Sample ID: 200-49156-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	11000		79	29	ug/m3	100		TO-15	Total/NA
Trichloroethene	6400		110	16	ug/m3	100		TO-15	Total/NA

Client Sample ID: 061119 B — Lab Sample ID: 200-49156-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1,1-Trichloroethane	460		11	3.7	ug/m3	10		TO-15	Total/NA
Tetrachloroethene	12	J	14	2.0	ug/m3	10		TO-15	Total/NA
1,1-Dichloroethane	8.2		8.1	1.1	ug/m3	10		TO-15	Total/NA
trans-1,2-Dichloroethene	910		7.9	2.9	ug/m3	10		TO-15	Total/NA
Trichloroethene	900		11	1.6	ug/m3	10		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00685

Lab Sample ID: 200-49156-1
Matrix: Air

Date Collected: 06/11/19 07:54
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	280	U	280	96	ug/m3			06/14/19 16:40	260
Tetrachloroethene	350	U	350	51	ug/m3			06/14/19 16:40	260
1,1-Dichloroethane	210	U	210	27	ug/m3			06/14/19 16:40	260
1,2-Dichloroethane	210	U	210	66	ug/m3			06/14/19 16:40	260
trans-1,2-Dichloroethene	**22000**		210	76	ug/m3			06/14/19 16:40	260
Chloroethane	340	U	340	140	ug/m3			06/14/19 16:40	260
1,1-Dichloroethene	210	U	210	35	ug/m3			06/14/19 16:40	260
Trichloroethene	280	U	280	42	ug/m3			06/14/19 16:40	260
Vinyl chloride	130	U	130	27	ug/m3			06/14/19 16:40	260
cis-1,2-Dichloroethene	210	U	210	38	ug/m3			06/14/19 16:40	260

Client Sample ID: GS00686

Lab Sample ID: 200-49156-2
Matrix: Air

Date Collected: 06/11/19 08:07
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	440	U	440	150	ug/m3			06/14/19 18:21	400
Tetrachloroethene	540	U	540	79	ug/m3			06/14/19 18:21	400
1,1-Dichloroethane	320	U	320	42	ug/m3			06/14/19 18:21	400
1,2-Dichloroethane	320	U	320	100	ug/m3			06/14/19 18:21	400
trans-1,2-Dichloroethene	**22000**		320	120	ug/m3			06/14/19 18:21	400
Chloroethane	530	U	530	220	ug/m3			06/14/19 18:21	400
1,1-Dichloroethene	320	U	320	54	ug/m3			06/14/19 18:21	400
Trichloroethene	**290**	**J**	430	64	ug/m3			06/14/19 18:21	400
Vinyl chloride	200	U	200	42	ug/m3			06/14/19 18:21	400
cis-1,2-Dichloroethene	320	U	320	59	ug/m3			06/14/19 18:21	400

Client Sample ID: GS00688

Lab Sample ID: 200-49156-3
Matrix: Air

Date Collected: 06/11/19 08:28
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	380	U	380	130	ug/m3			06/14/19 19:11	350
Tetrachloroethene	470	U	470	69	ug/m3			06/14/19 19:11	350
1,1-Dichloroethane	280	U	280	37	ug/m3			06/14/19 19:11	350
1,2-Dichloroethane	280	U	280	89	ug/m3			06/14/19 19:11	350
trans-1,2-Dichloroethene	**20000**		280	100	ug/m3			06/14/19 19:11	350
Chloroethane	460	U	460	190	ug/m3			06/14/19 19:11	350
1,1-Dichloroethene	280	U	280	47	ug/m3			06/14/19 19:11	350
Trichloroethene	380	U	380	56	ug/m3			06/14/19 19:11	350
Vinyl chloride	180	U	180	37	ug/m3			06/14/19 19:11	350
cis-1,2-Dichloroethene	280	U	280	51	ug/m3			06/14/19 19:11	350

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00687

Lab Sample ID: 200-49156-4

Date Collected: 06/11/19 08:48
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	44	U	44	15	ug/m3			06/14/19 20:01	40
Tetrachloroethene	54	U	54	7.9	ug/m3			06/14/19 20:01	40
1,1-Dichloroethane	32	U	32	4.2	ug/m3			06/14/19 20:01	40
1,2-Dichloroethane	32	U	32	10	ug/m3			06/14/19 20:01	40
trans-1,2-Dichloroethene	**3200**		32	12	ug/m3			06/14/19 20:01	40
Chloroethane	53	U	53	22	ug/m3			06/14/19 20:01	40
1,1-Dichloroethene	32	U	32	5.4	ug/m3			06/14/19 20:01	40
Trichloroethene	**1100**		43	6.4	ug/m3			06/14/19 20:01	40
Vinyl chloride	20	U	20	4.2	ug/m3			06/14/19 20:01	40
cis-1,2-Dichloroethene	32	U	32	5.9	ug/m3			06/14/19 20:01	40

Client Sample ID: GS00689

Lab Sample ID: 200-49156-5

Date Collected: 06/11/19 09:18
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	340	U	340	120	ug/m3			06/14/19 20:51	310
Tetrachloroethene	420	U	420	61	ug/m3			06/14/19 20:51	310
1,1-Dichloroethane	250	U	250	33	ug/m3			06/14/19 20:51	310
1,2-Dichloroethane	250	U	250	79	ug/m3			06/14/19 20:51	310
trans-1,2-Dichloroethene	**16000**		250	91	ug/m3			06/14/19 20:51	310
Chloroethane	410	U	410	170	ug/m3			06/14/19 20:51	310
1,1-Dichloroethene	250	U	250	42	ug/m3			06/14/19 20:51	310
Trichloroethene	**260**	**J**	330	50	ug/m3			06/14/19 20:51	310
Vinyl chloride	160	U	160	32	ug/m3			06/14/19 20:51	310
cis-1,2-Dichloroethene	250	U	250	45	ug/m3			06/14/19 20:51	310

Client Sample ID: GS00690

Lab Sample ID: 200-49156-6

Date Collected: 06/11/19 09:37
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	110	U	110	37	ug/m3			06/14/19 21:41	100
Tetrachloroethene	140	U	140	20	ug/m3			06/14/19 21:41	100
1,1-Dichloroethane	81	U	81	11	ug/m3			06/14/19 21:41	100
1,2-Dichloroethane	81	U	81	25	ug/m3			06/14/19 21:41	100
trans-1,2-Dichloroethene	**7600**		79	29	ug/m3			06/14/19 21:41	100
Chloroethane	130	U	130	55	ug/m3			06/14/19 21:41	100
1,1-Dichloroethene	79	U	79	13	ug/m3			06/14/19 21:41	100
Trichloroethene	**3400**		110	16	ug/m3			06/14/19 21:41	100
Vinyl chloride	51	U	51	10	ug/m3			06/14/19 21:41	100
cis-1,2-Dichloroethene	79	U	79	15	ug/m3			06/14/19 21:41	100

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00699

Lab Sample ID: 200-49156-7
Matrix: Air

Date Collected: 06/11/19 11:40
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	430	U	430	140	ug/m3			06/14/19 22:31	390
Tetrachloroethene	530	U	530	77	ug/m3			06/14/19 22:31	390
1,1-Dichloroethane	320	U	320	41	ug/m3			06/14/19 22:31	390
1,2-Dichloroethane	320	U	320	99	ug/m3			06/14/19 22:31	390
trans-1,2-Dichloroethene	**23000**		310	110	ug/m3			06/14/19 22:31	390
Chloroethane	510	U	510	220	ug/m3			06/14/19 22:31	390
1,1-Dichloroethene	310	U	310	53	ug/m3			06/14/19 22:31	390
Trichloroethene	**560**		420	63	ug/m3			06/14/19 22:31	390
Vinyl chloride	200	U	200	41	ug/m3			06/14/19 22:31	390
cis-1,2-Dichloroethene	310	U	310	57	ug/m3			06/14/19 22:31	390

Client Sample ID: GS00700

Lab Sample ID: 200-49156-8
Matrix: Air

Date Collected: 06/11/19 12:09
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	430	U	430	140	ug/m3			06/14/19 23:22	390
Tetrachloroethene	530	U	530	77	ug/m3			06/14/19 23:22	390
1,1-Dichloroethane	320	U	320	41	ug/m3			06/14/19 23:22	390
1,2-Dichloroethane	320	U	320	99	ug/m3			06/14/19 23:22	390
trans-1,2-Dichloroethene	**19000**		310	110	ug/m3			06/14/19 23:22	390
Chloroethane	510	U	510	220	ug/m3			06/14/19 23:22	390
1,1-Dichloroethene	310	U	310	53	ug/m3			06/14/19 23:22	390
Trichloroethene	**3900**		420	63	ug/m3			06/14/19 23:22	390
Vinyl chloride	200	U	200	41	ug/m3			06/14/19 23:22	390
cis-1,2-Dichloroethene	310	U	310	57	ug/m3			06/14/19 23:22	390

Client Sample ID: GS00701

Lab Sample ID: 200-49156-9
Matrix: Air

Date Collected: 06/11/19 12:23
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	4600	U	4600	1600	ug/m3			06/15/19 00:12	4200
Tetrachloroethene	5700	U	5700	830	ug/m3			06/15/19 00:12	4200
1,1-Dichloroethane	3400	U	3400	440	ug/m3			06/15/19 00:12	4200
1,2-Dichloroethane	3400	U	3400	1100	ug/m3			06/15/19 00:12	4200
trans-1,2-Dichloroethene	**320000**		3300	1200	ug/m3			06/15/19 00:12	4200
Chloroethane	5500	U	5500	2300	ug/m3			06/15/19 00:12	4200
1,1-Dichloroethene	3300	U	3300	570	ug/m3			06/15/19 00:12	4200
Trichloroethene	**55000**		4500	680	ug/m3			06/15/19 00:12	4200
Vinyl chloride	2100	U	2100	440	ug/m3			06/15/19 00:12	4200
cis-1,2-Dichloroethene	3300	U	3300	620	ug/m3			06/15/19 00:12	4200

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00702 — Lab Sample ID: 200-49156-10

Date Collected: 06/11/19 12:56
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	6900	U	6900	2300	ug/m3			06/15/19 01:02	6300
Tetrachloroethene	8500	U	8500	1200	ug/m3			06/15/19 01:02	6300
1,1-Dichloroethane	5100	U	5100	660	ug/m3			06/15/19 01:02	6300
1,2-Dichloroethane	5100	U	5100	1600	ug/m3			06/15/19 01:02	6300
trans-1,2-Dichloroethene	**410000**		5000	1800	ug/m3			06/15/19 01:02	6300
Chloroethane	8300	U	8300	3500	ug/m3			06/15/19 01:02	6300
1,1-Dichloroethene	5000	U	5000	850	ug/m3			06/15/19 01:02	6300
Trichloroethene	**39000**		6800	1000	ug/m3			06/15/19 01:02	6300
Vinyl chloride	3200	U	3200	660	ug/m3			06/15/19 01:02	6300
cis-1,2-Dichloroethene	5000	U	5000	920	ug/m3			06/15/19 01:02	6300

Client Sample ID: GS00703 — Lab Sample ID: 200-49156-11

Date Collected: 06/11/19 13:08
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	8000	U	8000	2700	ug/m3			06/15/19 01:52	7300
Tetrachloroethene	9900	U	9900	1400	ug/m3			06/15/19 01:52	7300
1,1-Dichloroethane	5900	U	5900	770	ug/m3			06/15/19 01:52	7300
1,2-Dichloroethane	5900	U	5900	1900	ug/m3			06/15/19 01:52	7300
trans-1,2-Dichloroethene	**530000**		5800	2100	ug/m3			06/15/19 01:52	7300
Chloroethane	9600	U	9600	4000	ug/m3			06/15/19 01:52	7300
1,1-Dichloroethene	5800	U	5800	980	ug/m3			06/15/19 01:52	7300
Trichloroethene	**70000**		7800	1200	ug/m3			06/15/19 01:52	7300
Vinyl chloride	3700	U	3700	770	ug/m3			06/15/19 01:52	7300
cis-1,2-Dichloroethene	5800	U	5800	1100	ug/m3			06/15/19 01:52	7300

Client Sample ID: GS00704 — Lab Sample ID: 200-49156-12

Date Collected: 06/11/19 13:18
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	420	U	420	140	ug/m3			06/15/19 02:43	386
Tetrachloroethene	**110**	**J**	520	76	ug/m3			06/15/19 02:43	386
1,1-Dichloroethane	310	U	310	41	ug/m3			06/15/19 02:43	386
1,2-Dichloroethane	310	U	310	98	ug/m3			06/15/19 02:43	386
trans-1,2-Dichloroethene	**60000**		310	110	ug/m3			06/15/19 02:43	386
Chloroethane	510	U	510	210	ug/m3			06/15/19 02:43	386
1,1-Dichloroethene	310	U	310	52	ug/m3			06/15/19 02:43	386
Trichloroethene	**38000**		410	62	ug/m3			06/15/19 02:43	386
Vinyl chloride	200	U	200	40	ug/m3			06/15/19 02:43	386
cis-1,2-Dichloroethene	310	U	310	57	ug/m3			06/15/19 02:43	386

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00705 — Lab Sample ID: 200-49156-13

Date Collected: 06/11/19 13:30
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	280	U	280	96	ug/m3			06/15/19 03:33	260
Tetrachloroethene	**180**	**J**	350	51	ug/m3			06/15/19 03:33	260
1,1-Dichloroethane	210	U	210	27	ug/m3			06/15/19 03:33	260
1,2-Dichloroethane	210	U	210	66	ug/m3			06/15/19 03:33	260
trans-1,2-Dichloroethene	**11000**		210	76	ug/m3			06/15/19 03:33	260
Chloroethane	340	U	340	140	ug/m3			06/15/19 03:33	260
1,1-Dichloroethene	210	U	210	35	ug/m3			06/15/19 03:33	260
Trichloroethene	**23000**		280	42	ug/m3			06/15/19 03:33	260
Vinyl chloride	130	U	130	27	ug/m3			06/15/19 03:33	260
cis-1,2-Dichloroethene	**300**		210	38	ug/m3			06/15/19 03:33	260

Client Sample ID: GS00706 — Lab Sample ID: 200-49156-14

Date Collected: 06/11/19 13:35
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	2200	U	2200	740	ug/m3			06/15/19 04:24	2000
Tetrachloroethene	2700	U	2700	390	ug/m3			06/15/19 04:24	2000
1,1-Dichloroethane	1600	U	1600	210	ug/m3			06/15/19 04:24	2000
1,2-Dichloroethane	1600	U	1600	510	ug/m3			06/15/19 04:24	2000
trans-1,2-Dichloroethene	**150000**		1600	590	ug/m3			06/15/19 04:24	2000
Chloroethane	2600	U	2600	1100	ug/m3			06/15/19 04:24	2000
1,1-Dichloroethene	1600	U	1600	270	ug/m3			06/15/19 04:24	2000
Trichloroethene	**23000**		2100	320	ug/m3			06/15/19 04:24	2000
Vinyl chloride	1000	U	1000	210	ug/m3			06/15/19 04:24	2000
cis-1,2-Dichloroethene	1600	U	1600	290	ug/m3			06/15/19 04:24	2000

Client Sample ID: GS00707 — Lab Sample ID: 200-49156-15

Date Collected: 06/11/19 14:24
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**99**		44	15	ug/m3			06/18/19 19:31	40
Tetrachloroethene	54	U	54	7.9	ug/m3			06/18/19 19:31	40
1,1-Dichloroethane	**17**	**J**	32	4.2	ug/m3			06/18/19 19:31	40
1,2-Dichloroethane	32	U	32	10	ug/m3			06/18/19 19:31	40
trans-1,2-Dichloroethene	**3400**		32	12	ug/m3			06/18/19 19:31	40
Chloroethane	53	U	53	22	ug/m3			06/18/19 19:31	40
1,1-Dichloroethene	32	U	32	5.4	ug/m3			06/18/19 19:31	40
Trichloroethene	**88**		43	6.4	ug/m3			06/18/19 19:31	40
Vinyl chloride	20	U	20	4.2	ug/m3			06/18/19 19:31	40
cis-1,2-Dichloroethene	32	U	32	5.9	ug/m3			06/18/19 19:31	40

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00708

Lab Sample ID: 200-49156-16
Matrix: Air

Date Collected: 06/11/19 14:36
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**470**		44	15	ug/m3			06/18/19 20:22	40
Tetrachloroethene	54	U	54	7.9	ug/m3			06/18/19 20:22	40
1,1-Dichloroethane	32	U	32	4.2	ug/m3			06/18/19 20:22	40
1,2-Dichloroethane	32	U	32	10	ug/m3			06/18/19 20:22	40
trans-1,2-Dichloroethene	**3500**		32	12	ug/m3			06/18/19 20:22	40
Chloroethane	53	U	53	22	ug/m3			06/18/19 20:22	40
1,1-Dichloroethene	32	U	32	5.4	ug/m3			06/18/19 20:22	40
Trichloroethene	**170**		43	6.4	ug/m3			06/18/19 20:22	40
Vinyl chloride	20	U	20	4.2	ug/m3			06/18/19 20:22	40
cis-1,2-Dichloroethene	32	U	32	5.9	ug/m3			06/18/19 20:22	40

Client Sample ID: GS00709

Lab Sample ID: 200-49156-17
Matrix: Air

Date Collected: 06/11/19 14:47
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**630**		33	11	ug/m3			06/18/19 21:13	30
Tetrachloroethene	**7.2**	**J**	41	5.9	ug/m3			06/18/19 21:13	30
1,1-Dichloroethane	**15**	**J**	24	3.2	ug/m3			06/18/19 21:13	30
1,2-Dichloroethane	24	U	24	7.6	ug/m3			06/18/19 21:13	30
trans-1,2-Dichloroethene	**2400**		24	8.8	ug/m3			06/18/19 21:13	30
Chloroethane	40	U	40	17	ug/m3			06/18/19 21:13	30
1,1-Dichloroethene	24	U	24	4.0	ug/m3			06/18/19 21:13	30
Trichloroethene	**1200**		32	4.8	ug/m3			06/18/19 21:13	30
Vinyl chloride	15	U	15	3.1	ug/m3			06/18/19 21:13	30
cis-1,2-Dichloroethene	24	U	24	4.4	ug/m3			06/18/19 21:13	30

Client Sample ID: GS00710

Lab Sample ID: 200-49156-18
Matrix: Air

Date Collected: 06/11/19 15:05
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**1100**		22	7.4	ug/m3			06/18/19 22:03	20
Tetrachloroethene	**30**		27	3.9	ug/m3			06/18/19 22:03	20
1,1-Dichloroethane	**18**		16	2.1	ug/m3			06/18/19 22:03	20
1,2-Dichloroethane	16	U	16	5.1	ug/m3			06/18/19 22:03	20
trans-1,2-Dichloroethene	**1600**		16	5.9	ug/m3			06/18/19 22:03	20
Chloroethane	26	U	26	11	ug/m3			06/18/19 22:03	20
1,1-Dichloroethene	16	U	16	2.7	ug/m3			06/18/19 22:03	20
Trichloroethene	**3800**		21	3.2	ug/m3			06/18/19 22:03	20
Vinyl chloride	10	U	10	2.1	ug/m3			06/18/19 22:03	20
cis-1,2-Dichloroethene	16	U	16	2.9	ug/m3			06/18/19 22:03	20

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00711 — Lab Sample ID: 200-49156-19

Date Collected: 06/11/19 15:06
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**230**		55	19	ug/m3			06/18/19 22:54	50
Tetrachloroethene	68	U	68	9.8	ug/m3			06/18/19 22:54	50
1,1-Dichloroethane	40	U	40	5.3	ug/m3			06/18/19 22:54	50
1,2-Dichloroethane	40	U	40	13	ug/m3			06/18/19 22:54	50
trans-1,2-Dichloroethene	**3800**		40	15	ug/m3			06/18/19 22:54	50
Chloroethane	66	U	66	28	ug/m3			06/18/19 22:54	50
1,1-Dichloroethene	40	U	40	6.7	ug/m3			06/18/19 22:54	50
Trichloroethene	**830**		54	8.1	ug/m3			06/18/19 22:54	50
Vinyl chloride	26	U	26	5.2	ug/m3			06/18/19 22:54	50
cis-1,2-Dichloroethene	40	U	40	7.3	ug/m3			06/18/19 22:54	50

Client Sample ID: 061119 A — Lab Sample ID: 200-49156-20

Date Collected: 06/11/19 09:44
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	110	U	110	37	ug/m3			06/18/19 23:44	100
Tetrachloroethene	140	U	140	20	ug/m3			06/18/19 23:44	100
1,1-Dichloroethane	81	U	81	11	ug/m3			06/18/19 23:44	100
1,2-Dichloroethane	81	U	81	25	ug/m3			06/18/19 23:44	100
trans-1,2-Dichloroethene	**11000**		79	29	ug/m3			06/18/19 23:44	100
Chloroethane	130	U	130	55	ug/m3			06/18/19 23:44	100
1,1-Dichloroethene	79	U	79	13	ug/m3			06/18/19 23:44	100
Trichloroethene	**6400**		110	16	ug/m3			06/18/19 23:44	100
Vinyl chloride	51	U	51	10	ug/m3			06/18/19 23:44	100
cis-1,2-Dichloroethene	79	U	79	15	ug/m3			06/18/19 23:44	100

Client Sample ID: 061119 B — Lab Sample ID: 200-49156-21

Date Collected: 06/11/19 14:53
Matrix: Air
Date Received: 06/12/19 09:57
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	**460**		11	3.7	ug/m3			06/19/19 00:35	10
Tetrachloroethene	**12**	**J**	14	2.0	ug/m3			06/19/19 00:35	10
1,1-Dichloroethane	**8.2**		8.1	1.1	ug/m3			06/19/19 00:35	10
1,2-Dichloroethane	8.1	U	8.1	2.5	ug/m3			06/19/19 00:35	10
trans-1,2-Dichloroethene	**910**		7.9	2.9	ug/m3			06/19/19 00:35	10
Chloroethane	13	U	13	5.5	ug/m3			06/19/19 00:35	10
1,1-Dichloroethene	7.9	U	7.9	1.3	ug/m3			06/19/19 00:35	10
Trichloroethene	**900**		11	1.6	ug/m3			06/19/19 00:35	10
Vinyl chloride	5.1	U	5.1	1.0	ug/m3			06/19/19 00:35	10
cis-1,2-Dichloroethene	7.9	U	7.9	1.5	ug/m3			06/19/19 00:35	10

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 200-144082/5 — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 144082

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/14/19 15:50	1
Tetrachloroethene	1.4	U	1.4	0.20	ug/m3			06/14/19 15:50	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/14/19 15:50	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/14/19 15:50	1
trans-1,2-Dichloroethene	0.79	U	0.79	0.29	ug/m3			06/14/19 15:50	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/14/19 15:50	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/14/19 15:50	1
Trichloroethene	1.1	U	1.1	0.16	ug/m3			06/14/19 15:50	1
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/14/19 15:50	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/14/19 15:50	1

Lab Sample ID: LCS 200-144082/3 — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 144082

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	54.6	40.9		ug/m3		75	72 - 127
Tetrachloroethene	67.8	62.1		ug/m3		92	70 - 125
1,1-Dichloroethane	40.5	28.9		ug/m3		71	66 - 130
1,2-Dichloroethane	40.5	31.4		ug/m3		78	68 - 135
trans-1,2-Dichloroethene	39.6	31.0		ug/m3		78	69 - 137
Chloroethane	26.4	22.1		ug/m3		84	68 - 130
1,1-Dichloroethene	39.6	28.8		ug/m3		73	68 - 120
Trichloroethene	53.7	40.1		ug/m3		75	73 - 122
Vinyl chloride	25.6	20.8		ug/m3		82	61 - 135
cis-1,2-Dichloroethene	39.6	31.5		ug/m3		79	72 - 121

Lab Sample ID: 200-49156-1 DU — **Client Sample ID: GS00685**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 144082

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
1,1,1-Trichloroethane	280	U	280	U	ug/m3		NC	25
Tetrachloroethene	350	U	350	U	ug/m3		NC	25
1,1-Dichloroethane	210	U	210	U	ug/m3		NC	25
1,2-Dichloroethane	210	U	210	U	ug/m3		NC	25
trans-1,2-Dichloroethene	22000		18500		ug/m3		16	25
Chloroethane	340	U	340	U	ug/m3		NC	25
1,1-Dichloroethene	210	U	210	U	ug/m3		NC	25
Trichloroethene	280	U	280	U	ug/m3		NC	25
Vinyl chloride	130	U	130	U	ug/m3		NC	25
cis-1,2-Dichloroethene	210	U	210	U	ug/m3		NC	25

Lab Sample ID: MB 200-144183/6 — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 144183

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/18/19 15:20	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 200-144183/6
Matrix: Air
Analysis Batch: 144183

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	1.4	U	1.4	0.20	ug/m3			06/18/19 15:20	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/18/19 15:20	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/18/19 15:20	1
trans-1,2-Dichloroethene	0.79	U	0.79	0.29	ug/m3			06/18/19 15:20	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/18/19 15:20	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/18/19 15:20	1
Trichloroethene	1.1	U	1.1	0.16	ug/m3			06/18/19 15:20	1
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/18/19 15:20	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/18/19 15:20	1

Lab Sample ID: LCS 200-144183/4
Matrix: Air
Analysis Batch: 144183

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,1,1-Trichloroethane	54.6	59.9		ug/m3		110	72 - 127
Tetrachloroethene	67.8	77.9		ug/m3		115	70 - 125
1,1-Dichloroethane	40.5	34.3		ug/m3		85	66 - 130
1,2-Dichloroethane	40.5	36.8		ug/m3		91	68 - 135
trans-1,2-Dichloroethene	39.6	35.1		ug/m3		89	69 - 137
Chloroethane	26.4	23.8		ug/m3		90	68 - 130
1,1-Dichloroethene	39.6	35.7		ug/m3		90	68 - 120
Trichloroethene	53.7	57.9		ug/m3		108	73 - 122
Vinyl chloride	25.6	22.8		ug/m3		89	61 - 135
cis-1,2-Dichloroethene	39.6	37.6		ug/m3		95	72 - 121

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Air - GC/MS VOA

Analysis Batch: 144082

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-49156-1	GS00685	Total/NA	Air	TO-15	
200-49156-2	GS00686	Total/NA	Air	TO-15	
200-49156-3	GS00688	Total/NA	Air	TO-15	
200-49156-4	GS00687	Total/NA	Air	TO-15	
200-49156-5	GS00689	Total/NA	Air	TO-15	
200-49156-6	GS00690	Total/NA	Air	TO-15	
200-49156-7	GS00699	Total/NA	Air	TO-15	
200-49156-8	GS00700	Total/NA	Air	TO-15	
200-49156-9	GS00701	Total/NA	Air	TO-15	
200-49156-10	GS00702	Total/NA	Air	TO-15	
200-49156-11	GS00703	Total/NA	Air	TO-15	
200-49156-12	GS00704	Total/NA	Air	TO-15	
200-49156-13	GS00705	Total/NA	Air	TO-15	
200-49156-14	GS00706	Total/NA	Air	TO-15	
MB 200-144082/5	Method Blank	Total/NA	Air	TO-15	
LCS 200-144082/3	Lab Control Sample	Total/NA	Air	TO-15	
200-49156-1 DU	GS00685	Total/NA	Air	TO-15	

Analysis Batch: 144183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-49156-15	GS00707	Total/NA	Air	TO-15	
200-49156-16	GS00708	Total/NA	Air	TO-15	
200-49156-17	GS00709	Total/NA	Air	TO-15	
200-49156-18	GS00710	Total/NA	Air	TO-15	
200-49156-19	GS00711	Total/NA	Air	TO-15	
200-49156-20	061119 A	Total/NA	Air	TO-15	
200-49156-21	061119 B	Total/NA	Air	TO-15	
MB 200-144183/6	Method Blank	Total/NA	Air	TO-15	
LCS 200-144183/4	Lab Control Sample	Total/NA	Air	TO-15	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00685 — Lab Sample ID: 200-49156-1

Date Collected: 06/11/19 07:54
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		260	144082	06/14/19 16:40	K1P	TAL BUR

Client Sample ID: GS00686 — Lab Sample ID: 200-49156-2

Date Collected: 06/11/19 08:07
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		400	144082	06/14/19 18:21	K1P	TAL BUR

Client Sample ID: GS00688 — Lab Sample ID: 200-49156-3

Date Collected: 06/11/19 08:28
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		350	144082	06/14/19 19:11	K1P	TAL BUR

Client Sample ID: GS00687 — Lab Sample ID: 200-49156-4

Date Collected: 06/11/19 08:48
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		40	144082	06/14/19 20:01	K1P	TAL BUR

Client Sample ID: GS00689 — Lab Sample ID: 200-49156-5

Date Collected: 06/11/19 09:18
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		310	144082	06/14/19 20:51	K1P	TAL BUR

Client Sample ID: GS00690 — Lab Sample ID: 200-49156-6

Date Collected: 06/11/19 09:37
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		100	144082	06/14/19 21:41	K1P	TAL BUR

Client Sample ID: GS00699 — Lab Sample ID: 200-49156-7

Date Collected: 06/11/19 11:40
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		390	144082	06/14/19 22:31	K1P	TAL BUR

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00700 — Lab Sample ID: 200-49156-8

Date Collected: 06/11/19 12:09
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		390	144082	06/14/19 23:22	K1P	TAL BUR

Client Sample ID: GS00701 — Lab Sample ID: 200-49156-9

Date Collected: 06/11/19 12:23
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		4200	144082	06/15/19 00:12	K1P	TAL BUR

Client Sample ID: GS00702 — Lab Sample ID: 200-49156-10

Date Collected: 06/11/19 12:56
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		6300	144082	06/15/19 01:02	K1P	TAL BUR

Client Sample ID: GS00703 — Lab Sample ID: 200-49156-11

Date Collected: 06/11/19 13:08
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		7300	144082	06/15/19 01:52	K1P	TAL BUR

Client Sample ID: GS00704 — Lab Sample ID: 200-49156-12

Date Collected: 06/11/19 13:18
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		386	144082	06/15/19 02:43	K1P	TAL BUR

Client Sample ID: GS00705 — Lab Sample ID: 200-49156-13

Date Collected: 06/11/19 13:30
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		260	144082	06/15/19 03:33	K1P	TAL BUR

Client Sample ID: GS00706 — Lab Sample ID: 200-49156-14

Date Collected: 06/11/19 13:35
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		2000	144082	06/15/19 04:24	K1P	TAL BUR

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Client Sample ID: GS00707 — Lab Sample ID: 200-49156-15

Date Collected: 06/11/19 14:24
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		40	144183	06/18/19 19:31	GGG	TAL BUR

Client Sample ID: GS00708 — Lab Sample ID: 200-49156-16

Date Collected: 06/11/19 14:36
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		40	144183	06/18/19 20:22	GGG	TAL BUR

Client Sample ID: GS00709 — Lab Sample ID: 200-49156-17

Date Collected: 06/11/19 14:47
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		30	144183	06/18/19 21:13	GGG	TAL BUR

Client Sample ID: GS00710 — Lab Sample ID: 200-49156-18

Date Collected: 06/11/19 15:05
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		20	144183	06/18/19 22:03	GGG	TAL BUR

Client Sample ID: GS00711 — Lab Sample ID: 200-49156-19

Date Collected: 06/11/19 15:06
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		50	144183	06/18/19 22:54	GGG	TAL BUR

Client Sample ID: 061119 A — Lab Sample ID: 200-49156-20

Date Collected: 06/11/19 09:44
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		100	144183	06/18/19 23:44	GGG	TAL BUR

Client Sample ID: 061119 B — Lab Sample ID: 200-49156-21

Date Collected: 06/11/19 14:53
Date Received: 06/12/19 09:57
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		10	144183	06/19/19 00:35	GGG	TAL BUR

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Laboratory: Eurofins TestAmerica, Burlington

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	050-999-436	12-31-19

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin

Job ID: 200-49156-1
SDG: 200-49156-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
200-49156-1	GS00685	Air	06/11/19 07:54	06/12/19 09:57	Air Canister (1-Liter) #6423
200-49156-2	GS00686	Air	06/11/19 08:07	06/12/19 09:57	Air Canister (1-Liter) #5912
200-49156-3	GS00688	Air	06/11/19 08:28	06/12/19 09:57	Air Canister (1-Liter) #6298
200-49156-4	GS00687	Air	06/11/19 08:48	06/12/19 09:57	Air Canister (1-Liter) #6279
200-49156-5	GS00689	Air	06/11/19 09:18	06/12/19 09:57	Air Canister (1-Liter) #5873
200-49156-6	GS00690	Air	06/11/19 09:37	06/12/19 09:57	Air Canister (1-Liter) #6413
200-49156-7	GS00699	Air	06/11/19 11:40	06/12/19 09:57	Air Canister (1-Liter) #6436
200-49156-8	GS00700	Air	06/11/19 12:09	06/12/19 09:57	Air Canister (1-Liter) #4664
200-49156-9	GS00701	Air	06/11/19 12:23	06/12/19 09:57	Air Canister (1-Liter) #3722
200-49156-10	GS00702	Air	06/11/19 12:56	06/12/19 09:57	Air Canister (1-Liter) #3599
200-49156-11	GS00703	Air	06/11/19 13:08	06/12/19 09:57	Air Canister (1-Liter) #4953
200-49156-12	GS00704	Air	06/11/19 13:18	06/12/19 09:57	Air Canister (1-Liter) #8499
200-49156-13	GS00705	Air	06/11/19 13:30	06/12/19 09:57	Air Canister (1-Liter) #4389
200-49156-14	GS00706	Air	06/11/19 13:35	06/12/19 09:57	Air Canister (1-Liter) #3814
200-49156-15	GS00707	Air	06/11/19 14:24	06/12/19 09:57	Air Canister (1-Liter) #3817
200-49156-16	GS00708	Air	06/11/19 14:36	06/12/19 09:57	Air Canister (1-Liter) #6453
200-49156-17	GS00709	Air	06/11/19 14:47	06/12/19 09:57	Air Canister (1-Liter) #4662
200-49156-18	GS00710	Air	06/11/19 15:05	06/12/19 09:57	Air Canister (1-Liter) #4962
200-49156-19	GS00711	Air	06/11/19 15:06	06/12/19 09:57	Air Canister (1-Liter) #6281
200-49156-20	061119 A	Air	06/11/19 09:44	06/12/19 09:57	Air Canister (1-Liter) #4485
200-49156-21	061119 B	Air	06/11/19 14:53	06/12/19 09:57	Air Canister (1-Liter) #6363

TestAmerica Minneapolis SC
213

Canister Samples Chain of Custody Record

200-49156 Chain of Custody

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403-6809
phone 802.660.1990 fax 802.660.1919

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

Environment Testing TestAmerica

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Information	Client Project Manager: Chris Bratsch	Samples Collected By: Kelly Jawarski (KJJ)	COC No: 1 of 2 COCs
Company Name: WENCK	Phone: Shane Waterman		
Address: 1807 Woodbine Drive	Email:		For Lab Use Only:
City/State/Zip: Woodbury MN 55125			Walk-in Client:
Phone:	Site Contact:		Lab Sampling:
FAX:	Tel/Fax		
Project Name: Water Gremlin	Analysis Turnaround Time		Job / SDG No.:
Site/Location: White Bear Lake, MN	Standard (Specific): 5-DAY		(See below for Add'l Items)
P O # 2606-0016	Rush (Specifiy):		

Sample Identification	Sample Start Date	Time Start	Sample End Date	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)	TO-15 SIM	EPA 3C	EPA 25C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Sample Type	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
GS00685	6/11	747	754	6/11/19	-25	-2	6039	6423							X			X					SS-7
GS00686	6/11	803	807		-29	-2	6517	5912							X			X					SS-4
GS00688	6/11	821	828		-29.5	-1	6107	6298							X			X					SS-6
GS00687	6/11	840	848		-29	-4	5594	6279							X			X					SS-5
GS00689	6/11	9:13	9:18		-30	-2	4677	5873							X			X					SS-3 (SS-3)
GS00690	6/11	932	937		-26	-2	4900	6413							X			X					SS-2
GS00699	6/11	1135	1140		-24.5	-2.5	6037	6436							X			X					SS-1
GS00700	6/11	1202	1209		-24	-2	6373	4664							X			X					SS-8
GS00701	6/11	1216	1223		-28	-2	6289	3722							X			X					SS-9
GS00702	6/11	1251	1256		-29	-2	6402	3599							X			X					SS-11

Temperature (Fahrenheit)			
Start	Interior	Ambient	
Stop			

Pressure (inches of Hg)			
Start	Interior	Ambient	
Stop			

Special Instructions/QC Requirements & Comments: TO-15 Modified list (Chloroethane, 1,1-DCA, 1,2-DCA, 1,1-DCE, cis-1,2-DCE, Trans-1,2-DCE, PCE 1,1,1-TCA, TCE, VC)

Samples Shipped by: Kelly Jawarski	Date / Time: 06/11/2019 16:51	Samples Received by: [signature] 6-11-19 1651
Samples Relinquished by: [signature]	Date / Time: 6-11-19 1710	Received by: Taylor Johnson TABUR 6/12/19 ~~05~~ TM 6/12/19 0957
Relinquished by:	Date / Time:	Received by:
Lab Use Only: Shipper Name:	Opened by:	Condition:

Form No. CA-C-WI-003, Rev. 2.13, dated 4/10/2019

TestAmerica Minneapolis SC
213

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

eurofins | Environment Testing TestAmerica

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403-6809
phone 802.660.1990 fax 802.660.1919

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Information	Client Project Manager: CHRIS BIRKEL	Samples Collected By: KSJ	COC No:
Company Name: WENCK	Phone: SHANE WATERMAN		2 of 2 COCs
Address: 1620 WOODDALE DRIVE	Email:		
City/State/Zip WOODBURY MN 55125			For Lab Use Only:
Phone:	Site Contact:		Walk-in Client:
FAX:	Tel/Fax		Lab Sampling:
Project Name: WATER GP EMIIN	Analysis Turnaround Time		
Site/Location: WHITE BEAR LAKE, MN	Standard (Specific): 5-DAY		Job / SDG No.:
P O # 2606-0016	Rush (Specifiy):		(See below for Add'l Items)

Sample Identification	Sample Start Date	Time Start	Sample End Date	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)	TO-15 SIM	EPA 3C	EPA 25C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Sample Type	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
GS00703	6/11	1302	1308		-26.5	-2	6088	4953							X			X				X	SS-12
GS00704	6/11	1312	1318		-30	-3	6498	6499							X			X				X	SS-13
GS00705	6/11	1323	1330		-28	-2.5	6530	4389							X			X				X	SS-15
GS00706	6/11	1329	1335		-30	-2	5598	3814							X			X				X	SS-14
GS00707	6/11	14:19	14:24		-25	-3	6695	3817							X			X				X	SS-16
GS00708	6/11	1429	1436		-29	-4	6028	6453							X			X				X	SS-17
GS00709	6/11	1441	1447		-30	-3	6163	4662							X			X				X	SS-18
GS00710	6/11	1500	1505		-25	-2	4715	4962							X			X				X	SS-19
GS00711	6/11	1502	1506		-22	-1.5	5326	6281							X			X				X	SS-20
061119A	6/11	939	944		-26	-1	4485	6240							X			X				X	DUP
061119B	6/11	1448	1453				~~6363~~ 6545	~~6545~~ 6363							X			X				X	DUP

Temperature Fahrenheit	Interior	Ambient
Start		20
Stop		-20

Pressure (inches of Hg)	Interior	Ambient
Start		
Stop		

Special Instructions/QC Requirements & Comments: TO-15 Modified List

Samples Shipped by: Kelly Jankowski	Date / Time: 06/11/2019 16:51	Samples Received by: [signature] 6-11-19 1657
Samples Relinquished by: [signature]	Date / Time: 6-11-19 1710	Received by: Taylor Shaw TABW1 6/12/19 0957
Relinquished by:	Date / Time:	Received by:

Lab Use Only: Shipper Name: Opened by: Condition:

Form No. CA-C-WI-003, Rev. 2.13, dated 4/10/2019

ORIGIN ID:GPZA (111) 111-1111
SAMPLE RECEIVING
TESTAMERICA
7600 WEST 27TH STREET
SUITE 209
MINNEAPOLIS, MN 55426
UNITED STATES US

SHIP DATE: 11JUN19
ACTWGT: 44.20 LB
CAD: 399920/CAFE3211

BILL RECIPIENT

551C1/D210/104C

TO **SAMPLE RECEIVING**
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE

BURLINGTON VT 05403

(802) 660-1990 REF:
INV:
PO: DEPT:

FedEx Express

E

J181118060501uv

TRK# 0201 4114 9906 4679

WED - 12 JUN 10:30A
PRIORITY OVERNIGHT

NC BTVA

05403
VT-US BTV

ORIGIN ID:GPZA (111) 111-1111
SAMPLE RECEIVING
TESTAMERICA
7600 WEST 27TH STREET
SUITE 209
MINNEAPOLIS, MN 55426
UNITED STATES US

SHIP DATE: 11JUN19
ACTWGT: 27.90 LB
CAD: 399920/CAFE3211

BILL RECIPIENT

551C1/D210/104C

TO **SAMPLE RECEIVING**
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE

BURLINGTON VT 05403

(802) 660-1990 REF: DEPT:
INV:
PO:

FedEx Express

E

J181118060501uv

TRK# 0201 4114 9906 4668

WED - 12 JUN 10:30A
PRIORITY OVERNIGHT

NC BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 200-49156-1
SDG Number: 200-49156-1

Login Number: 49156
List Number: 1
Creator: Mohn, Taylor J

List Source: Eurofins TestAmerica, Burlington

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	169516, -517
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician	Can Size	Certification Type:
Oven 1/2	5000	200	5/28/2019	1200	20	20	SML	6 liter 5/29/19	batch

Port	Can ID	Initial[1] (psia)	Final (psia)	Diff.[3]	Final ("Hg)	Initial Reading Gauge:	Date:	Time:	Tech:	Temp:	Final Reading Gauge:	Date:	Time:	Tech:	Temp:
1	3598	.04	.04	.00	29.9	G26	5/29/19	1300	SL	20.0	G26	6/7/19	1130	SCH	21
2	4962		-.04	.00		G26					G26				
3	8499		.12	.08		G26					G26				
4	3814		.18	.14		G26					G26				
5	3579	.04	0.11	.07	29.8	G26	6/7/19	1155	SCH	21	G26	6/11/19	1704	SCH	21
6	5891	.04	.04	.00	29.9	G26	5/29/19	1300	SL	20.0	G26	6/7/19	1130	SCH	21
7	4485		.17	.13		G26					G26				
8	4958		.04	.00		G26					G26				
9	6281		.04	.00		G26					G26				
10	3722		-.04	.00		G26					G26				
11	5912		-.04	.00		G26					G26				
12	6363		.04	.00		G26					G26				

[1] Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

[3] Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister **PM Authorization** **Date:**

Clean Canister Certification Analysis & Authorization of Release to Inventory

Test Method: ☐TO15 Routine ☐ TO15 LL

Can ID	Date	Sequence	Analyst	Inventory Level 1	2	3	4	Secondary Review Limited	Review Date	Reviewer
3579	6/6/19	36230	BK			XXXX			6/7/19	EKF

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Dup Tees/Vac gauges (enter IDs if included):

Comments:

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

200-48938-A-5
3579
Location: Air-Storage
Bottle: Summa Canister 1L
Sampled: 5/28/2019 12:00 AM 200-1288102

Loc: 200
48938
#5
A

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician	Can Size	Certification Type:
Oven 1/2	80	25	6/5/2019	16:44	21	21	SCH	1 liter	batch

Port	Can ID	Initial[1] (psia)	Final (psia)	Diff.[3]	Final ("Hg)	Initial Reading Gauge:	Date:	Time:	Tech:	Temp:	Final Reading Gauge:	Date:	Time:	Tech:	Temp:
1	6423	.02	.24	.22	29.9	G26	6/6/19	10:41	SCH	21	G26	6/7/19	1126	SCH	21
2	6413		.05	.03		G26					G26				
3	3810		.25	.23		G26					G26				
4	4854		.27	.25		G26					G26				
5	6283	.02	.17	.15	29.8	G26	6/7/19	1202	SCH	21	G26	6/11/19	1705	SCH	21
6	6415	.02	.02	.00	29.9	G26	6/6/19	10:41	SCH	21	G26	6/7/19	1126	SCH	21
7	6298		.11	.09		G26					G26				
8	4662		.02	.00		G26					G26				
9	4953		.04	.02		G26					G26				
10	3599		.05	.03		G26					G26				
11	6453		.03	.01		G26					G26				
12	6279		.02	.00		G26					G26				

[1] Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

[3] Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister PM Authorization Date:

Clean Canister Certification Analysis & Authorization of Release to Inventory

Test Method: ☑ TO15 Routine ☐ TO15 LL

Can ID	Date	Sequence	Analyst	Inventory Level 1	2	3	4	Secondary Review Limited	Review Date	Reviewer
6283	6/6/19	36230	BK		~~XXXX~~ SH 6/7/19	XXXX			6/7/19	EKT

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Comments:

☐ **Dup Tees/Vac gauges (enter IDs if included):**

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

200-49051-A-5
6283
Location: Air-Storage
Bottle: Summa Canister 1L
Sampled: 6/5/2019 4:44 PM
200-1290186

Loc: 200
49051
#5
A

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48938-1

SDG No.:

Client Sample ID: 3579 Lab Sample ID: 200-48938-5

Matrix: Air Lab File ID: 36131-11.D

Analysis Method: TO-15 Date Collected: 05/28/2019 00:00

Sample wt/vol: 200(mL) Date Analyzed: 05/30/2019 19:30

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	5.0	U	5.0	5.0
75-71-8	Dichlorodifluoromethane	0.50	U	0.50	0.50
75-45-6	Freon 22	0.50	U	0.50	0.50
76-14-2	1,2-Dichlorotetrafluoroethane	0.20	U	0.20	0.20
74-87-3	Chloromethane	0.50	U	0.50	0.50
106-97-8	n-Butane	0.50	U	0.50	0.50
75-01-4	Vinyl chloride	0.20	U	0.20	0.20
106-99-0	1,3-Butadiene	0.20	U	0.20	0.20
74-83-9	Bromomethane	0.20	U	0.20	0.20
75-00-3	Chloroethane	0.50	U	0.50	0.50
593-60-2	Bromoethene(Vinyl Bromide)	0.20	U	0.20	0.20
75-69-4	Trichlorofluoromethane	0.20	U	0.20	0.20
64-17-5	Ethanol	5.0	U	5.0	5.0
76-13-1	Freon TF	0.20	U	0.20	0.20
75-35-4	1,1-Dichloroethene	0.20	U	0.20	0.20
67-64-1	Acetone	5.0	U	5.0	5.0
67-63-0	Isopropyl alcohol	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	0.50	U	0.50	0.50
107-05-1	3-Chloropropene	0.50	U	0.50	0.50
75-09-2	Methylene Chloride	0.50	U	0.50	0.50
75-65-0	tert-Butyl alcohol	5.0	U	5.0	5.0
1634-04-4	Methyl tert-butyl ether	0.20	U	0.20	0.20
156-60-5	trans-1,2-Dichloroethene	0.20	U	0.20	0.20
110-54-3	n-Hexane	0.20	U	0.20	0.20
75-34-3	1,1-Dichloroethane	0.20	U	0.20	0.20
108-05-4	Vinyl acetate	5.0	U	5.0	5.0
141-78-6	Ethyl acetate	5.0	U	5.0	5.0
78-93-3	Methyl Ethyl Ketone	0.50	U	0.50	0.50
156-59-2	cis-1,2-Dichloroethene	0.20	U	0.20	0.20
540-59-0	1,2-Dichloroethene, Total	0.40	U	0.40	0.40
67-66-3	Chloroform	0.20	U	0.20	0.20
109-99-9	Tetrahydrofuran	5.0	U	5.0	5.0
71-55-6	1,1,1-Trichloroethane	0.20	U	0.20	0.20
110-82-7	Cyclohexane	0.20	U	0.20	0.20
56-23-5	Carbon tetrachloride	0.20	U	0.20	0.20
540-84-1	2,2,4-Trimethylpentane	0.20	U	0.20	0.20

FORM I TO-15

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48938-1

SDG No.:

Client Sample ID: 3579 Lab Sample ID: 200-48938-5

Matrix: Air Lab File ID: 36131-11.D

Analysis Method: TO-15 Date Collected: 05/28/2019 00:00

Sample wt/vol: 200(mL) Date Analyzed: 05/30/2019 19:30

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.20	U	0.20	0.20
107-06-2	1,2-Dichloroethane	0.20	U	0.20	0.20
142-82-5	n-Heptane	0.20	U	0.20	0.20
79-01-6	Trichloroethene	0.20	U	0.20	0.20
80-62-6	Methyl methacrylate	0.50	U	0.50	0.50
78-87-5	1,2-Dichloropropane	0.20	U	0.20	0.20
123-91-1	1,4-Dioxane	5.0	U	5.0	5.0
75-27-4	Bromodichloromethane	0.20	U	0.20	0.20
10061-01-5	cis-1,3-Dichloropropene	0.20	U	0.20	0.20
108-10-1	methyl isobutyl ketone	0.50	U	0.50	0.50
108-88-3	Toluene	0.20	U	0.20	0.20
10061-02-6	trans-1,3-Dichloropropene	0.20	U	0.20	0.20
79-00-5	1,1,2-Trichloroethane	0.20	U	0.20	0.20
127-18-4	Tetrachloroethene	0.20	U	0.20	0.20
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.50	U	0.50	0.50
124-48-1	Dibromochloromethane	0.20	U	0.20	0.20
106-93-4	1,2-Dibromoethane	0.20	U	0.20	0.20
108-90-7	Chlorobenzene	0.20	U	0.20	0.20
100-41-4	Ethylbenzene	0.20	U	0.20	0.20
179601-23-1	m,p-Xylene	0.50	U	0.50	0.50
95-47-6	Xylene, o-	0.20	U	0.20	0.20
1330-20-7	Xylene (total)	0.70	U	0.70	0.70
100-42-5	Styrene	0.20	U	0.20	0.20
75-25-2	Bromoform	0.20	U	0.20	0.20
98-82-8	Cumene	0.20	U	0.20	0.20
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U	0.20	0.20
103-65-1	n-Propylbenzene	0.20	U	0.20	0.20
622-96-8	4-Ethyltoluene	0.20	U	0.20	0.20
108-67-8	1,3,5-Trimethylbenzene	0.20	U	0.20	0.20
95-49-8	2-Chlorotoluene	0.20	U	0.20	0.20
98-06-6	tert-Butylbenzene	0.20	U	0.20	0.20
95-63-6	1,2,4-Trimethylbenzene	0.20	U	0.20	0.20
135-98-8	sec-Butylbenzene	0.20	U	0.20	0.20
99-87-6	4-Isopropyltoluene	0.20	U	0.20	0.20
541-73-1	1,3-Dichlorobenzene	0.20	U	0.20	0.20
106-46-7	1,4-Dichlorobenzene	0.20	U	0.20	0.20

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48938-1

SDG No.:

Client Sample ID: 3579 Lab Sample ID: 200-48938-5

Matrix: Air Lab File ID: 36131-11.D

Analysis Method: TO-15 Date Collected: 05/28/2019 00:00

Sample wt/vol: 200(mL) Date Analyzed: 05/30/2019 19:30

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.20	U	0.20	0.20
104-51-8	n-Butylbenzene	0.20	U	0.20	0.20
95-50-1	1,2-Dichlorobenzene	0.20	U	0.20	0.20
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.50	0.50
87-68-3	Hexachlorobutadiene	0.20	U	0.20	0.20
91-20-3	Naphthalene	0.50	U	0.50	0.50

Eurofins TestAmerica, Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D
Lims ID: 200-48938-A-5
Client ID: 3579
Sample Type: Client
Inject. Date: 30-May-2019 19:30:30 ALS Bottle#: 12 Worklist Smp#: 11
Purge Vol: 200.000 mL Dil. Factor: 1.0000
Sample Info: 200-0036131-011
Operator ID: ert Instrument ID: CHC.i

Method: \\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\TO15_MasterMethod_(v1)_CHC.i.m
Limit Group: AI_TO15_ICAL
Last Update: 31-May-2019 12:51:27 Calib Date: 21-May-2019 07:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Burlington\ChromData\CHC.i\20190520-36004.b\36004-12.D

Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
Process Host: CTX0304

First Level Reviewer: puangmaleek Date: 31-May-2019 12:51:27

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		2.957				ND	
2 Dichlorodifluoromethane	85		3.026				ND	U
3 Chlorodifluoromethane	51		3.069				ND	U
4 1,2-Dichloro-1,1,2,2-tetra	85		3.277				ND	U
5 Chloromethane	50		3.405				ND	U
6 Butane	43		3.603				ND	U
7 Vinyl chloride	62		3.640				ND	
8 Butadiene	54		3.715				ND	
10 Bromomethane	94		4.371				ND	
11 Chloroethane	64		4.601				ND	
13 Vinyl bromide	106		4.990				ND	
14 Trichlorofluoromethane	101		5.102				ND	
17 Ethanol	45		5.668				ND	U
20 1,1,2-Trichloro-1,2,2-trif	101		6.186				ND	
21 1,1-Dichloroethene	96		6.212				ND	
22 Acetone	43		6.420				ND	U
23 Carbon disulfide	76		6.586				ND	
24 Isopropyl alcohol	45		6.746				ND	
25 3-Chloro-1-propene	41		6.991				ND	U
27 Methylene Chloride	49		7.280				ND	U
28 2-Methyl-2-propanol	59		7.520				ND	
29 Methyl tert-butyl ether	73		7.707				ND	
31 trans-1,2-Dichloroethene	61		7.733				ND	U
33 Hexane	57		8.144				ND	
34 1,1-Dichloroethane	63		8.593				ND	
35 Vinyl acetate	43		8.683				ND	U
37 cis-1,2-Dichloroethene	96		9.703				ND	U
38 2-Butanone (MEK)	72		9.740				ND	
39 Ethyl acetate	88		9.815				ND	
* 40 Chlorobromomethane	128	10.161	10.162	-0.001	79	327722	10.0	
41 Tetrahydrofuran	42		10.172				ND	
S 30 1,2-Dichloroethene, Total	61		10.200				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
42 Chloroform	83		10.311				ND	
43 Cyclohexane	84		10.573				ND	
44 1,1,1-Trichloroethane	97		10.583				ND	
45 Carbon tetrachloride	117		10.839				ND	
47 Benzene	78		11.288				ND	U
46 Isooctane	57		11.298				ND	
48 1,2-Dichloroethane	62		11.458				ND	
49 n-Heptane	43		11.704				ND	U
* 50 1,4-Difluorobenzene	114	12.141	12.142	-0.001	93	1764530	10.0	
53 Trichloroethene	95	12.622	12.622	0.011	1	3282	0.0907	M
54 1,2-Dichloropropane	63		13.145				ND	
55 Methyl methacrylate	69		13.348				ND	
56 1,4-Dioxane	88		13.385				ND	
57 Dibromomethane	174		13.406				ND	U
58 Dichlorobromomethane	83		13.727				ND	
60 cis-1,3-Dichloropropene	75		14.677				ND	
61 4-Methyl-2-pentanone (MIBK	43		14.959				ND	
65 Toluene	92		15.274				ND	
66 trans-1,3-Dichloropropene	75		15.872				ND	
67 1,1,2-Trichloroethane	83		16.240				ND	
68 Tetrachloroethene	166	16.379	16.379	0.000	94	6113	0.0829	M
69 2-Hexanone	43		16.694				ND	U
71 Chlorodibromomethane	129		17.009				ND	
72 Ethylene Dibromide	107		17.265				ND	
* 74 Chlorobenzene-d5	117	18.177	18.178	-0.001	83	2067406	10.0	
75 Chlorobenzene	112		18.236				ND	
76 Ethylbenzene	91		18.396				ND	U
78 m-Xylene & p-Xylene	106		18.647				ND	
79 o-Xylene	106		19.485				ND	
80 Styrene	104		19.533				ND	
81 Bromoform	173		19.965				ND	
S 73 Xylenes, Total	106		20.100				ND	
82 Isopropylbenzene	105		20.206				ND	
84 1,1,2,2-Tetrachloroethane	83		20.873				ND	
85 N-Propylbenzene	91		20.953				ND	U
88 4-Ethyltoluene	105		21.150				ND	
89 2-Chlorotoluene	91		21.150				ND	U
90 1,3,5-Trimethylbenzene	105		21.262				ND	
92 tert-Butylbenzene	119		21.764				ND	
93 1,2,4-Trimethylbenzene	105		21.860				ND	U
94 sec-Butylbenzene	105		22.095				ND	U
95 4-Isopropyltoluene	119		22.303				ND	U
96 1,3-Dichlorobenzene	146		22.324				ND	U
97 1,4-Dichlorobenzene	146		22.463				ND	U
98 Benzyl chloride	91		22.650				ND	U
100 n-Butylbenzene	91		22.874				ND	U
101 1,2-Dichlorobenzene	146		22.981				ND	U
103 1,2,4-Trichlorobenzene	180		25.372				ND	
104 Hexachlorobutadiene	225		25.564				ND	
105 Naphthalene	128		25.815				ND	U

QC Flag Legend

Review Flags

M - Manually Integrated

U - Marked Undetected

Reagents:

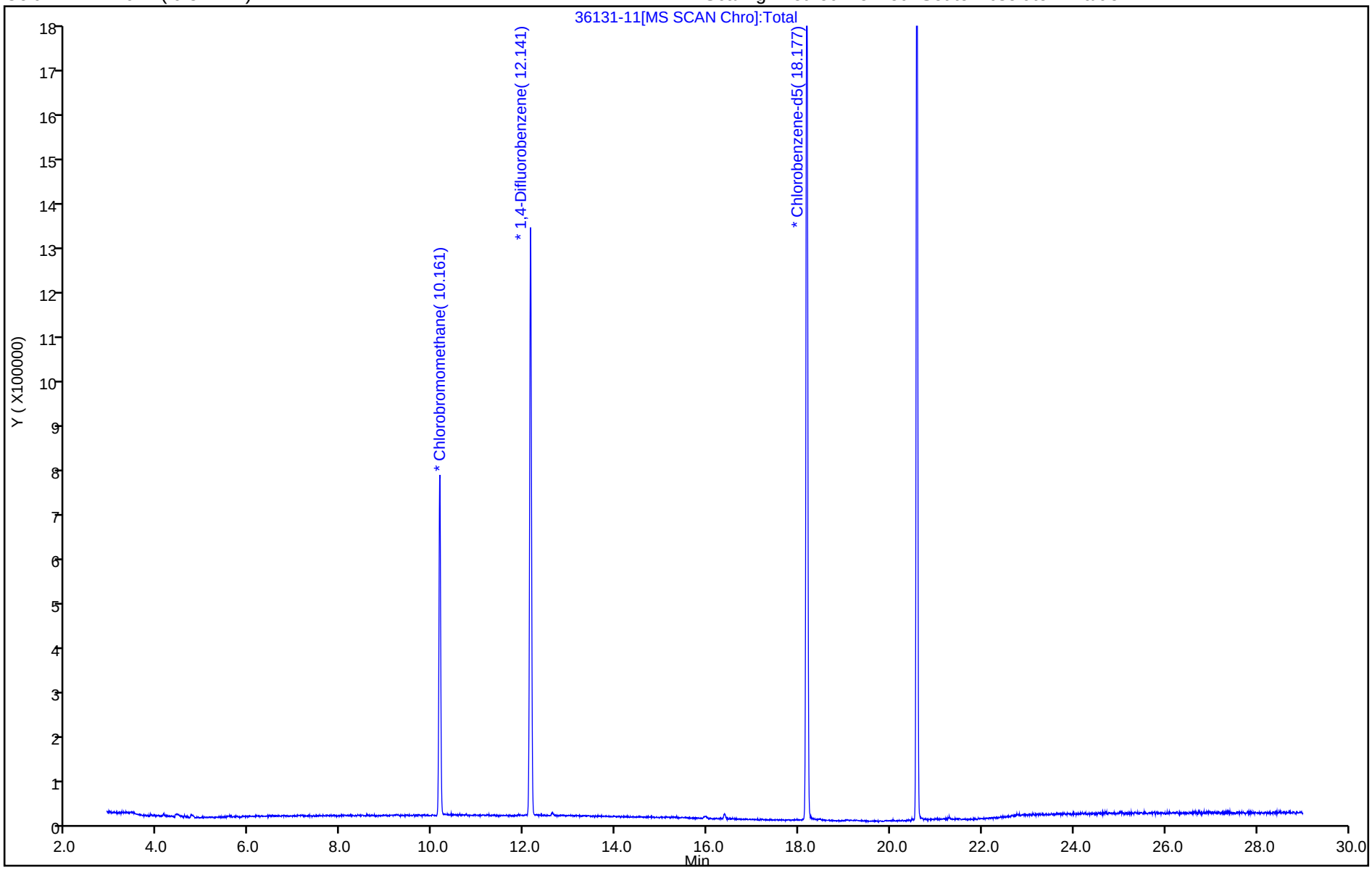
ATTO15CISs_00010	Amount Added: 20.00	Units: mL	Run Reagent

Report Date: 31-May-2019 12:51:27 Chrom Revision: 2.3 03-May-2019 15:52:00

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i	Operator ID:	ert
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5	Worklist Smp#:	11
Client ID:	3579				
Purge Vol:	200.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		

Column: RTX-624 (0.32 mm) Y Scaling: Method Defined: Set to Absolute Y Value



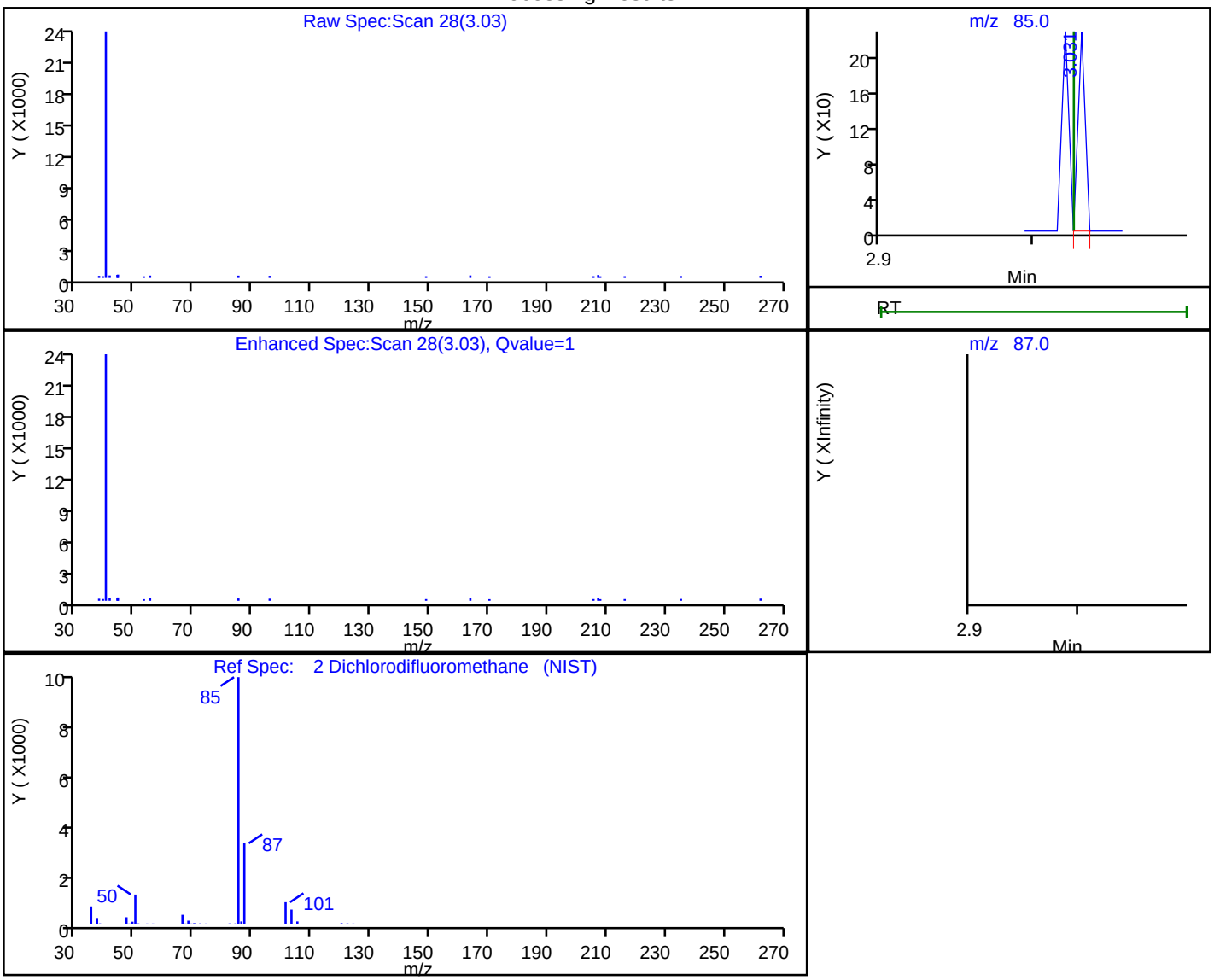
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

2 Dichlorodifluoromethane, CAS: 75-71-8

Processing Results



RT	Mass	Response	Amount
3.03	85.00	71	0.001876
3.03	87.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:55

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

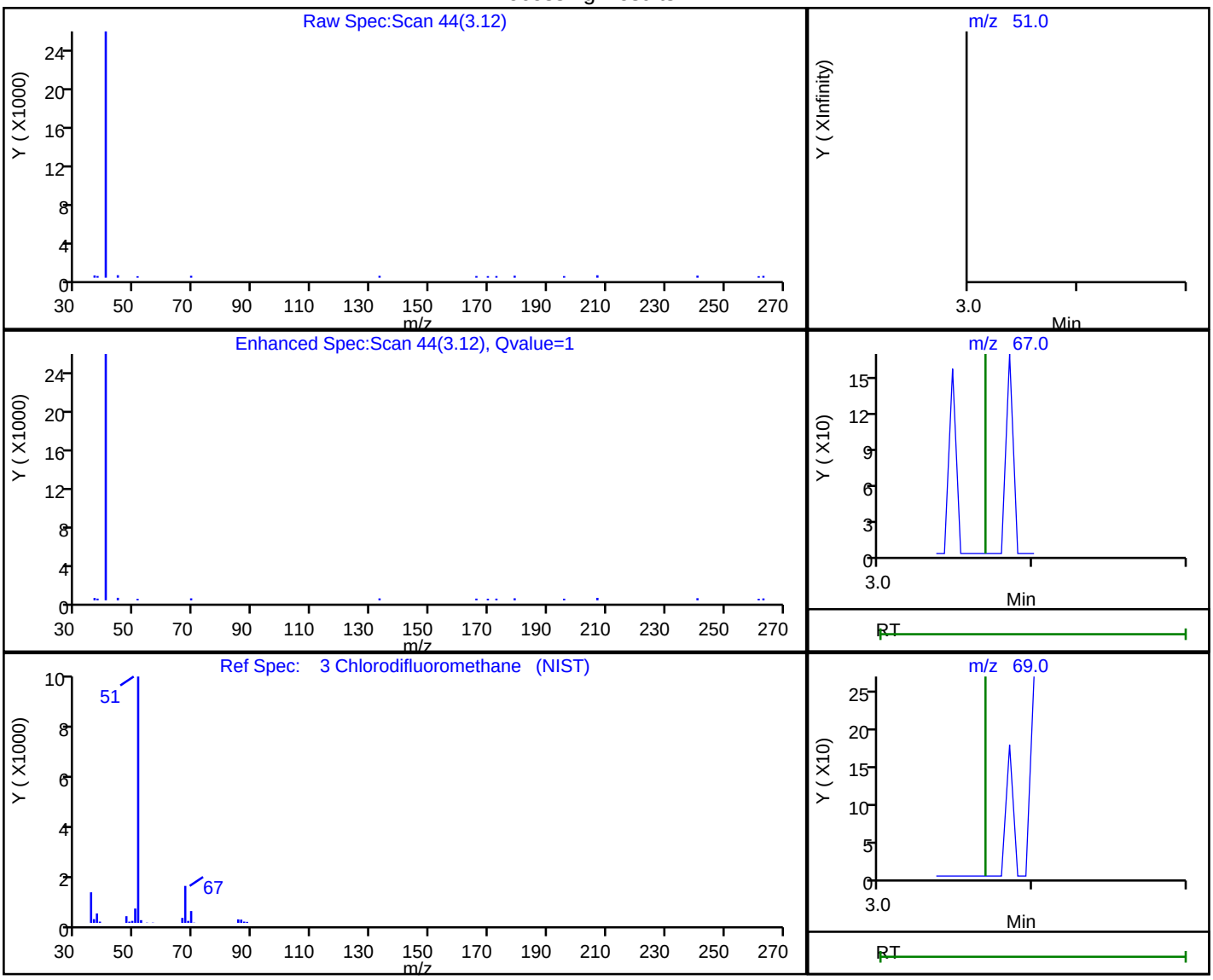
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

3 Chlorodifluoromethane, CAS: 75-45-6

Processing Results



RT	Mass	Response	Amount
3.12	51.00	48	0.002156
3.07	67.00	0	
3.07	69.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:56

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

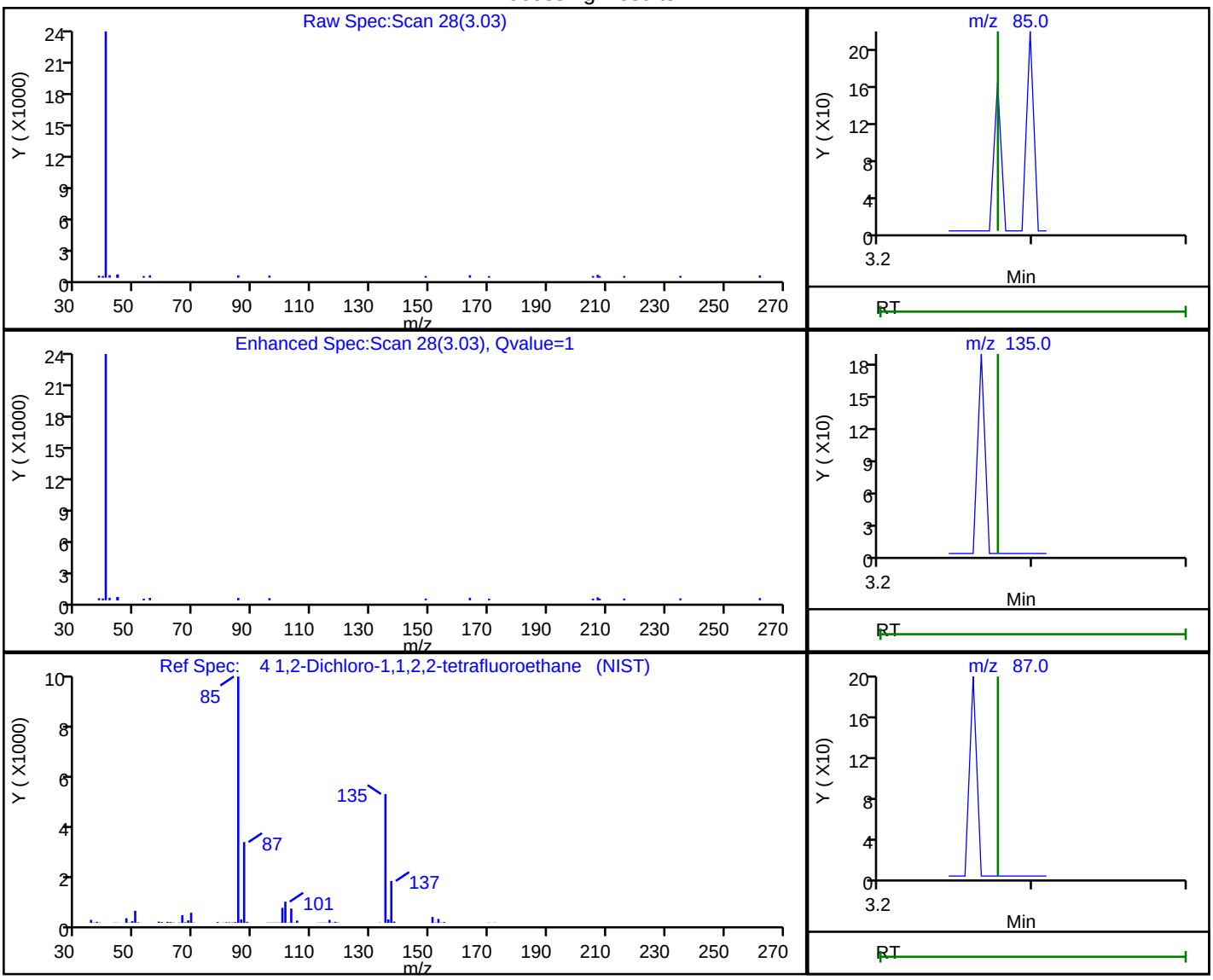
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

4 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Processing Results



RT	Mass	Response	Amount
3.03	85.00	71	0.001448
3.28	135.00	0	
3.28	87.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:57

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

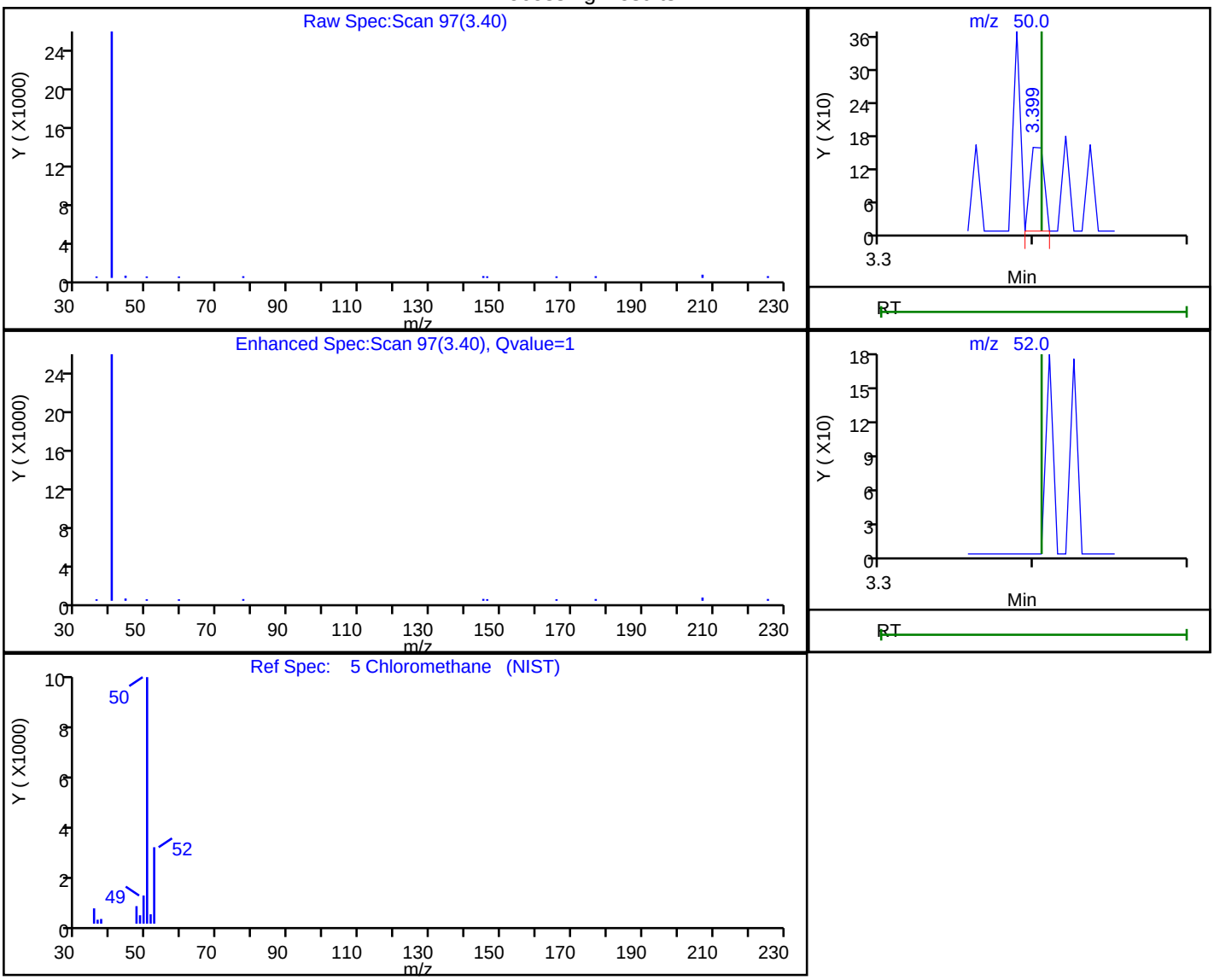
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

5 Chloromethane, CAS: 74-87-3

Processing Results



RT	Mass	Response	Amount
3.40	50.00	98	0.007018
3.41	52.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:58

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

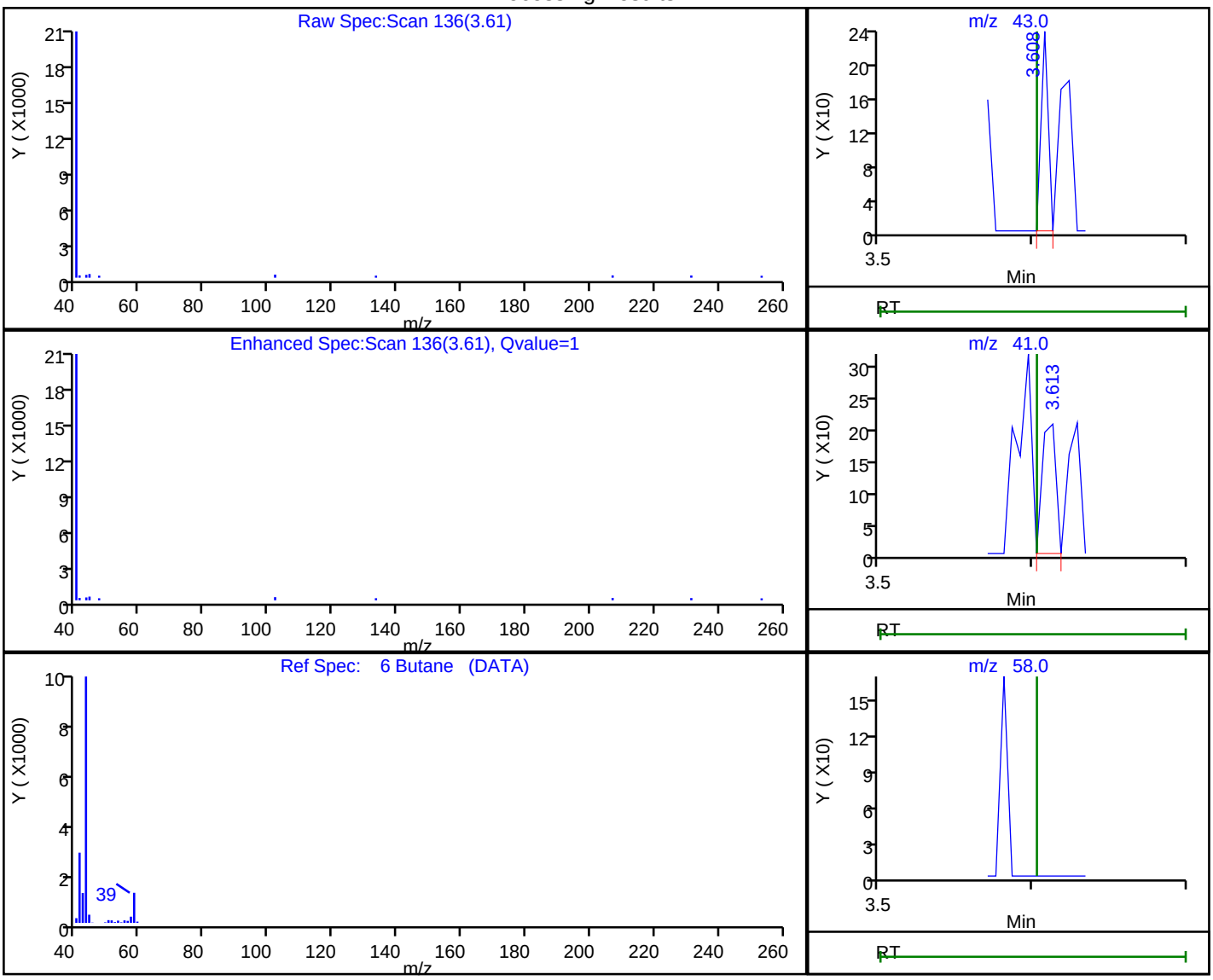
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

6 Butane, CAS: 106-97-8

Processing Results



RT	Mass	Response	Amount
3.61	43.00	74	0.003386
3.61	41.00	126	
3.60	58.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:59

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

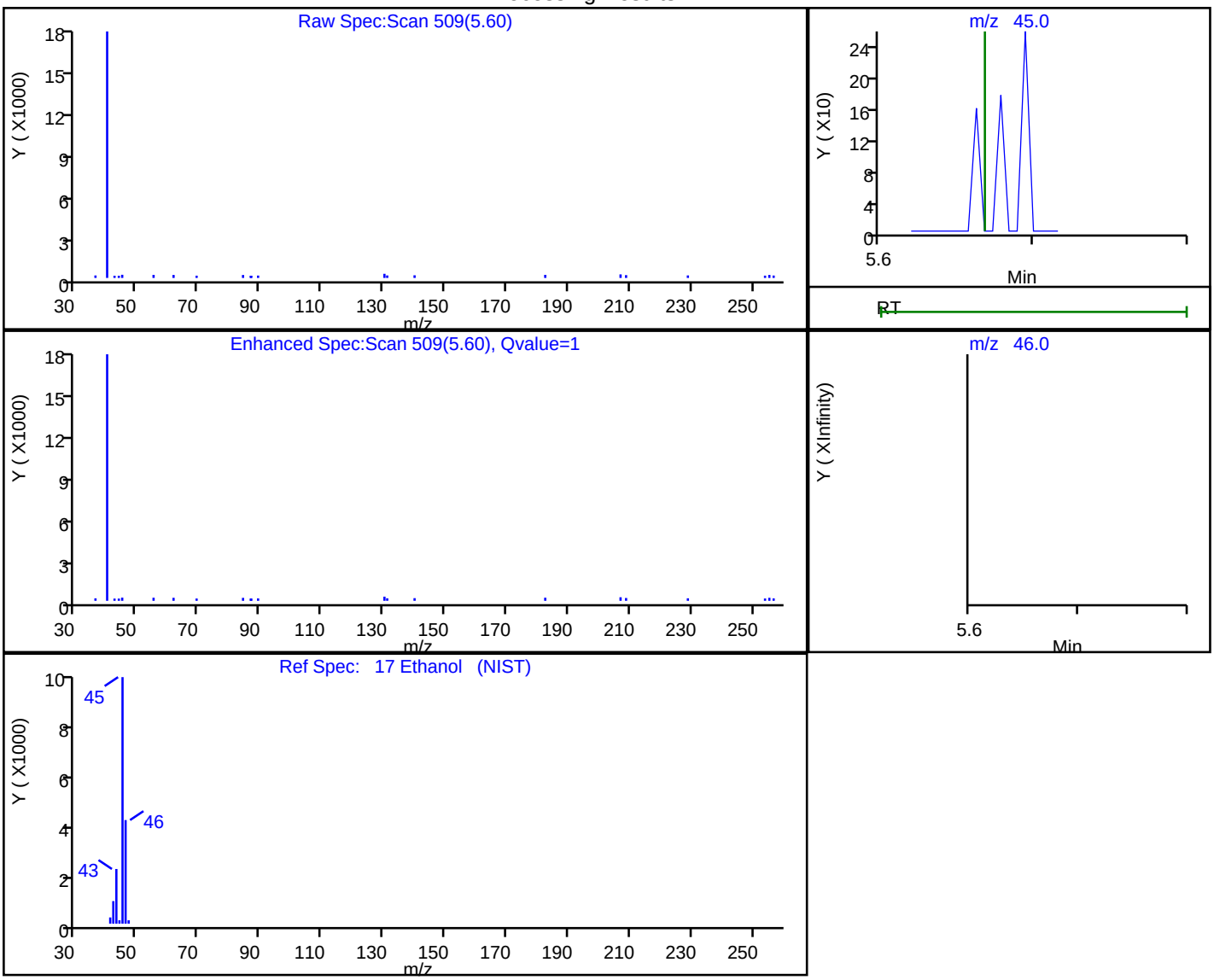
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

17 Ethanol, CAS: 64-17-5

Processing Results



RT	Mass	Response	Amount
5.60	45.00	119	0.022829
5.66	46.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:01

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

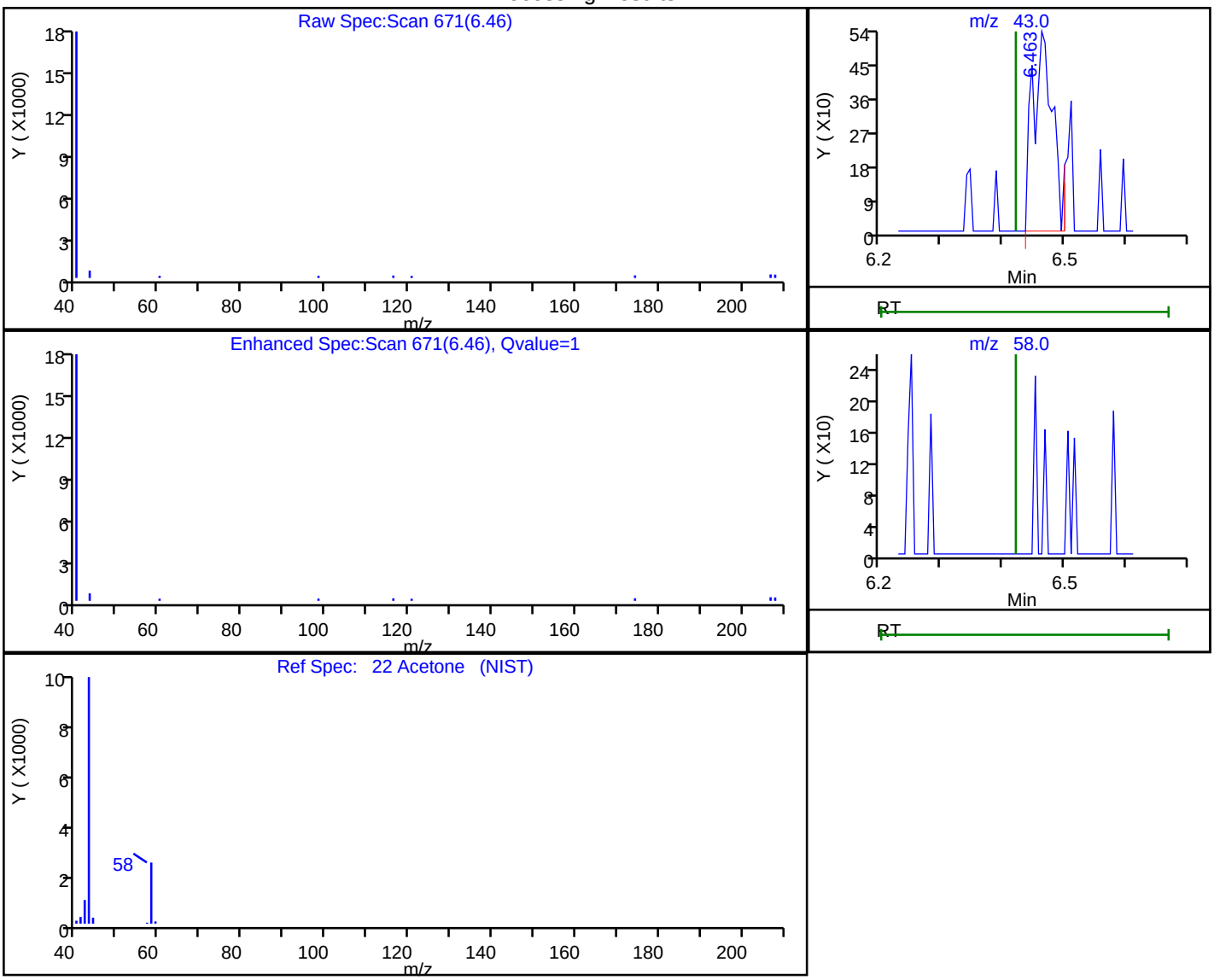
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

22 Acetone, CAS: 67-64-1

Processing Results



RT	Mass	Response	Amount
6.46	43.00	1224	0.054700
6.42	58.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:03

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

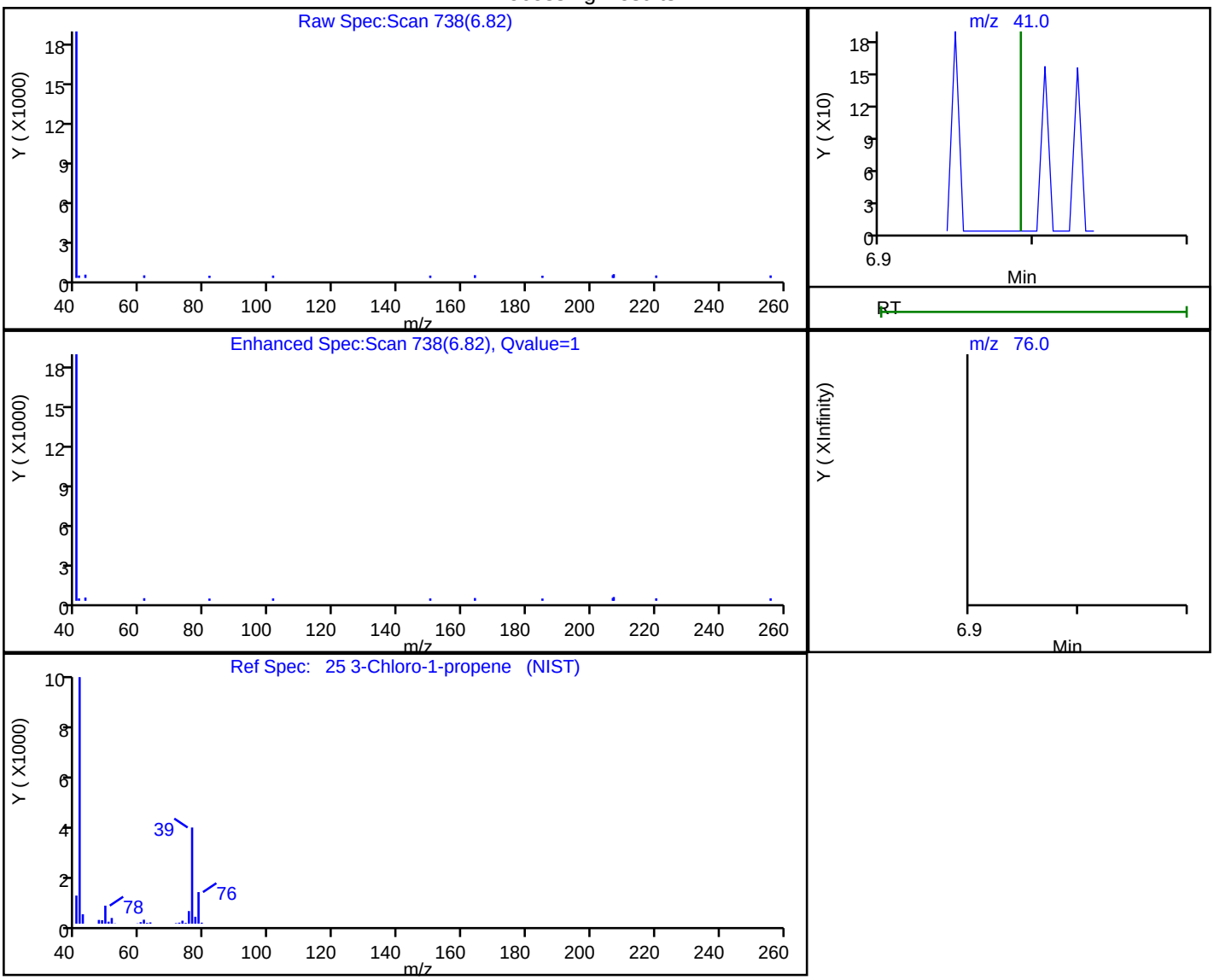
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

25 3-Chloro-1-propene, CAS: 107-05-1

Processing Results



RT	Mass	Response	Amount
6.82	41.00	110	0.006167
6.99	76.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:08

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

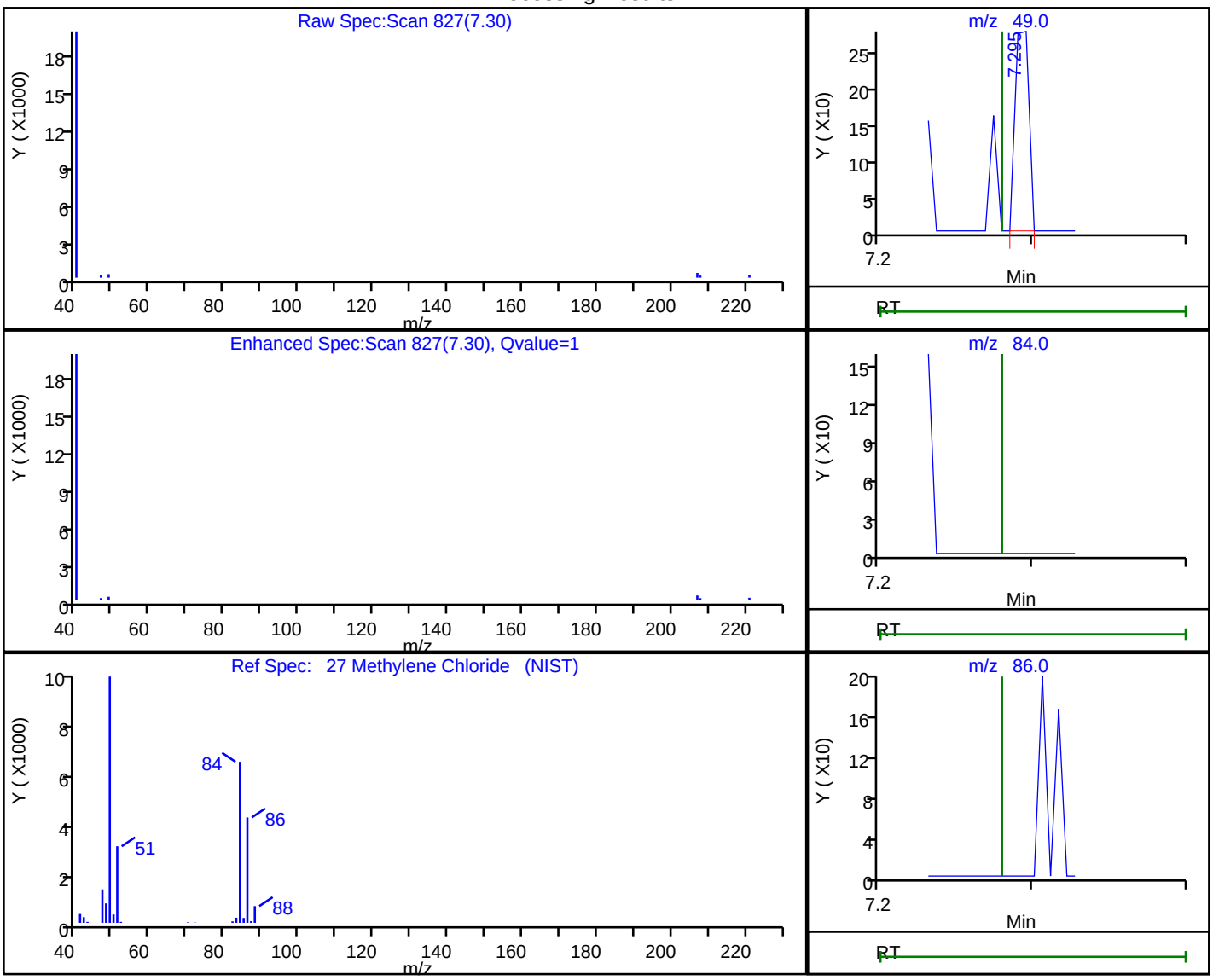
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

27 Methylene Chloride, CAS: 75-09-2

Processing Results



RT	Mass	Response	Amount
7.30	49.00	177	0.009897
7.29	84.00	0	
7.29	86.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:09

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

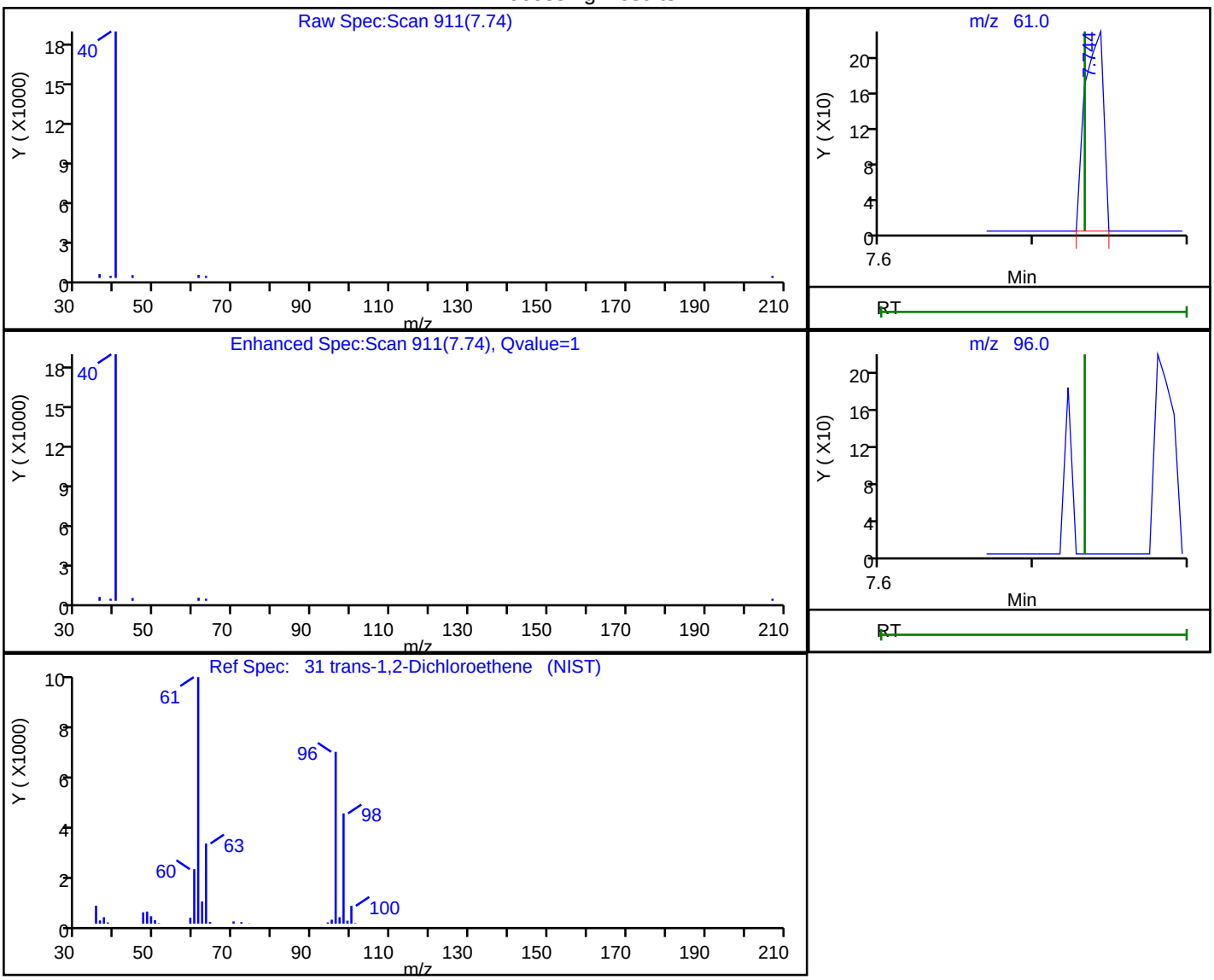
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

31 trans-1,2-Dichloroethene, CAS: 156-60-5

Processing Results



RT	Mass	Response	Amount
7.74	61.00	192	0.007573
7.73	96.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:11

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

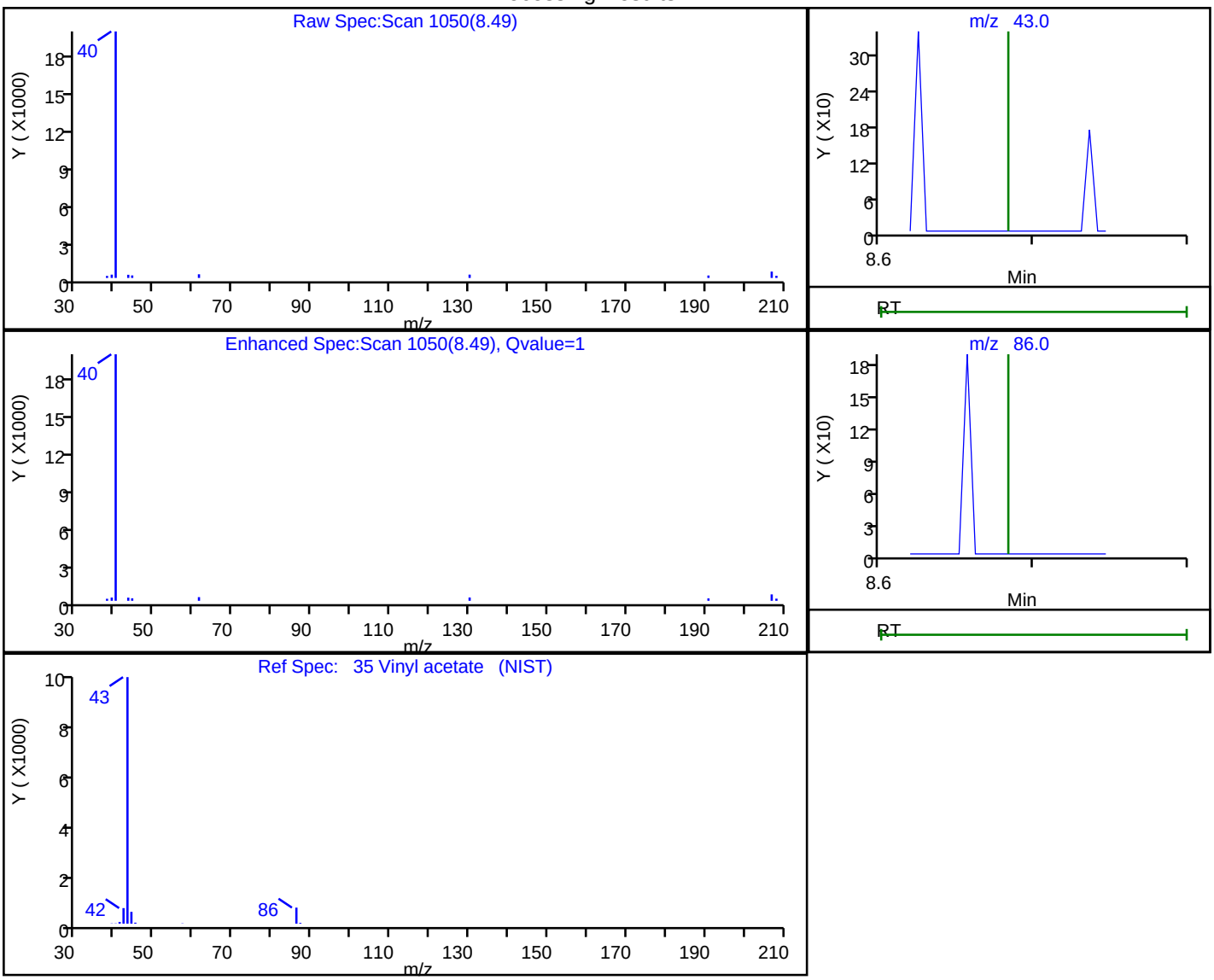
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

35 Vinyl acetate, CAS: 108-05-4

Processing Results



RT	Mass	Response	Amount
8.49	43.00	136	0.003759
8.68	86.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:14

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

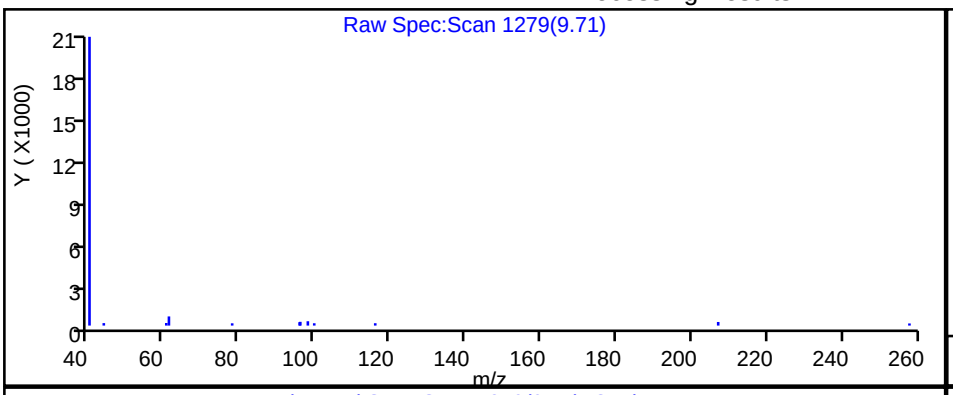
User Disabled Compound Report

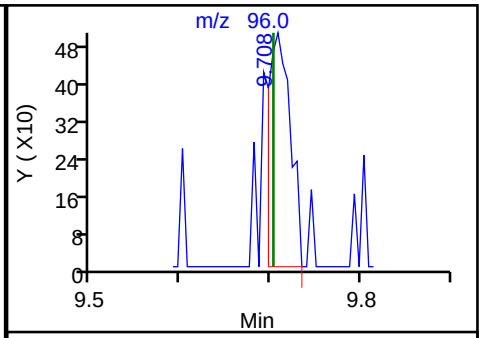
Eurofins TestAmerica, Burlington

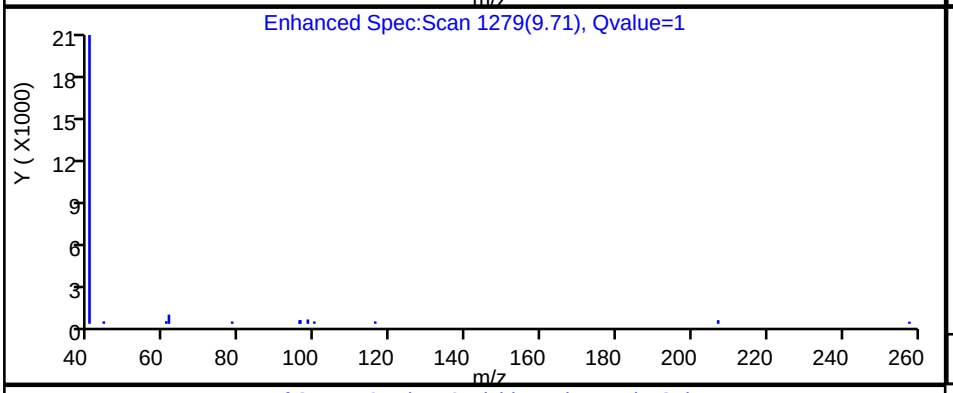
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

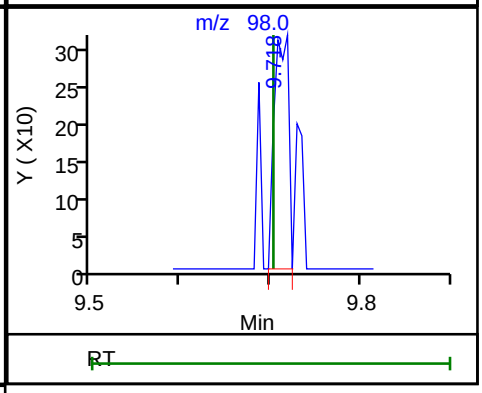
37 cis-1,2-Dichloroethene, CAS: 156-59-2

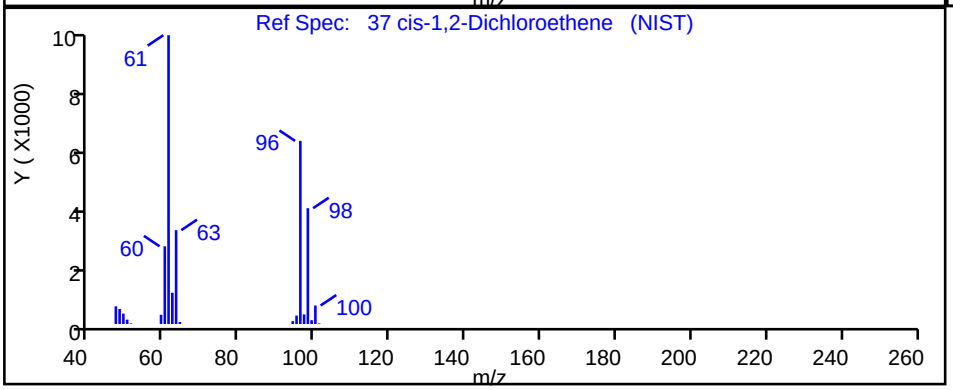
Processing Results











RT	Mass	Response	Amount
9.71	96.00	838	0.034758
9.72	98.00	347	

Reviewer: puangmaleek, 31-May-2019 12:50:16

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

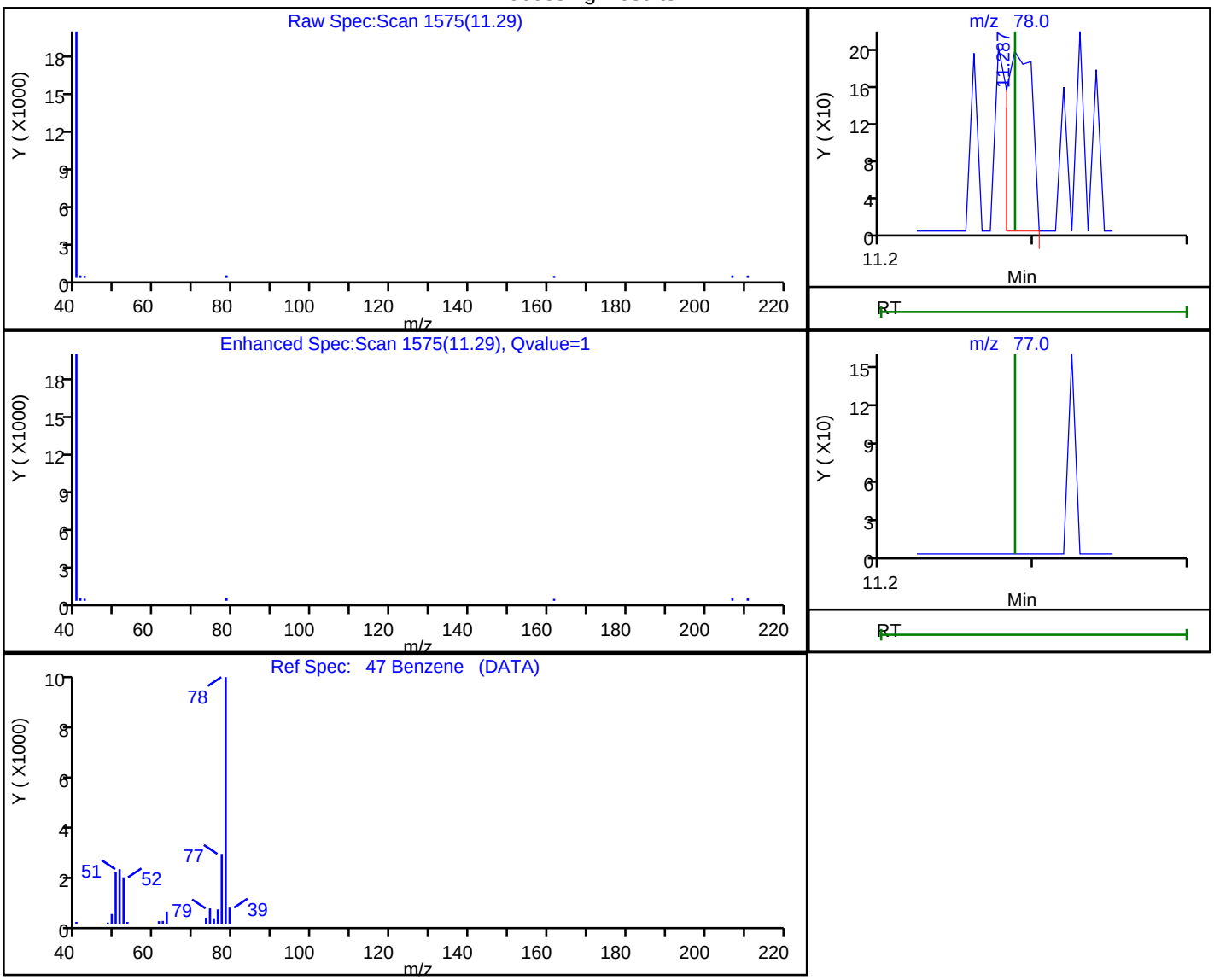
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

47 Benzene, CAS: 71-43-2

Processing Results



RT	Mass	Response	Amount
11.29	78.00	231	0.003052
11.29	77.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:24

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

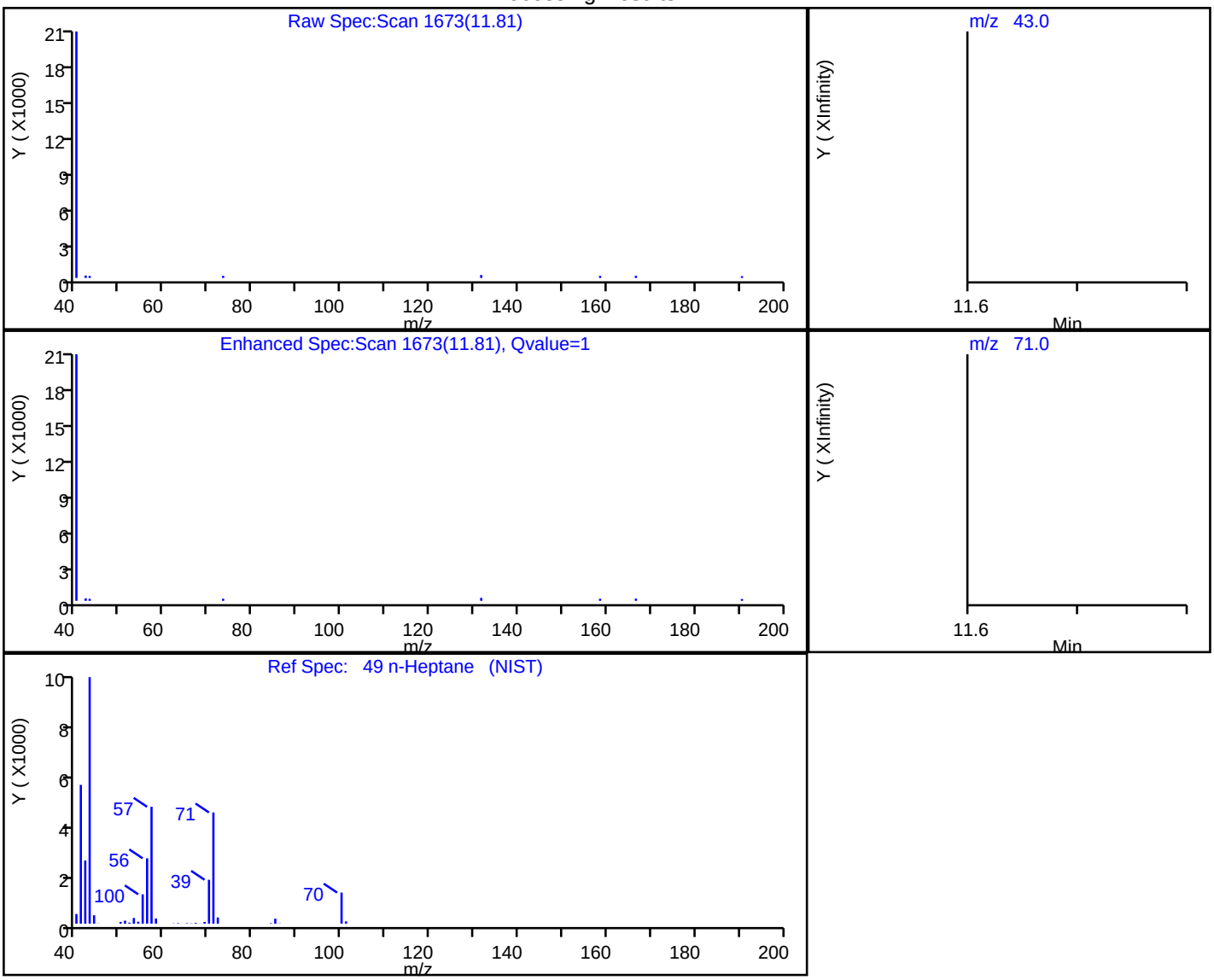
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

49 n-Heptane, CAS: 142-82-5

Processing Results



RT	Mass	Response	Amount
11.81	43.00	52	0.001393
11.70	71.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:26

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

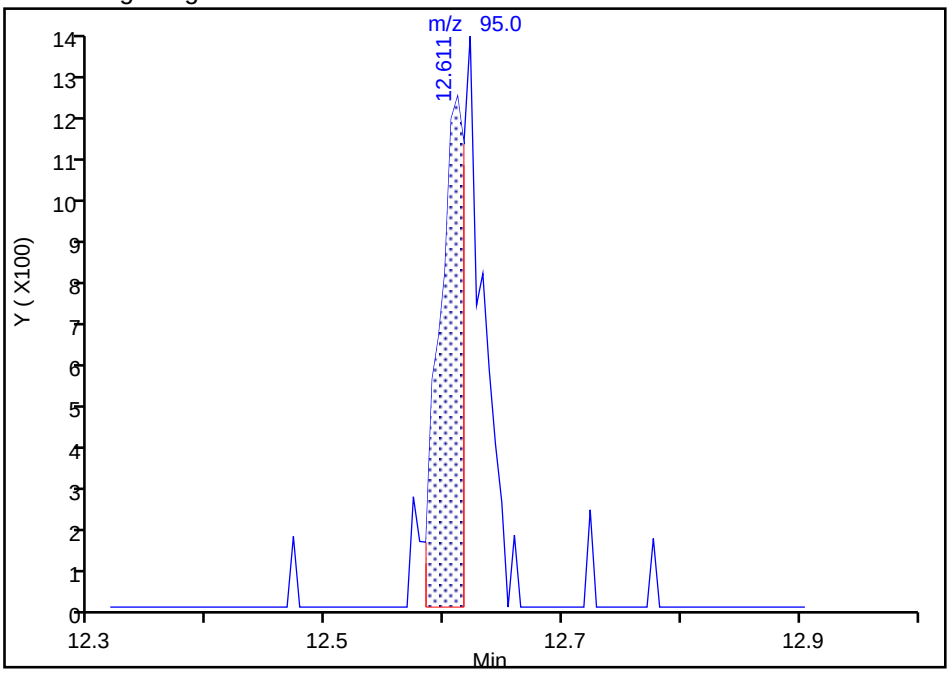
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

53 Trichloroethene, CAS: 79-01-6

Signal: 1

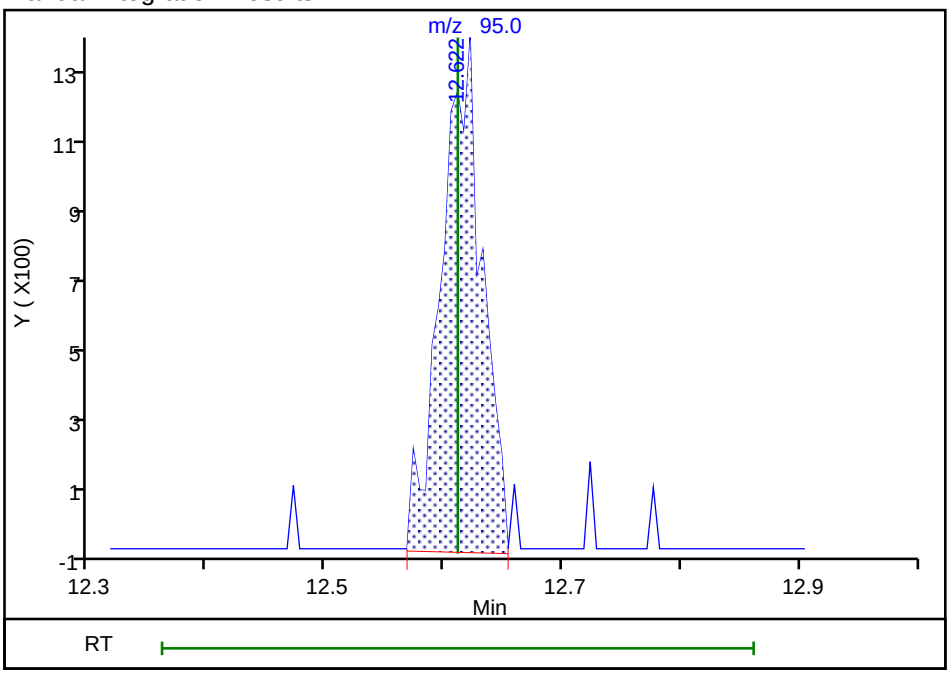
Processing Integration Results

RT: 12.61
Area: 1794
Amount: 0.049573
Amount Units: ppb v/v



Manual Integration Results

RT: 12.62
Area: 3282
Amount: 0.090690
Amount Units: ppb v/v



Reviewer: puangmaleek, 31-May-2019 12:50:34

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

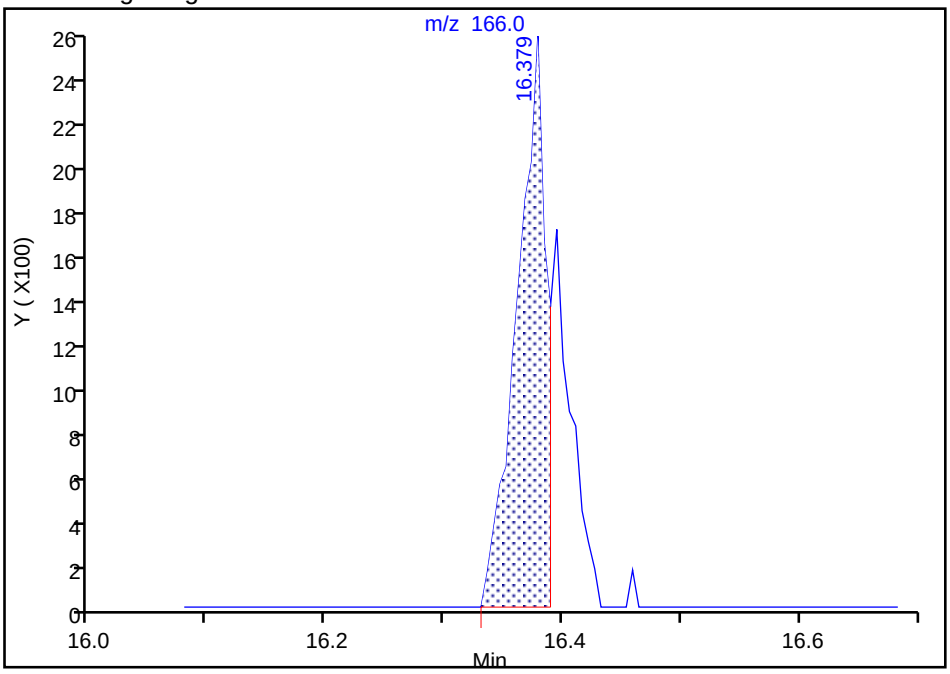
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

68 Tetrachloroethene, CAS: 127-18-4

Signal: 1

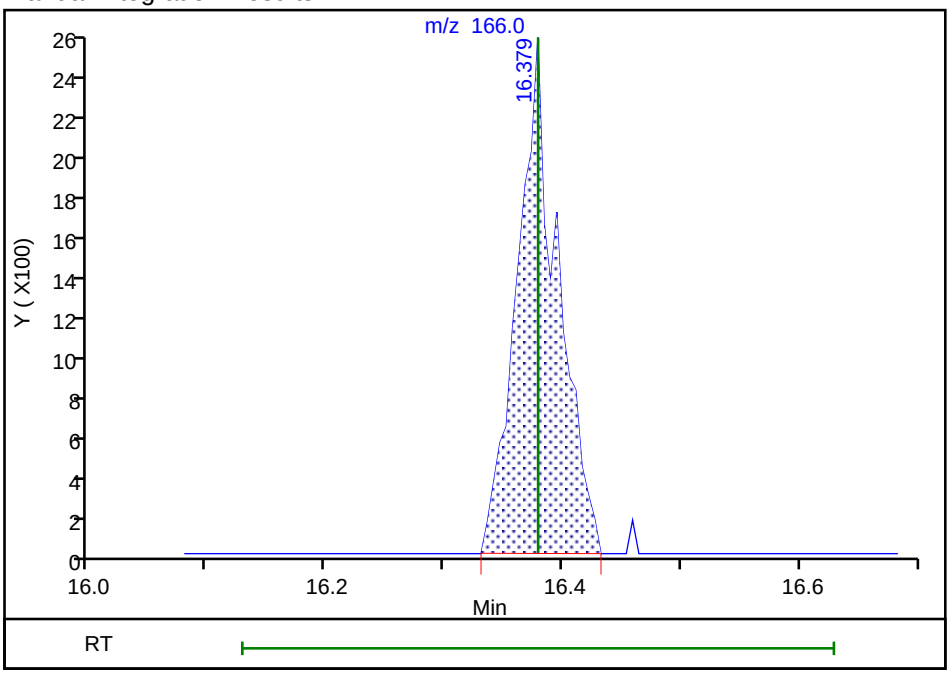
Processing Integration Results

RT: 16.38
Area: 4390
Amount: 0.059564
Amount Units: ppb v/v



Manual Integration Results

RT: 16.38
Area: 6113
Amount: 0.082942
Amount Units: ppb v/v



Reviewer: puangmaleek, 31-May-2019 12:50:51

Audit Action: Manually Integrated Audit Reason: Assign Peak

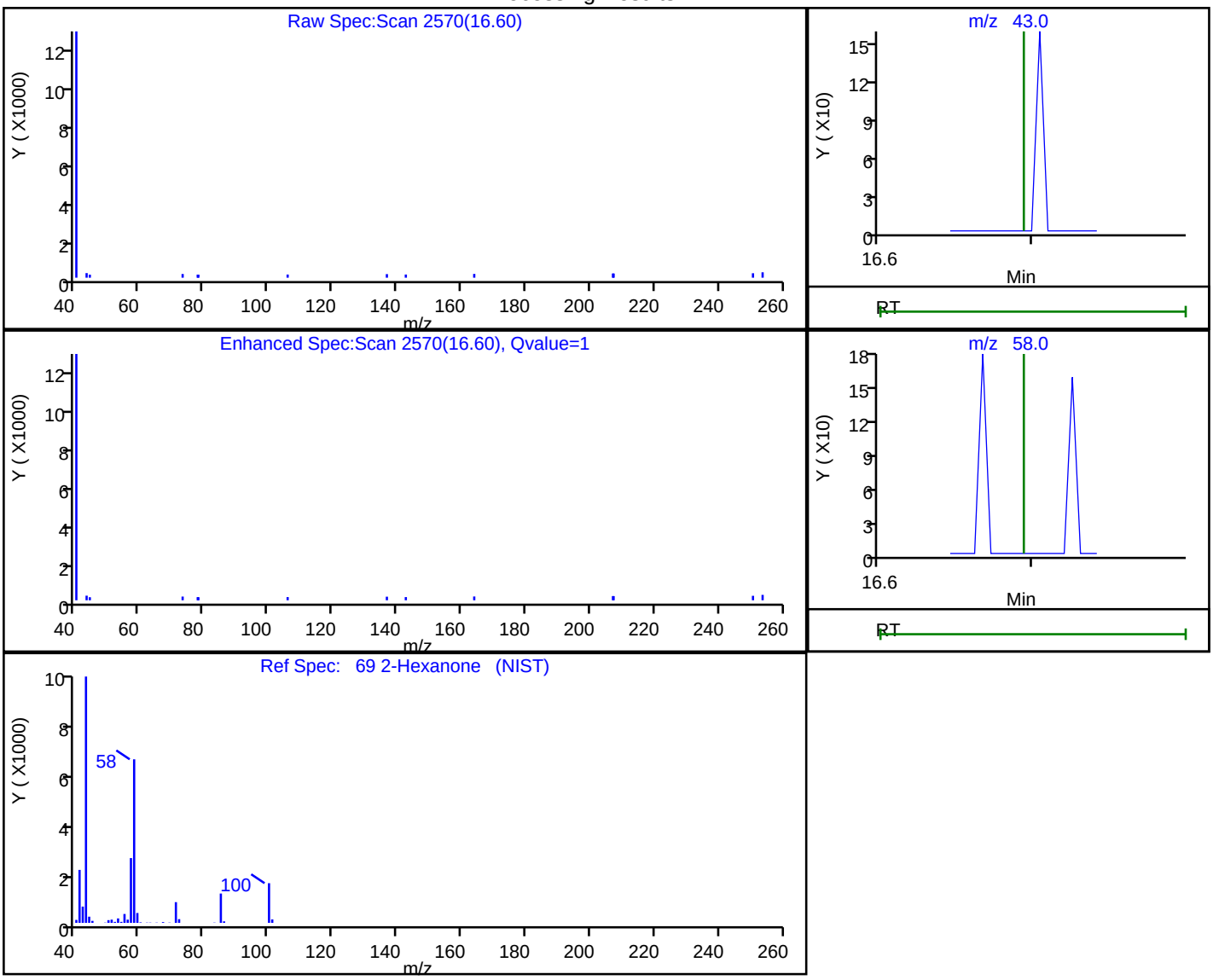
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

69 2-Hexanone, CAS: 591-78-6

Processing Results



RT	Mass	Response	Amount
16.60	43.00	122	0.002063
16.69	58.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:56

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

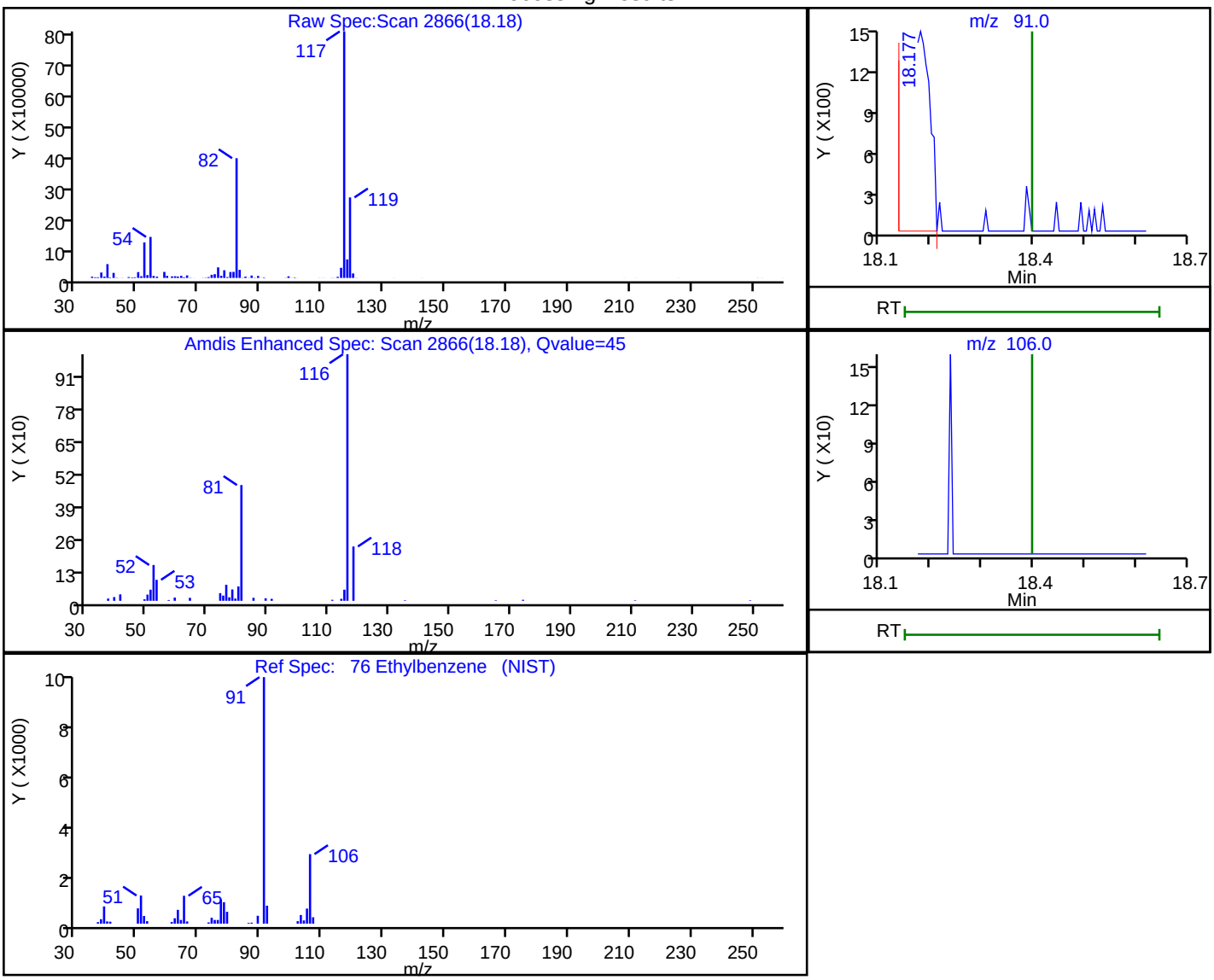
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

76 Ethylbenzene, CAS: 100-41-4

Processing Results



RT	Mass	Response	Amount
18.18	91.00	3885	0.023865
18.40	106.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:00

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

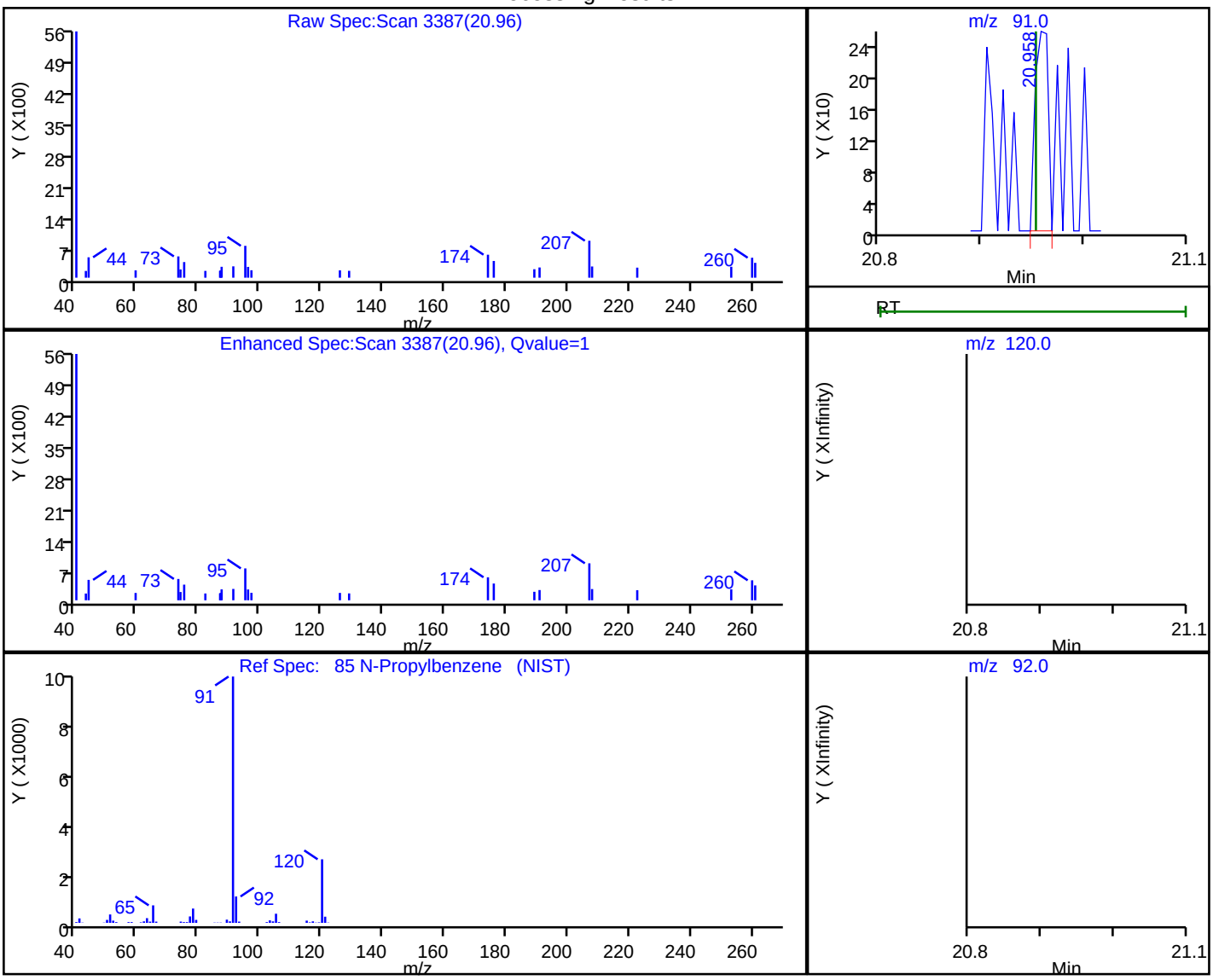
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

85 N-Propylbenzene, CAS: 103-65-1

Processing Results



RT	Mass	Response	Amount
20.96	91.00	226	0.001028
20.95	120.00	0	
20.95	92.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:06

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

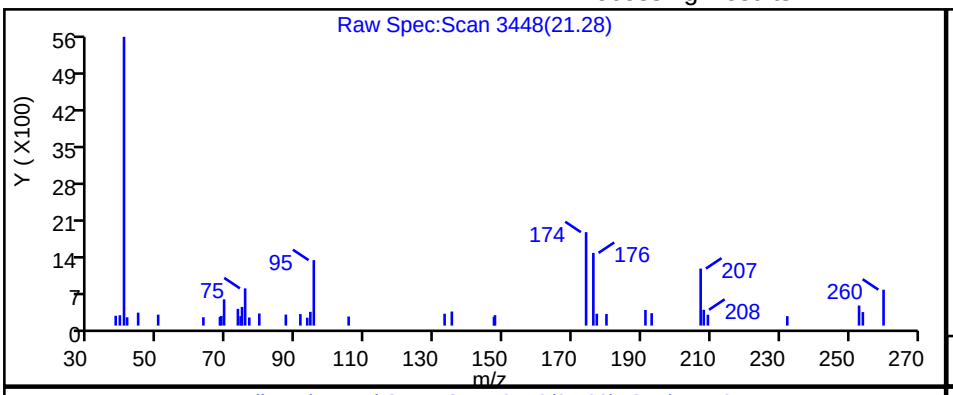
User Disabled Compound Report

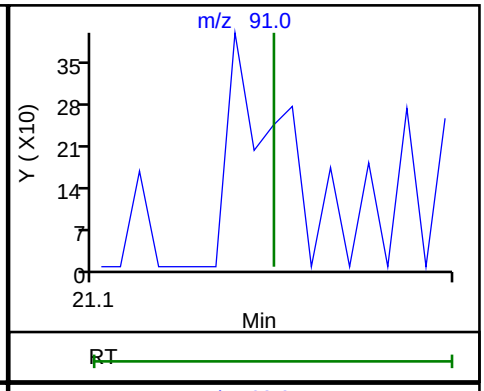
Eurofins TestAmerica, Burlington

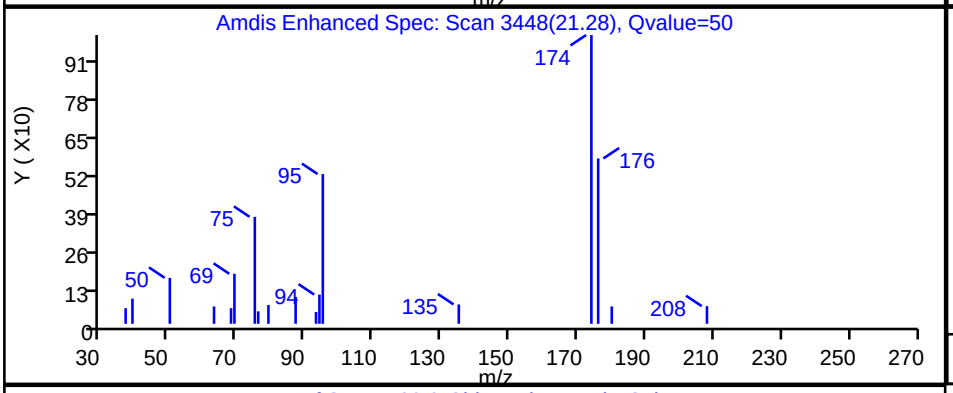
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

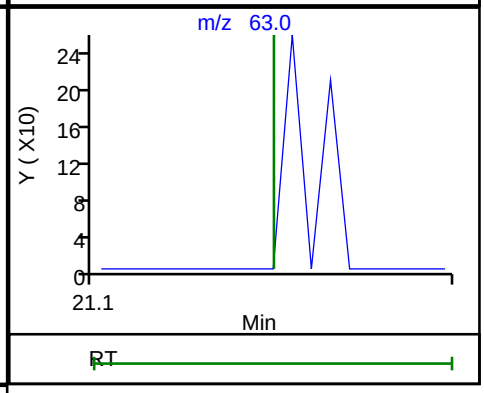
89 2-Chlorotoluene, CAS: 95-49-8

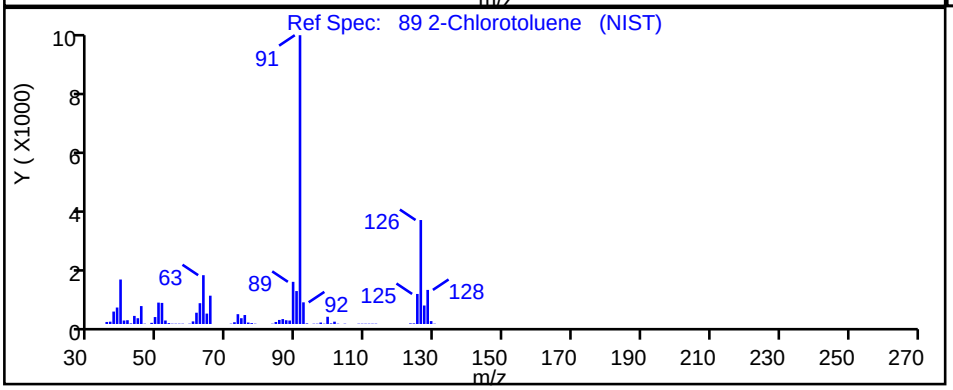
Processing Results











RT	Mass	Response	Amount
21.28	91.00	131	0.000907
21.15	63.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:09

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

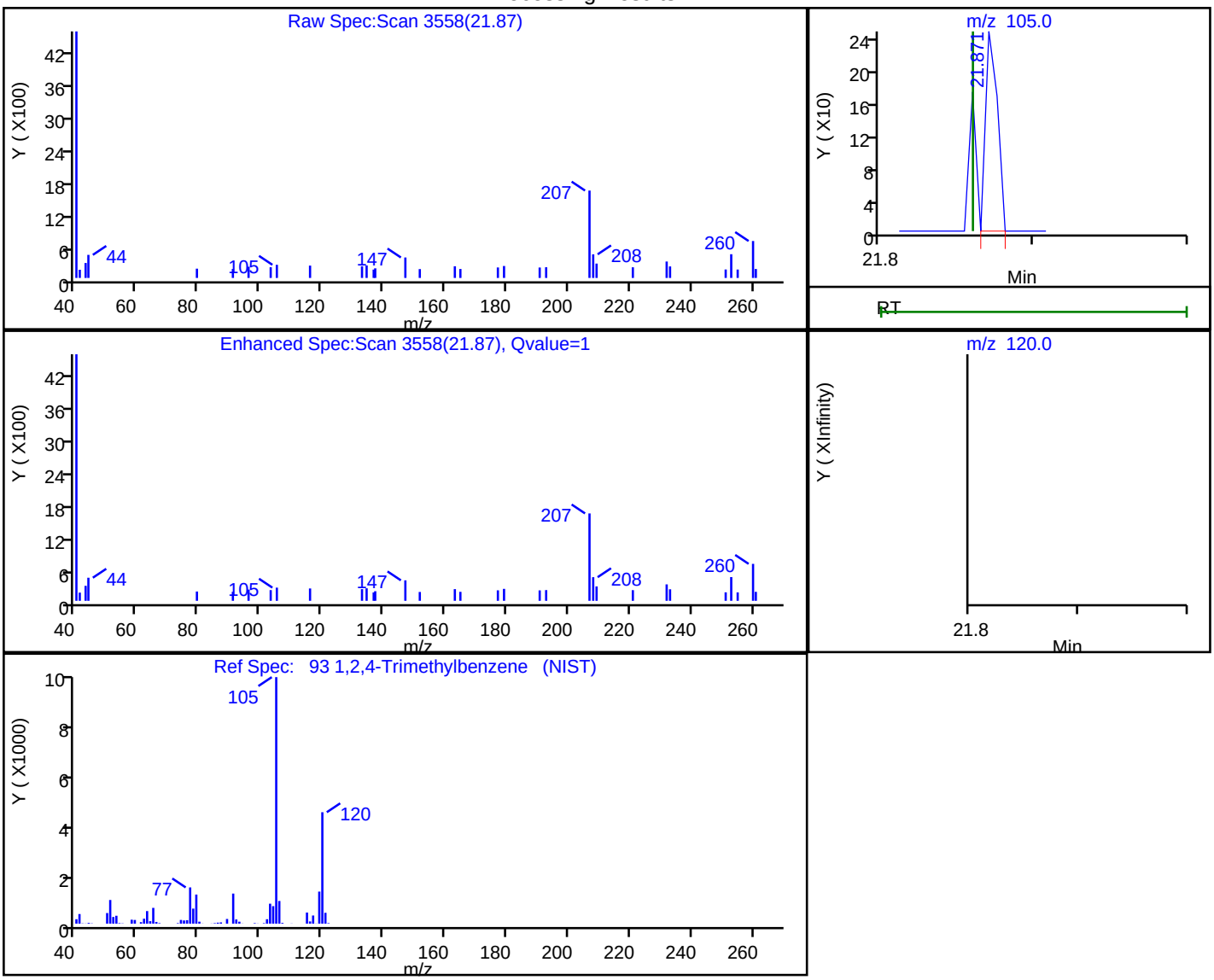
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

93 1,2,4-Trimethylbenzene, CAS: 95-63-6

Processing Results



RT	Mass	Response	Amount
21.87	105.00	129	0.000855
21.86	120.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:12

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

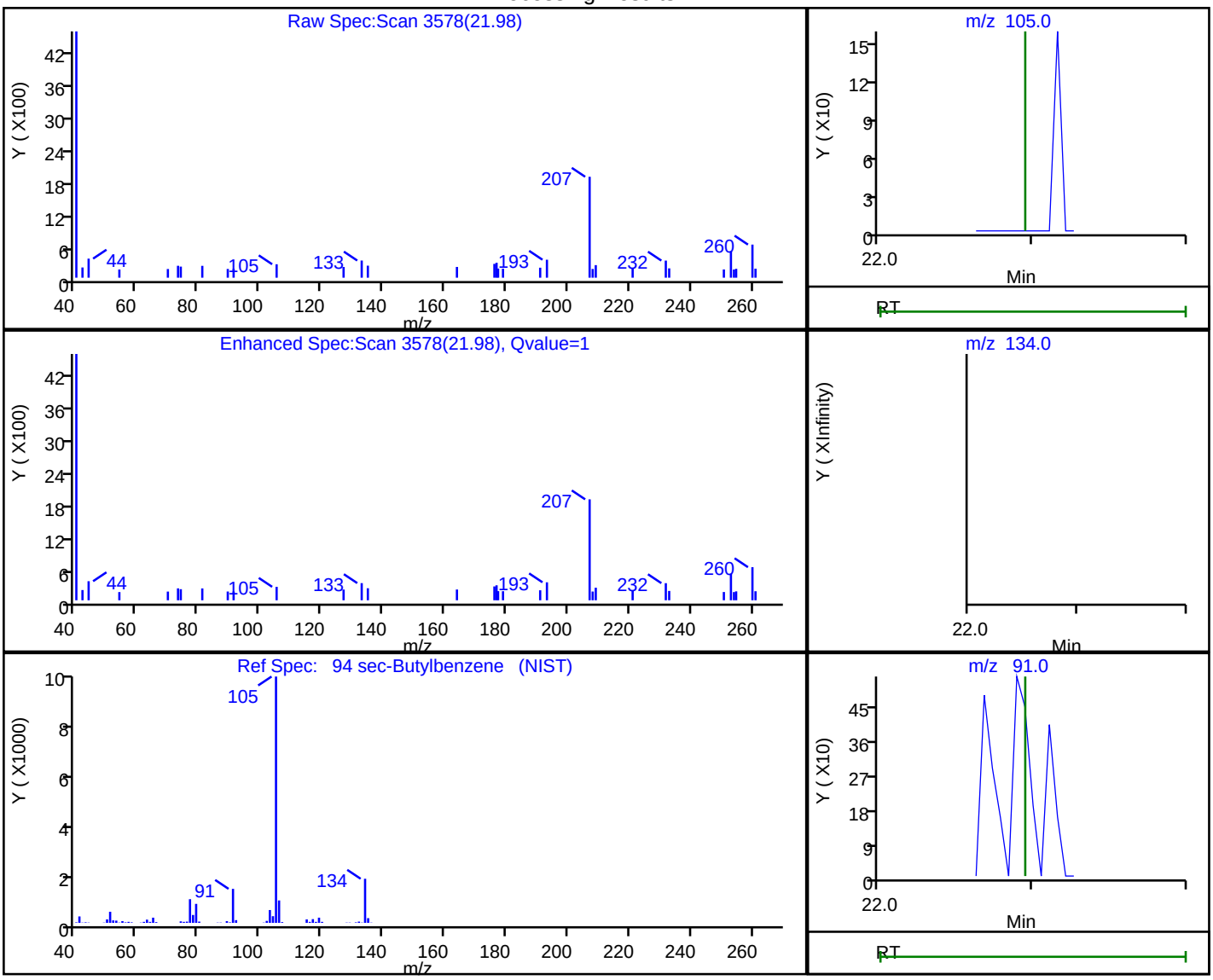
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

94 sec-Butylbenzene, CAS: 135-98-8

Processing Results



RT	Mass	Response	Amount
21.98	105.00	79	0.000346
21.98	91.00	220	
22.09	134.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:14

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

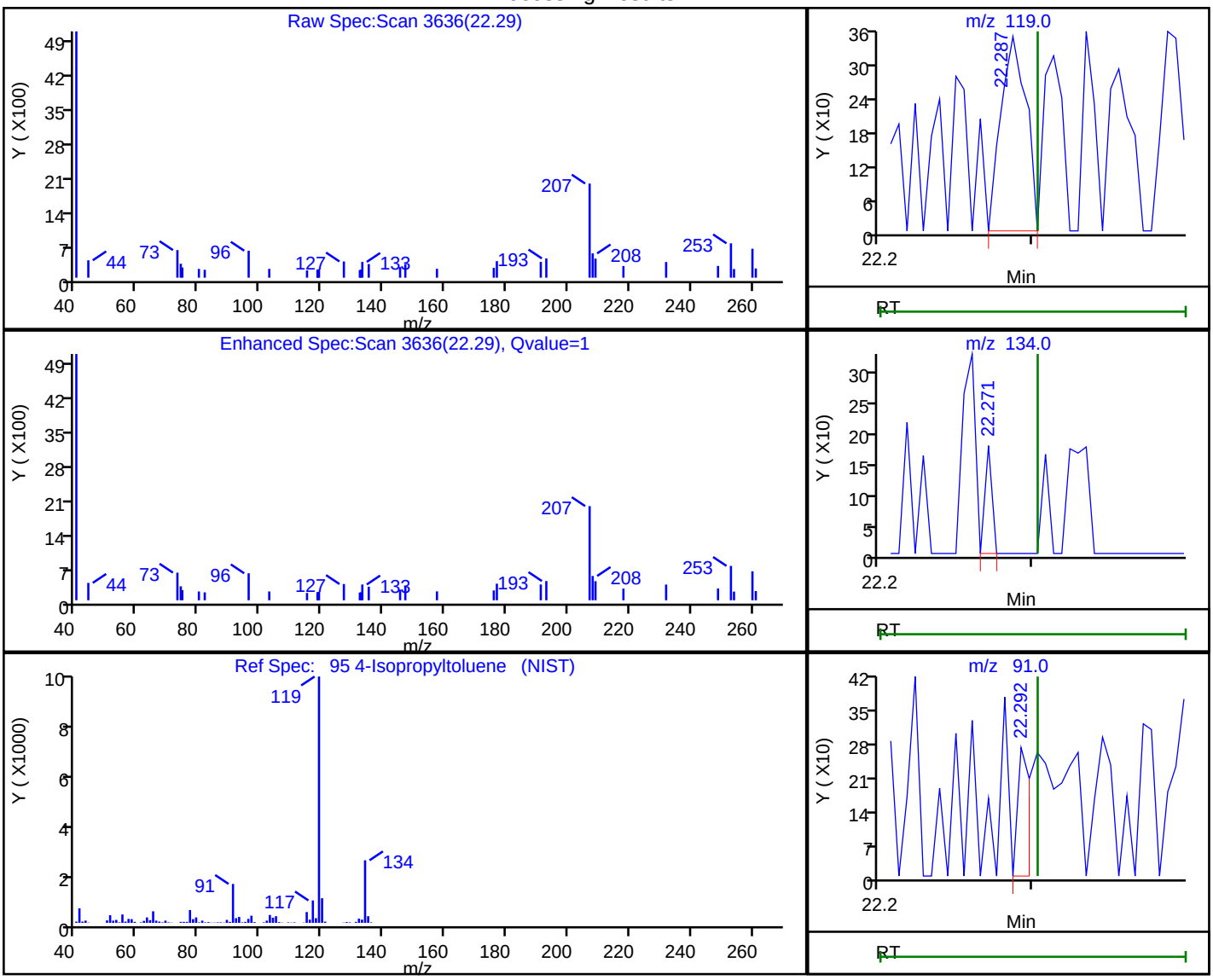
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

95 4-Isopropyltoluene, CAS: 99-87-6

Processing Results



RT	Mass	Response	Amount
22.29	119.00	393	0.001995
22.27	134.00	56	
22.29	91.00	151	

Reviewer: puangmaleek, 31-May-2019 12:51:15

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

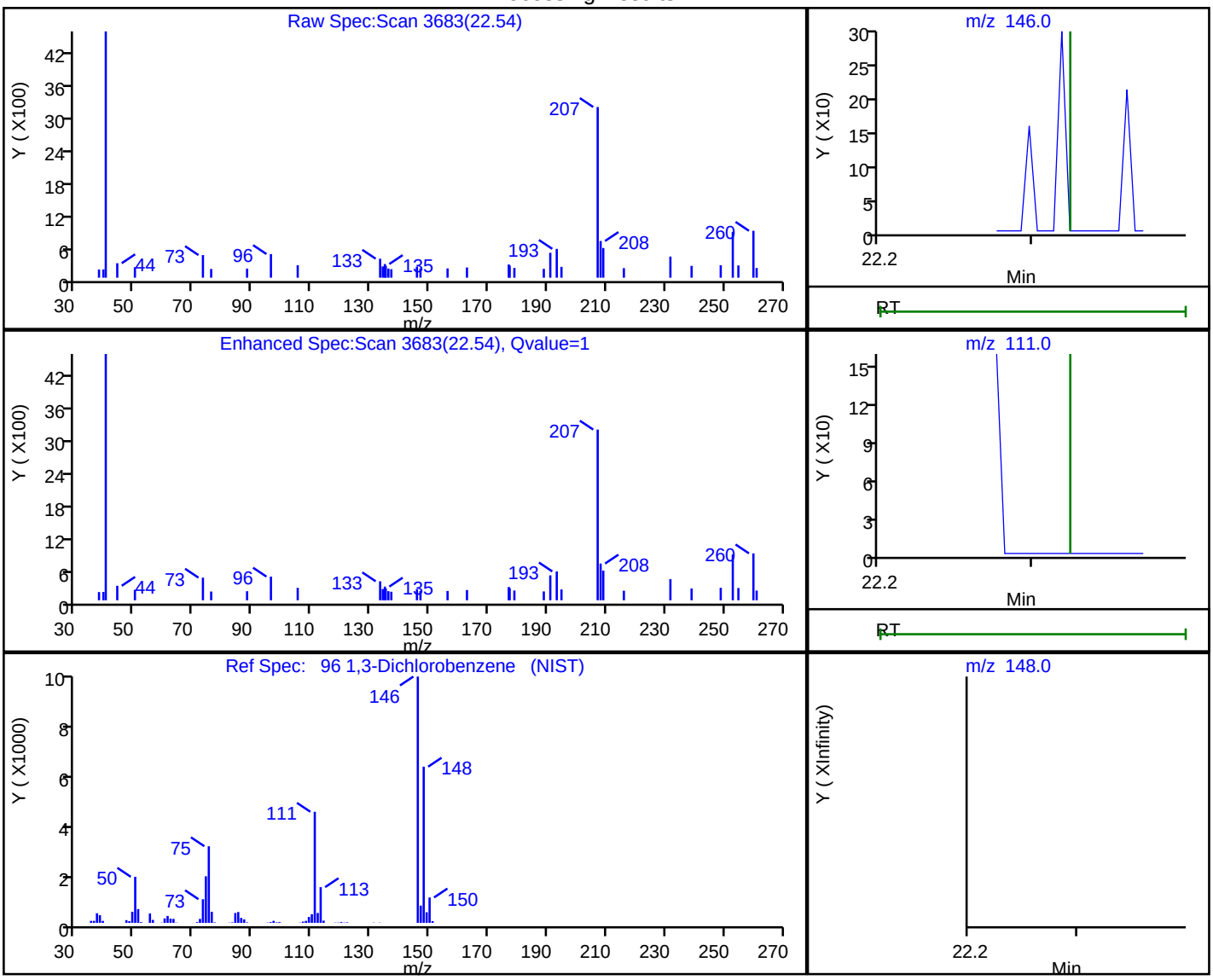
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

96 1,3-Dichlorobenzene, CAS: 541-73-1

Processing Results



RT	Mass	Response	Amount
22.54	146.00	121	0.001005
22.32	111.00	0	
22.32	148.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:16

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

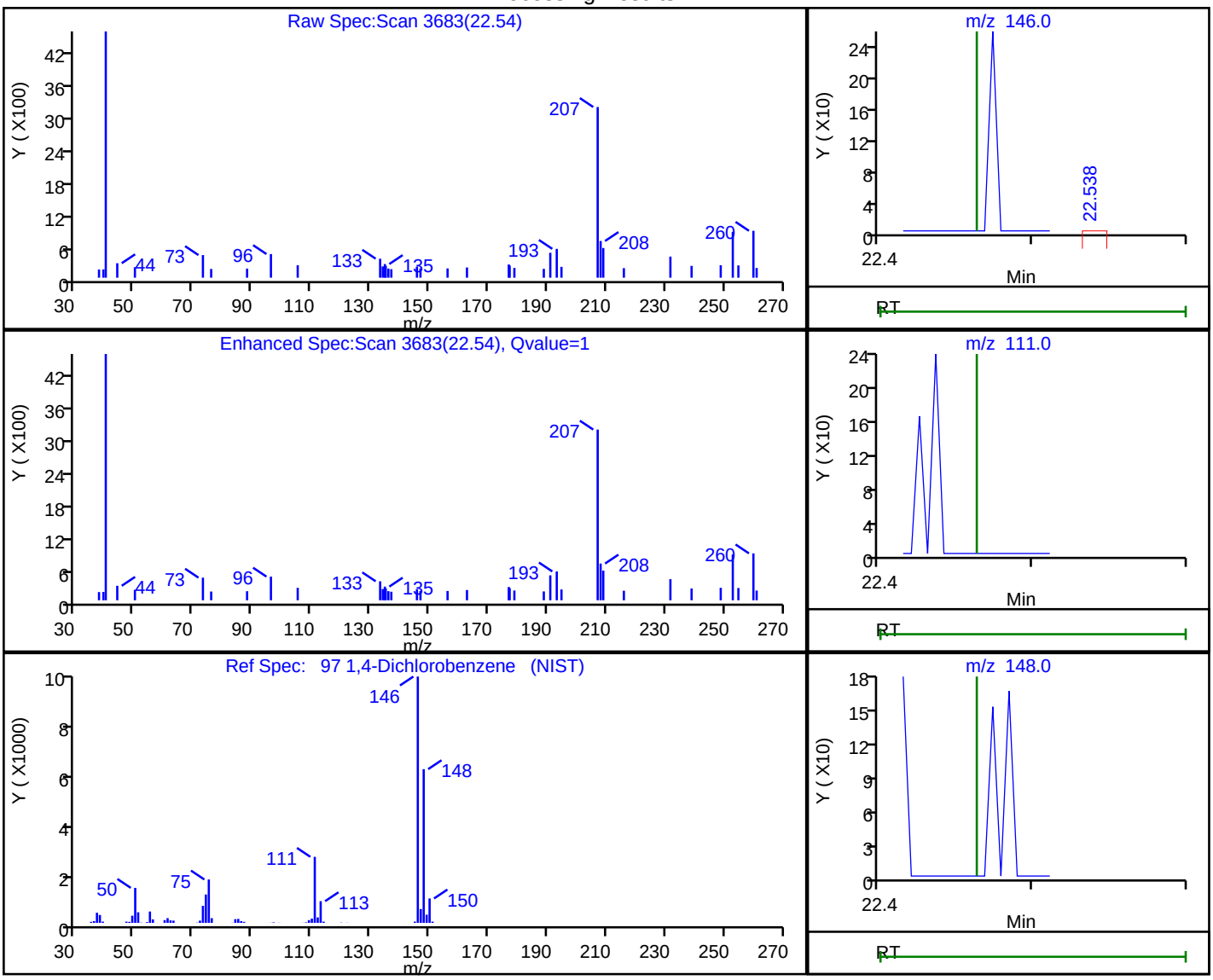
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

97 1,4-Dichlorobenzene, CAS: 106-46-7

Processing Results



RT	Mass	Response	Amount
22.54	146.00	121	0.001006
22.46	111.00	0	
22.46	148.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:17

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

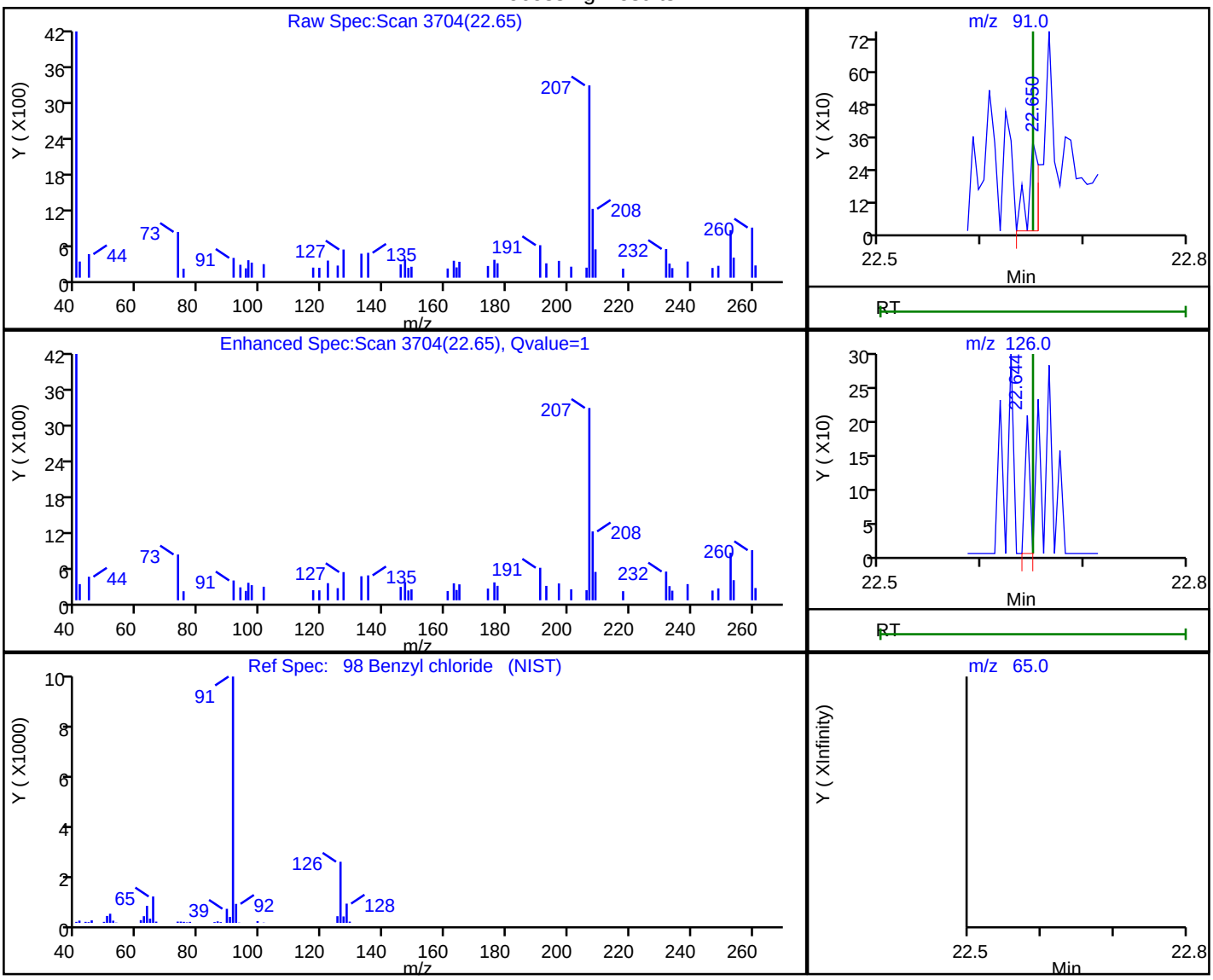
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

98 Benzyl chloride, CAS: 100-44-7

Processing Results



RT	Mass	Response	Amount
22.65	91.00	240	0.001859
22.64	126.00	66	
22.65	65.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:19

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

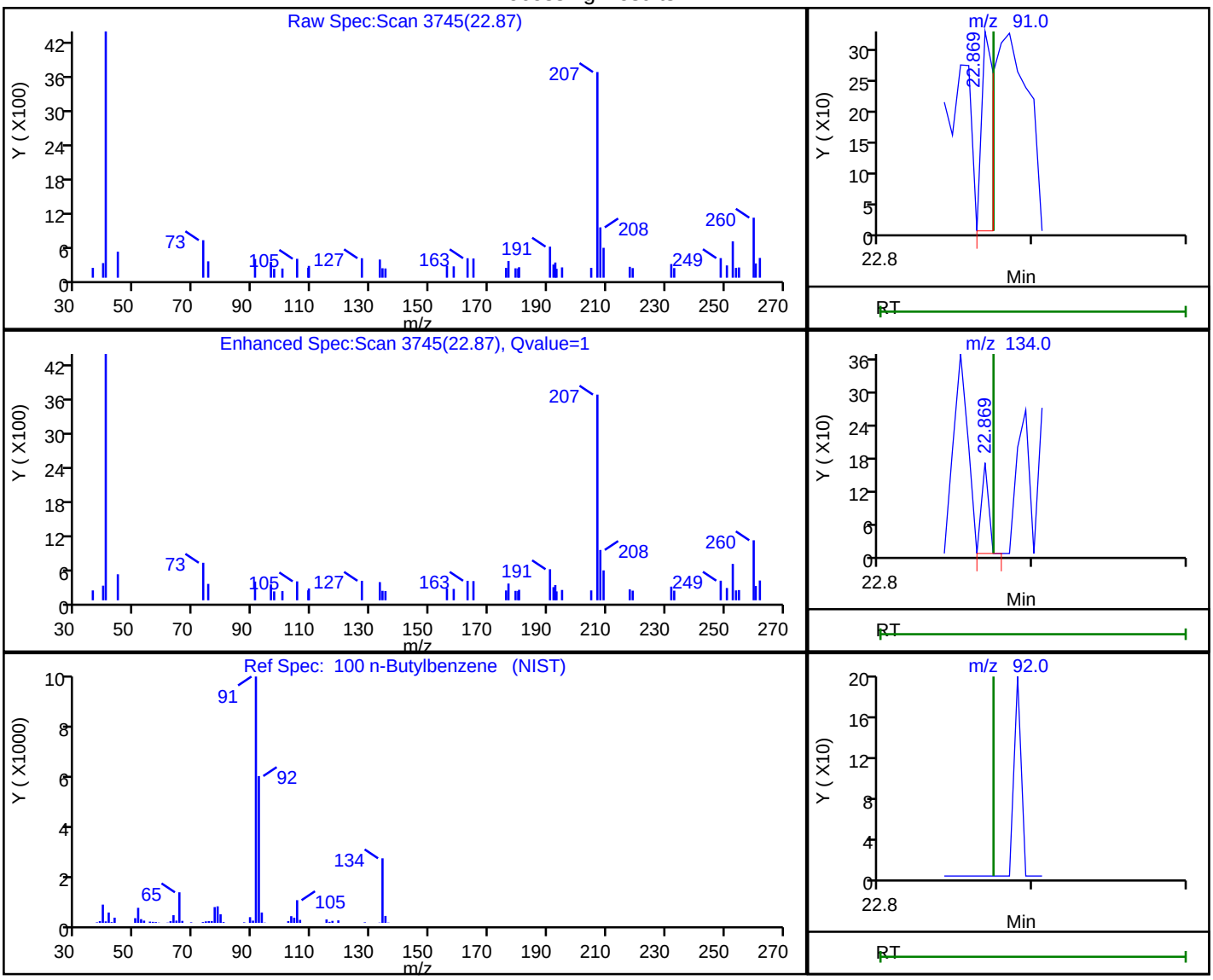
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

100 n-Butylbenzene, CAS: 104-51-8

Processing Results



RT	Mass	Response	Amount
22.87	91.00	188	0.001053
22.87	134.00	53	
22.87	92.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

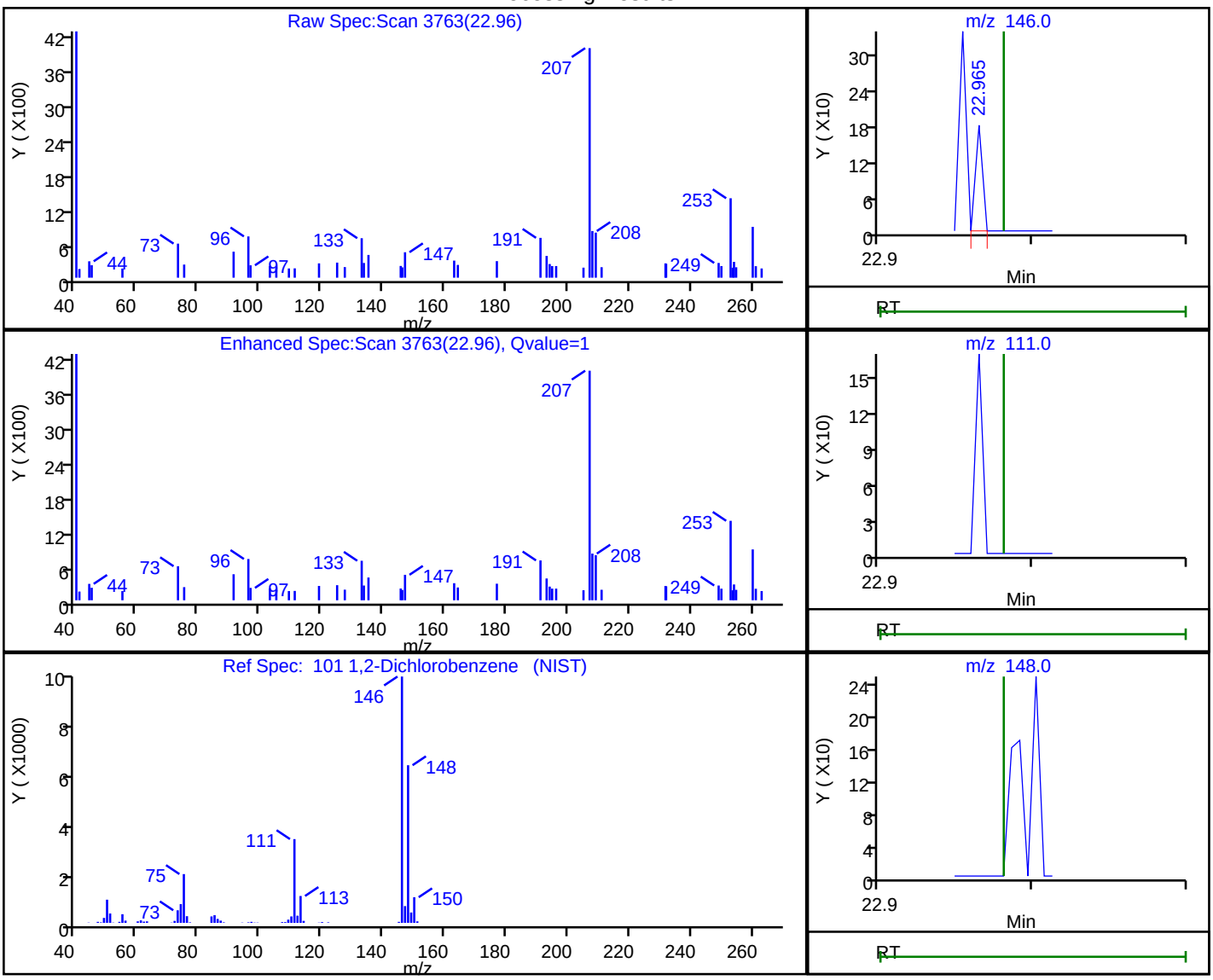
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

101 1,2-Dichlorobenzene, CAS: 95-50-1

Processing Results



RT	Mass	Response	Amount
22.96	146.00	58	0.000499
22.98	111.00	0	
22.98	148.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:21

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

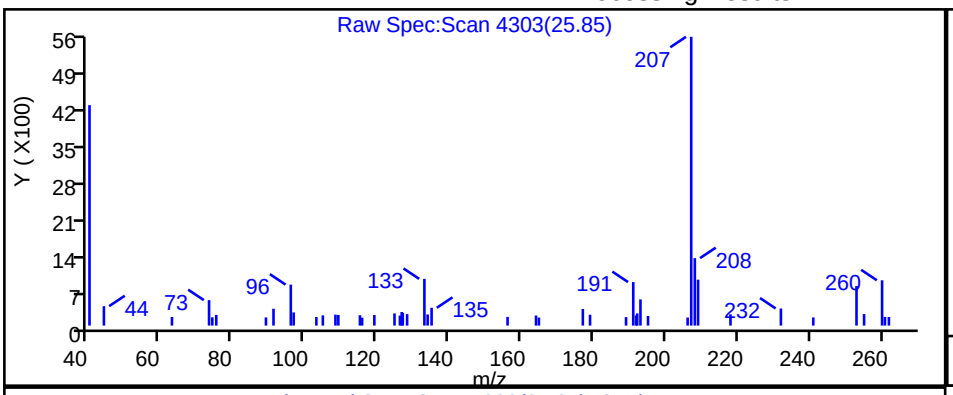
User Disabled Compound Report

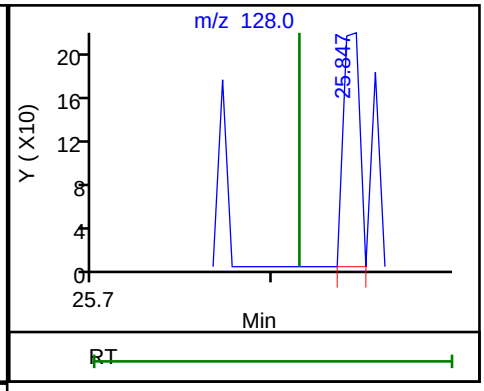
Eurofins TestAmerica, Burlington

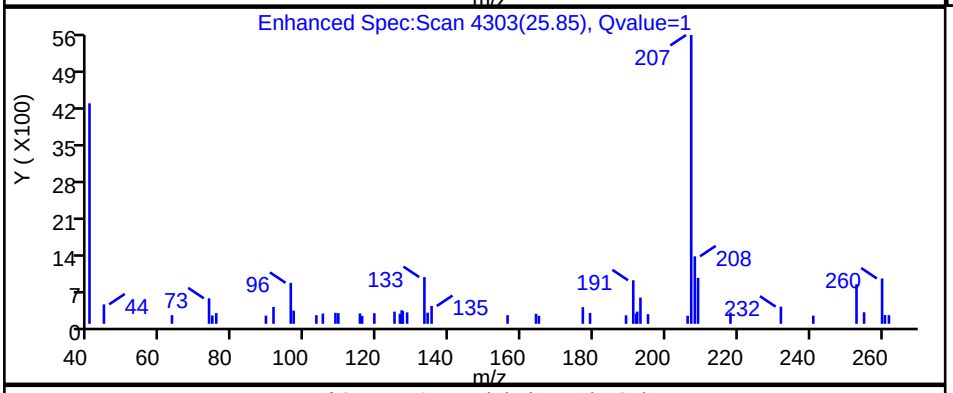
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

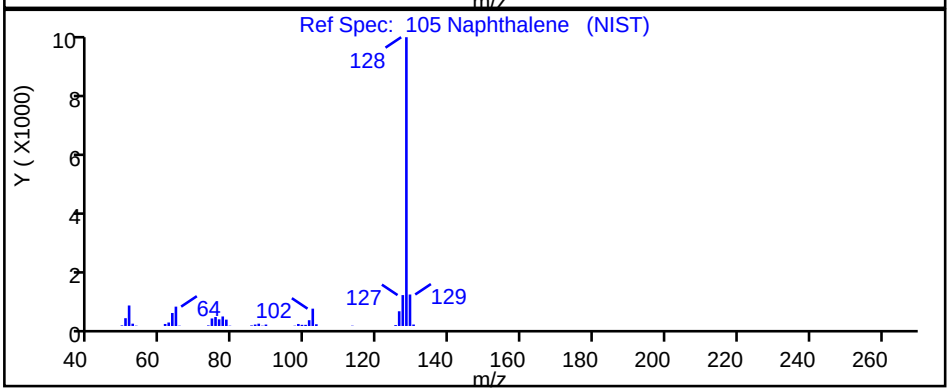
105 Naphthalene, CAS: 91-20-3

Processing Results









RT	Mass	Response	Amount
25.85	128.00	139	0.000807

Reviewer: puangmaleek, 31-May-2019 12:49:46

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-49051-1

SDG No.:

Client Sample ID: 6283 Lab Sample ID: 200-49051-5

Matrix: Air Lab File ID: 36230-018.d

Analysis Method: TO-15 Date Collected: 06/05/2019 16:44

Sample wt/vol: 200(mL) Date Analyzed: 06/07/2019 06:26

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143816 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	5.0	U *	5.0	5.0
75-71-8	Dichlorodifluoromethane	0.50	U *	0.50	0.50
75-45-6	Freon 22	0.50	U *	0.50	0.50
76-14-2	1,2-Dichlorotetrafluoroethane	0.20	U *	0.20	0.20
74-87-3	Chloromethane	0.50	U *	0.50	0.50
106-97-8	n-Butane	0.50	U *	0.50	0.50
75-01-4	Vinyl chloride	0.20	U *	0.20	0.20
106-99-0	1,3-Butadiene	0.20	U *	0.20	0.20
74-83-9	Bromomethane	0.20	U *	0.20	0.20
75-00-3	Chloroethane	0.50	U *	0.50	0.50
593-60-2	Bromoethene(Vinyl Bromide)	0.20	U *	0.20	0.20
75-69-4	Trichlorofluoromethane	0.20	U *	0.20	0.20
64-17-5	Ethanol	5.0	U *	5.0	5.0
76-13-1	Freon TF	0.20	U *	0.20	0.20
75-35-4	1,1-Dichloroethene	0.20	U *	0.20	0.20
67-64-1	Acetone	5.0	U *	5.0	5.0
67-63-0	Isopropyl alcohol	5.0	U *	5.0	5.0
75-15-0	Carbon disulfide	0.50	U *	0.50	0.50
107-05-1	3-Chloropropene	0.50	U *	0.50	0.50
75-09-2	Methylene Chloride	0.50	U *	0.50	0.50
75-65-0	tert-Butyl alcohol	5.0	U *	5.0	5.0
1634-04-4	Methyl tert-butyl ether	0.20	U *	0.20	0.20
156-60-5	trans-1,2-Dichloroethene	0.20	U *	0.20	0.20
110-54-3	n-Hexane	0.20	U *	0.20	0.20
75-34-3	1,1-Dichloroethane	0.20	U *	0.20	0.20
108-05-4	Vinyl acetate	5.0	U *	5.0	5.0
141-78-6	Ethyl acetate	5.0	U *	5.0	5.0
78-93-3	Methyl Ethyl Ketone	0.50	U *	0.50	0.50
156-59-2	cis-1,2-Dichloroethene	0.20	U *	0.20	0.20
540-59-0	1,2-Dichloroethene, Total	0.40	U *	0.40	0.40
67-66-3	Chloroform	0.20	U *	0.20	0.20
109-99-9	Tetrahydrofuran	5.0	U *	5.0	5.0
71-55-6	1,1,1-Trichloroethane	0.20	U *	0.20	0.20
110-82-7	Cyclohexane	0.20	U *	0.20	0.20
56-23-5	Carbon tetrachloride	0.20	U *	0.20	0.20
540-84-1	2,2,4-Trimethylpentane	0.20	U *	0.20	0.20

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-49051-1

SDG No.:

Client Sample ID: 6283 Lab Sample ID: 200-49051-5

Matrix: Air Lab File ID: 36230-018.d

Analysis Method: TO-15 Date Collected: 06/05/2019 16:44

Sample wt/vol: 200(mL) Date Analyzed: 06/07/2019 06:26

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143816 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.20	U *	0.20	0.20
107-06-2	1,2-Dichloroethane	0.20	U *	0.20	0.20
142-82-5	n-Heptane	0.20	U *	0.20	0.20
79-01-6	Trichloroethene	0.20	U *	0.20	0.20
80-62-6	Methyl methacrylate	0.50	U *	0.50	0.50
78-87-5	1,2-Dichloropropane	0.20	U *	0.20	0.20
123-91-1	1,4-Dioxane	5.0	U *	5.0	5.0
75-27-4	Bromodichloromethane	0.20	U *	0.20	0.20
10061-01-5	cis-1,3-Dichloropropene	0.20	U *	0.20	0.20
108-10-1	methyl isobutyl ketone	0.50	U *	0.50	0.50
108-88-3	Toluene	0.20	U *	0.20	0.20
10061-02-6	trans-1,3-Dichloropropene	0.20	U *	0.20	0.20
79-00-5	1,1,2-Trichloroethane	0.20	U *	0.20	0.20
127-18-4	Tetrachloroethene	0.20	U *	0.20	0.20
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.50	U *	0.50	0.50
124-48-1	Dibromochloromethane	0.20	U *	0.20	0.20
106-93-4	1,2-Dibromoethane	0.20	U *	0.20	0.20
108-90-7	Chlorobenzene	0.20	U *	0.20	0.20
100-41-4	Ethylbenzene	0.20	U *	0.20	0.20
179601-23-1	m,p-Xylene	0.50	U *	0.50	0.50
95-47-6	Xylene, o-	0.20	U *	0.20	0.20
1330-20-7	Xylene (total)	0.70	U *	0.70	0.70
100-42-5	Styrene	0.20	U *	0.20	0.20
75-25-2	Bromoform	0.20	U *	0.20	0.20
98-82-8	Cumene	0.20	U *	0.20	0.20
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U *	0.20	0.20
103-65-1	n-Propylbenzene	0.20	U *	0.20	0.20
622-96-8	4-Ethyltoluene	0.20	U *	0.20	0.20
108-67-8	1,3,5-Trimethylbenzene	0.20	U *	0.20	0.20
95-49-8	2-Chlorotoluene	0.20	U *	0.20	0.20
98-06-6	tert-Butylbenzene	0.20	U *	0.20	0.20
95-63-6	1,2,4-Trimethylbenzene	0.20	U *	0.20	0.20
135-98-8	sec-Butylbenzene	0.20	U *	0.20	0.20
99-87-6	4-Isopropyltoluene	0.20	U *	0.20	0.20
541-73-1	1,3-Dichlorobenzene	0.20	U *	0.20	0.20
106-46-7	1,4-Dichlorobenzene	0.20	U *	0.20	0.20

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-49051-1

SDG No.:

Client Sample ID: 6283 Lab Sample ID: 200-49051-5

Matrix: Air Lab File ID: 36230-018.d

Analysis Method: TO-15 Date Collected: 06/05/2019 16:44

Sample wt/vol: 200(mL) Date Analyzed: 06/07/2019 06:26

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143816 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.20	U *	0.20	0.20
104-51-8	n-Butylbenzene	0.20	U *	0.20	0.20
95-50-1	1,2-Dichlorobenzene	0.20	U *	0.20	0.20
120-82-1	1,2,4-Trichlorobenzene	0.50	U *	0.50	0.50
87-68-3	Hexachlorobutadiene	0.20	U *	0.20	0.20
91-20-3	Naphthalene	0.50	U *	0.50	0.50

Eurofins TestAmerica, Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d
Lims ID: 200-49051-A-5
Client ID: 6283
Sample Type: Client
Inject. Date: 07-Jun-2019 06:26:30 ALS Bottle#: 17 Worklist Smp#: 18
Purge Vol: 200.000 mL Dil. Factor: 1.0000
Sample Info: 200-0036230-018
Misc. Info.: 49051-5
Operator ID: ert Instrument ID: CHW.i

Method: \\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\TO15_MasterMethod_(v1).m
Limit Group: AI_TO15_ICAL
Last Update: 07-Jun-2019 18:13:33 Calib Date: 30-Apr-2019 01:52:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Burlington\ChromData\CHW.i\20190429-35688.b\35688-012.d

Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
Process Host: CTX0309

First Level Reviewer: bunmaa Date: 07-Jun-2019 18:13:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		2.933				ND	U
2 Dichlorodifluoromethane	85		3.008				ND	U
3 Chlorodifluoromethane	51		3.040				ND	
4 1,2-Dichloro-1,1,2,2-tetra	85		3.276				ND	
5 Chloromethane	50		3.356				ND	U
6 Vinyl chloride	62		3.591				ND	
7 Butane	43		3.597				ND	U
21 Butadiene	54		3.682				ND	U
8 Bromomethane	94		4.271				ND	
9 Chloroethane	64		4.517				ND	
11 Vinyl bromide	106		4.923				ND	
12 Trichlorofluoromethane	101		5.084				ND	
14 Ethanol	45		5.555				ND	U
17 1,1-Dichloroethene	96		6.250				ND	
19 1,1,2-Trichloro-1,2,2-trif	101		6.309				ND	
20 Acetone	43	6.405	6.375	0.027	44	6823	0.4968	
22 Carbon disulfide	76		6.683				ND	
23 Isopropyl alcohol	45	6.780	6.755	0.022	87	3544	0.2839	
25 3-Chloro-1-propene	41		7.079				ND	
26 Methylene Chloride	49	7.368	7.368	0.011	83	1035	0.0976	M
27 2-Methyl-2-propanol	59		7.662				ND	
29 trans-1,2-Dichloroethene	61		7.946				ND	
30 Methyl tert-butyl ether	73		7.957				ND	
32 Hexane	57		8.550				ND	
33 1,1-Dichloroethane	63		8.861				ND	
34 Vinyl acetate	43		8.909				ND	
35 2-Butanone (MEK)	72		10.043				ND	
36 cis-1,2-Dichloroethene	96		10.048				ND	
37 Ethyl acetate	88		10.161				ND	
S 38 1,2-Dichloroethene, Total	61		10.200				ND	
* 39 Chlorobromomethane	128	10.540	10.546	-0.006	72	164567	10.0	s

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
40 Tetrahydrofuran	42		10.573				ND	
41 Chloroform	83		10.781				ND	
42 1,1,1-Trichloroethane	97		11.107				ND	
43 Cyclohexane	84		11.252				ND	
44 Carbon tetrachloride	117		11.434				ND	
45 Benzene	78		11.873				ND	
46 1,2-Dichloroethane	62		11.996				ND	
47 Isooctane	57		12.140				ND	
48 n-Heptane	43		12.536				ND	
* 49 1,4-Difluorobenzene	114	12.798	12.793	0.005	95	781604	10.0	s
51 Trichloroethene	95		13.269				ND	
53 1,2-Dichloropropane	63		13.804				ND	
54 Methyl methacrylate	69		13.937				ND	
55 1,4-Dioxane	88		13.948				ND	
56 Dibromomethane	174		13.975				ND	
57 Dichlorobromomethane	83		14.344				ND	
60 cis-1,3-Dichloropropene	75		15.237				ND	
61 4-Methyl-2-pentanone (MIBK	43		15.537				ND	
62 Toluene	92		15.917				ND	
64 trans-1,3-Dichloropropene	75		16.393				ND	
65 1,1,2-Trichloroethane	83		16.794				ND	
66 Tetrachloroethene	166		16.965				ND	
67 2-Hexanone	43		17.233				ND	
68 Chlorodibromomethane	129		17.559				ND	
69 Ethylene Dibromide	107		17.805				ND	
* 70 Chlorobenzene-d5	117	18.758	18.758	0.000	88	668784	10.0	s
71 Chlorobenzene	112		18.816				ND	
72 Ethylbenzene	91		19.020				ND	
74 m-Xylene & p-Xylene	106		19.298				ND	
77 o-Xylene	106		20.090				ND	
S 76 Xylenes, Total	106		20.100				ND	
78 Styrene	104		20.132				ND	
79 Bromoform	173		20.486				ND	
80 Isopropylbenzene	105		20.807				ND	
81 1,1,2,2-Tetrachloroethane	83		21.341				ND	U
83 N-Propylbenzene	91		21.529				ND	
84 2-Chlorotoluene	91		21.679				ND	
85 4-Ethyltoluene	105		21.732				ND	
86 1,3,5-Trimethylbenzene	105		21.828				ND	
89 tert-Butylbenzene	119		22.315				ND	
90 1,2,4-Trimethylbenzene	105		22.401				ND	
91 sec-Butylbenzene	105		22.641				ND	
92 1,3-Dichlorobenzene	146		22.813				ND	
93 4-Isopropyltoluene	119		22.855				ND	
94 1,4-Dichlorobenzene	146		22.952				ND	
95 Benzyl chloride	91		23.107				ND	
96 n-Butylbenzene	91		23.417				ND	
97 1,2-Dichlorobenzene	146		23.449				ND	
100 1,2,4-Trichlorobenzene	180		25.932				ND	
101 Hexachlorobutadiene	225		26.183				ND	
102 Naphthalene	128		26.434				ND	

QC Flag Legend

Processing Flags

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

U - Marked Undetected

Reagents:

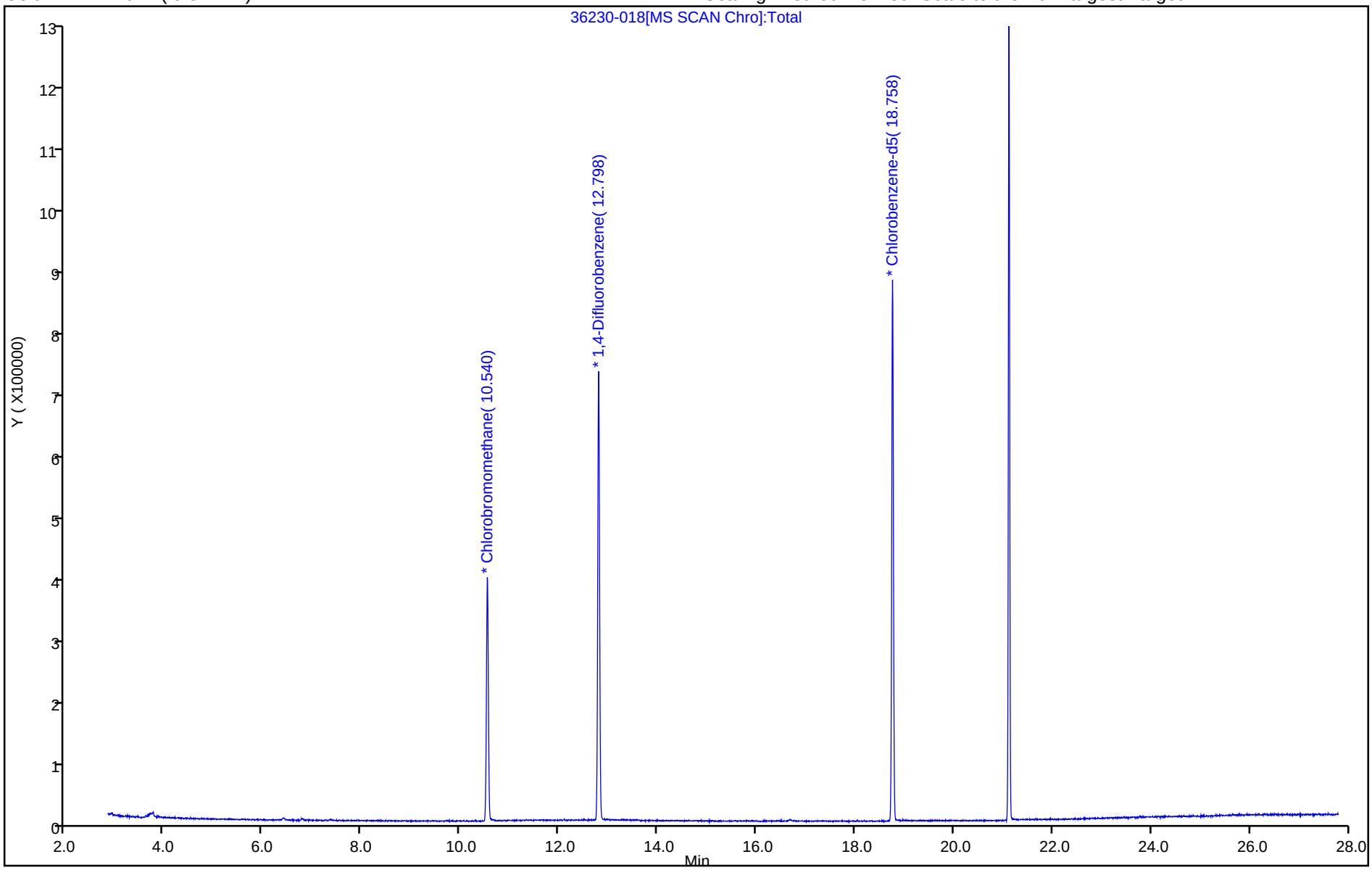
ATTO15WISs_00004	Amount Added: 20.00	Units: mL	Run Reagent

Report Date: 07-Jun-2019 18:13:34 Chrom Revision: 2.3 03-May-2019 15:52:00

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i	Operator ID:	ert
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5	Worklist Smp#:	18
Client ID:	6283				
Purge Vol:	200.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		

Column: RTX-624 (0.32 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



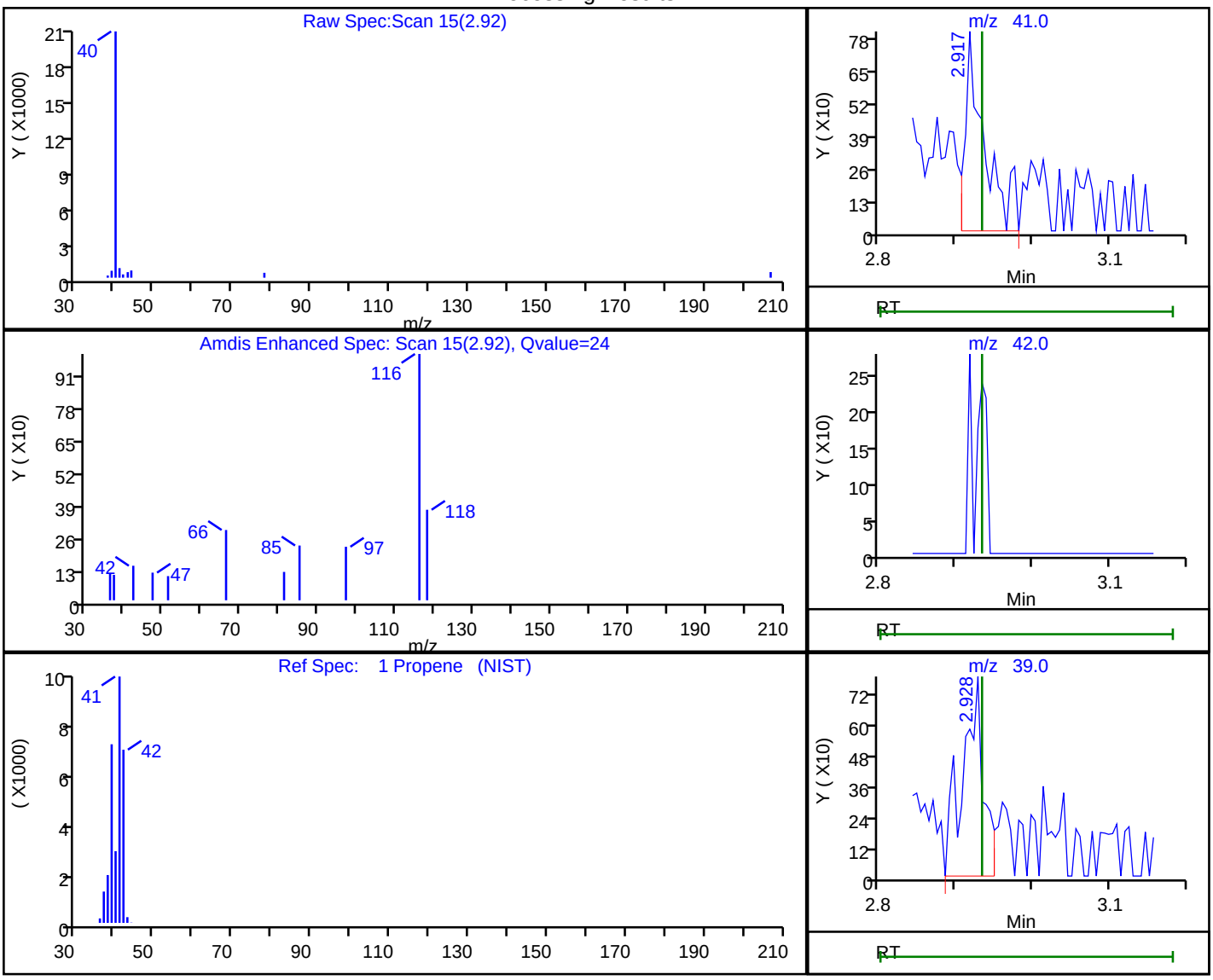
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

1 Propene, CAS: 115-07-1

Processing Results



RT	Mass	Response	Amount
2.92	41.00	1410	0.259937
2.93	42.00	0	
2.93	39.00	1506	

Reviewer: bunmaa, 07-Jun-2019 18:11:59

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

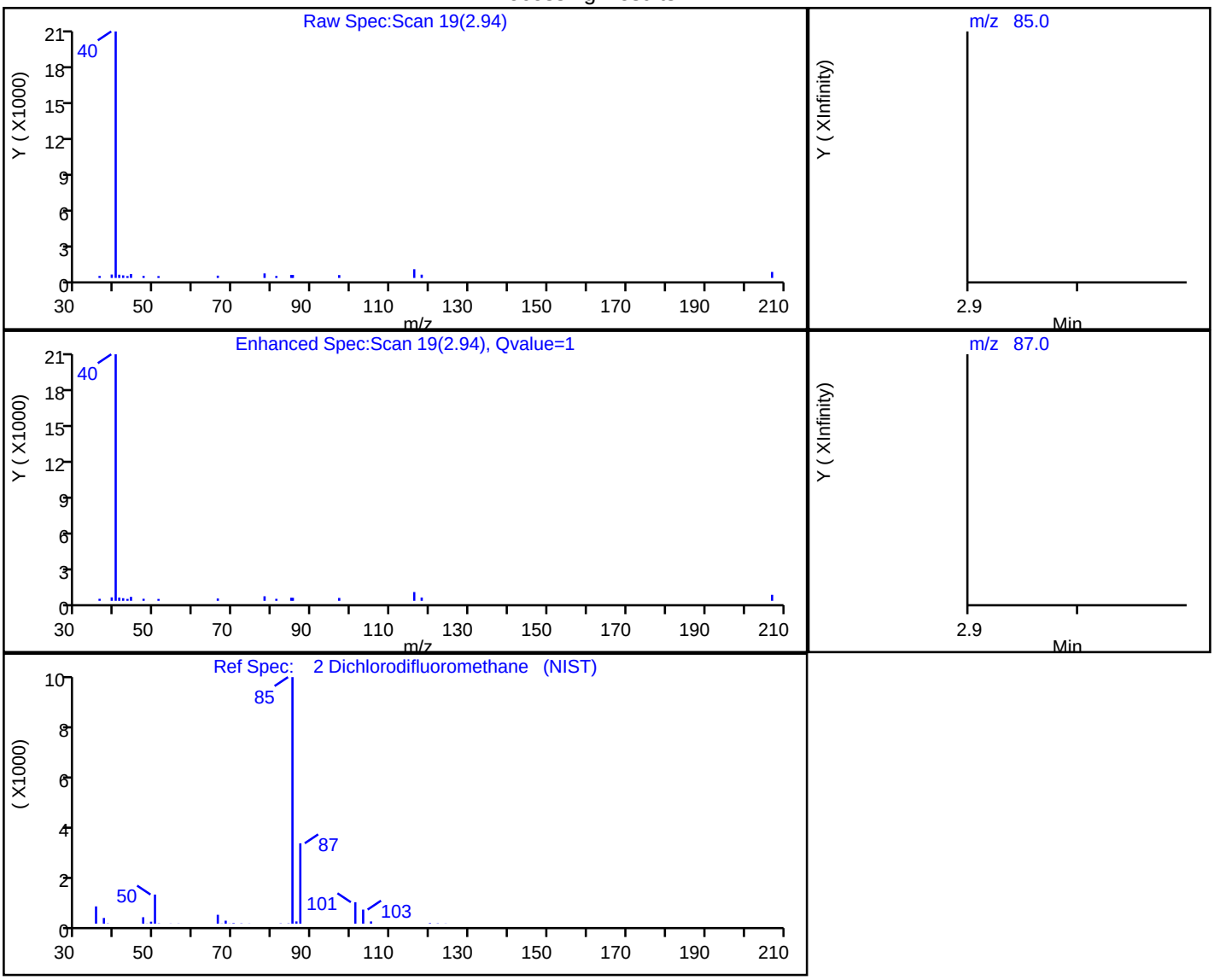
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

2 Dichlorodifluoromethane, CAS: 75-71-8

Processing Results



RT	Mass	Response	Amount
2.94	85.00	217	0.004333
3.01	87.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:02

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

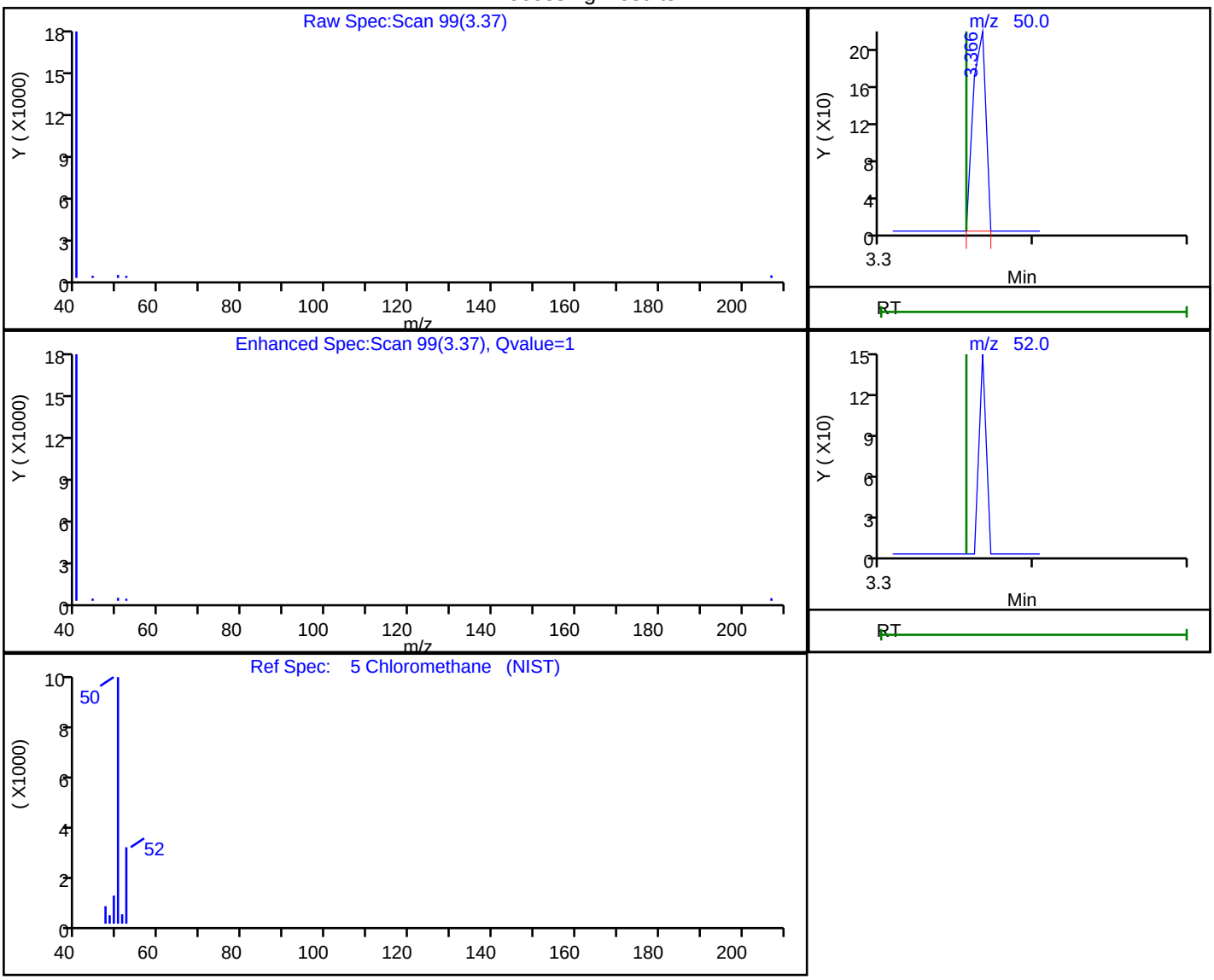
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

5 Chloromethane, CAS: 74-87-3

Processing Results



RT	Mass	Response	Amount
3.37	50.00	120	0.015065
3.36	52.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:07

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

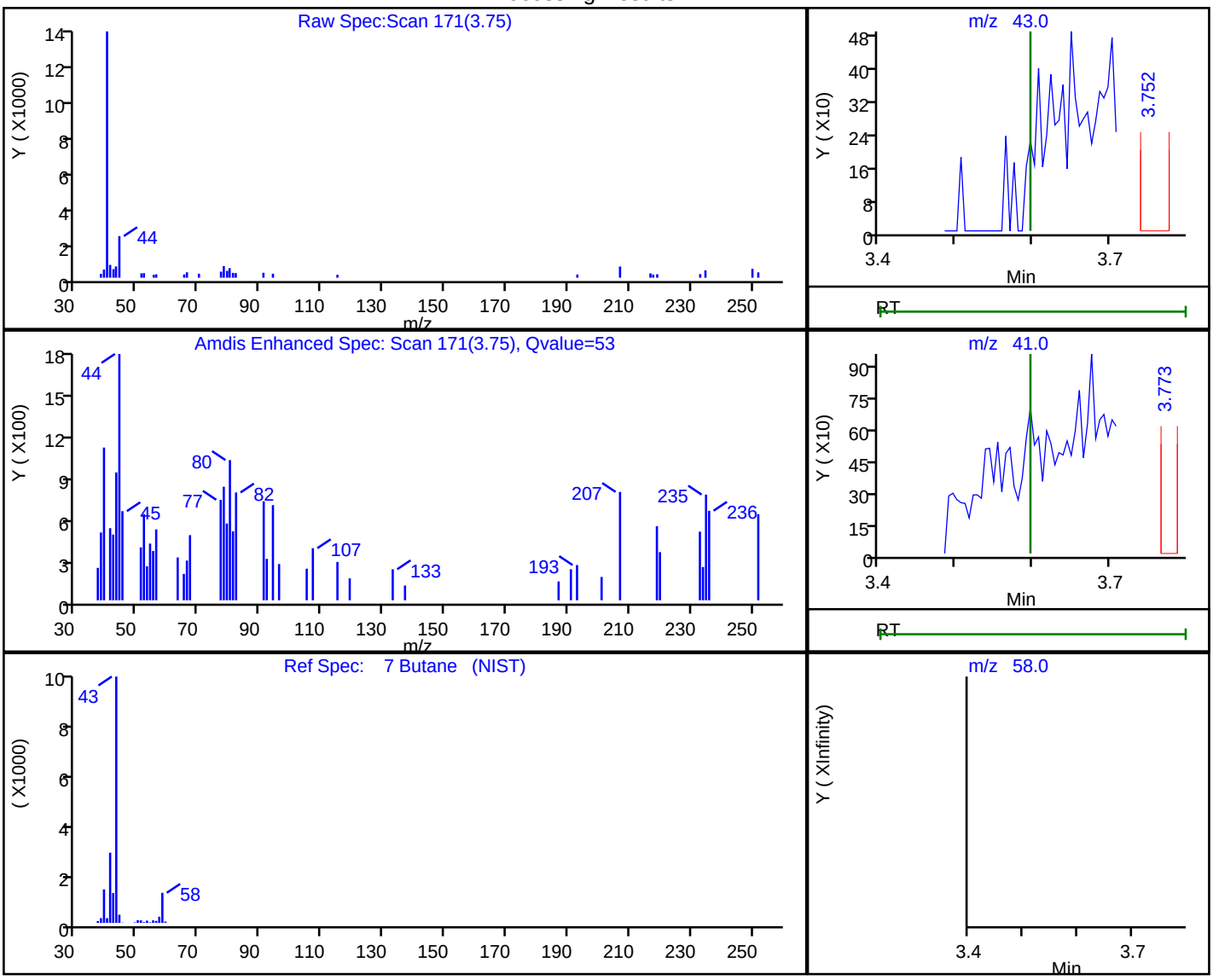
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

7 Butane, CAS: 106-97-8

Processing Results



RT	Mass	Response	Amount
3.75	43.00	1089	0.094989
3.77	41.00	717	
3.60	58.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:12

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

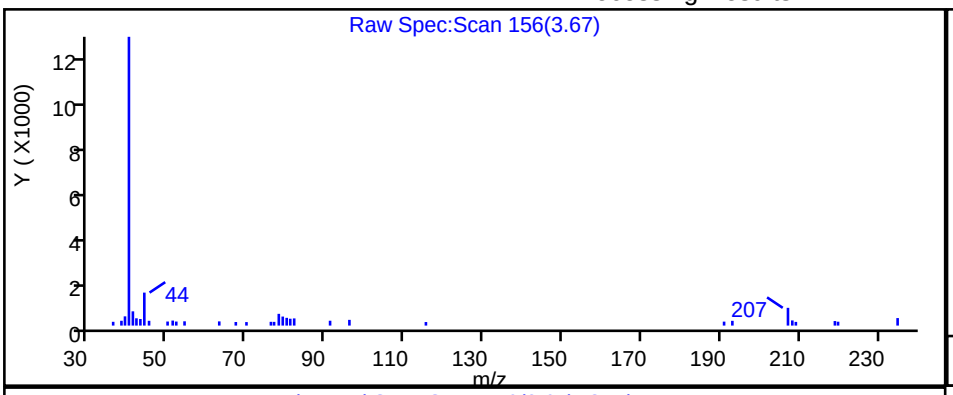
User Disabled Compound Report

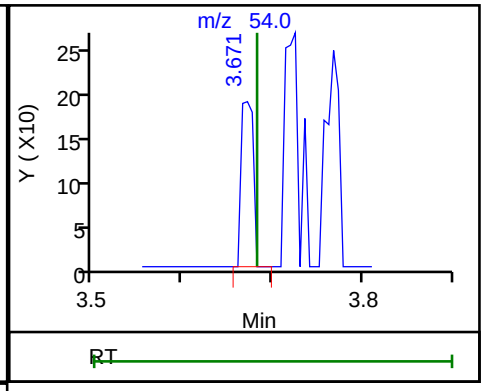
Eurofins TestAmerica, Burlington

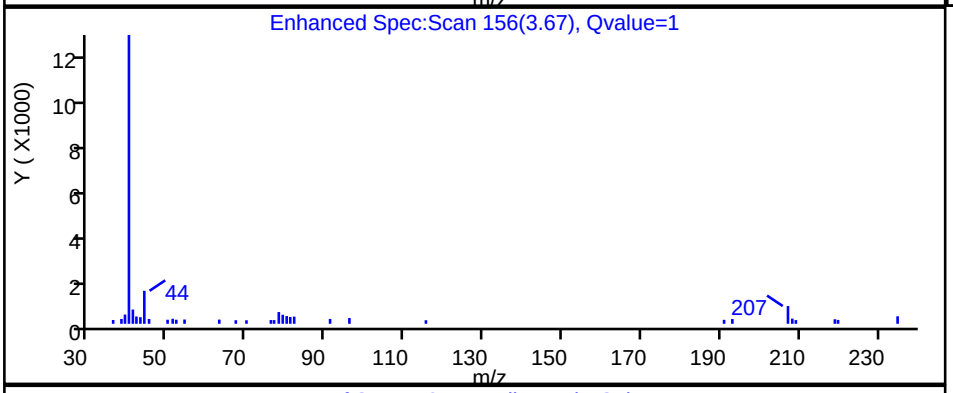
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

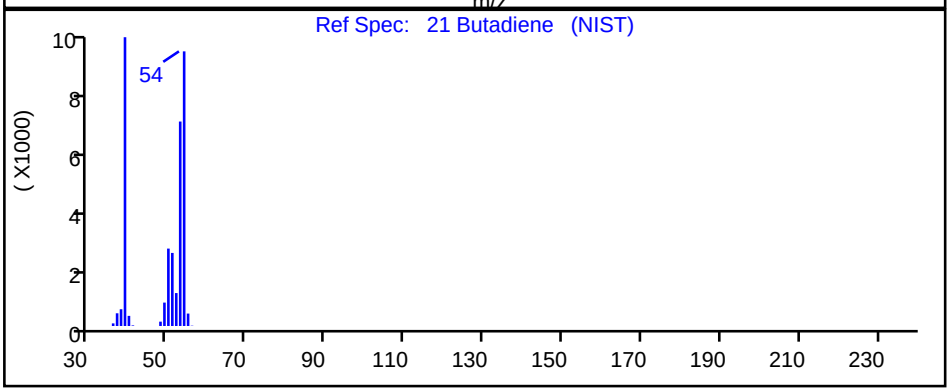
21 Butadiene, CAS: 106-99-0

Processing Results









RT	Mass	Response	Amount
3.67	54.00	176	0.022584

Reviewer: bunmaa, 07-Jun-2019 18:12:16

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

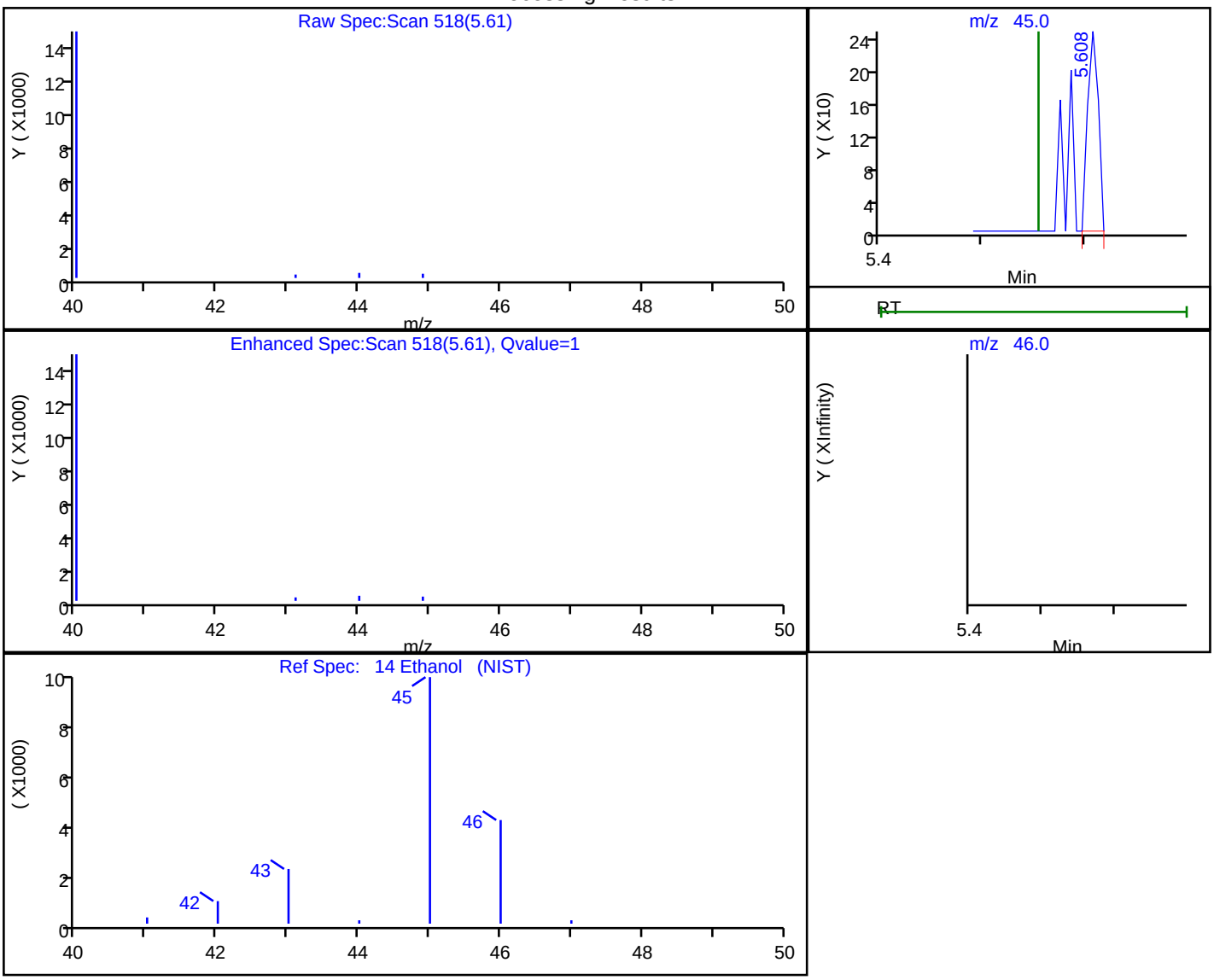
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

14 Ethanol, CAS: 64-17-5

Processing Results



RT	Mass	Response	Amount
5.61	45.00	182	0.067001
5.55	46.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:22

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

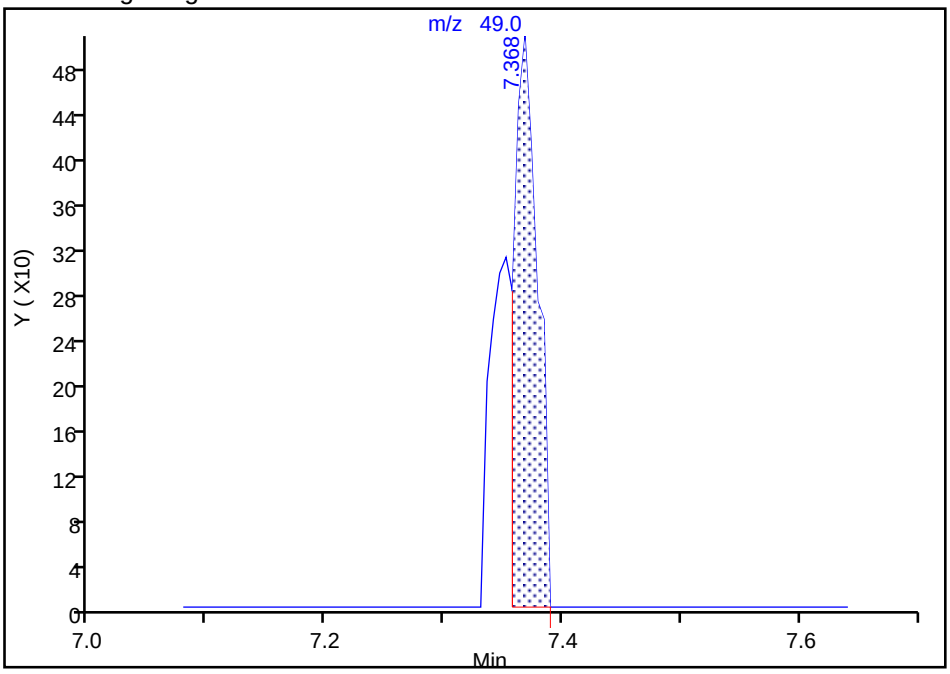
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

26 Methylene Chloride, CAS: 75-09-2

Signal: 1

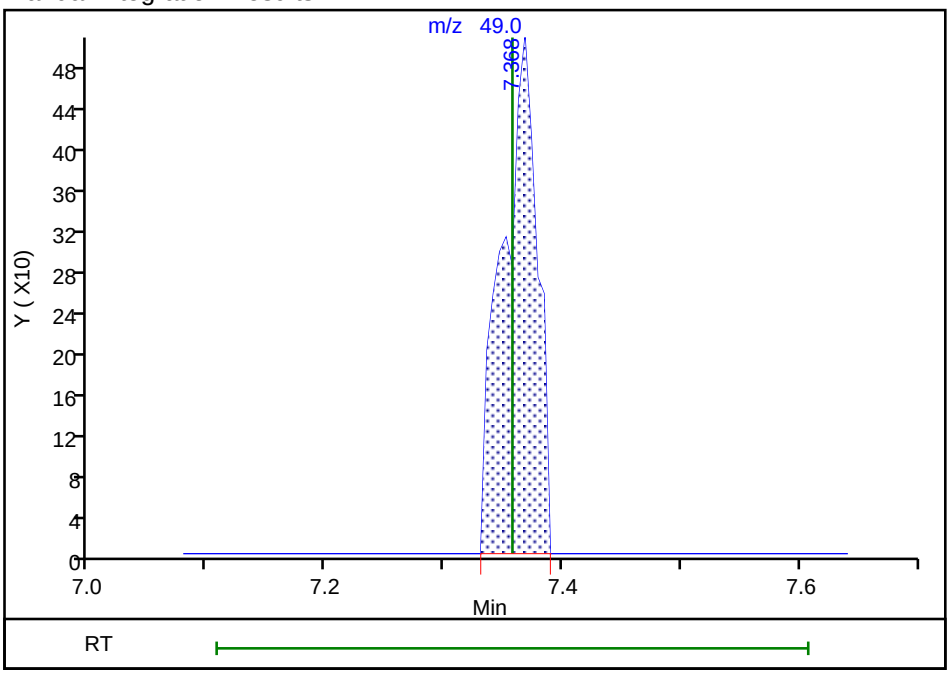
Processing Integration Results

RT: 7.37
Area: 695
Amount: 0.065515
Amount Units: ppb v/v



Manual Integration Results

RT: 7.37
Area: 1035
Amount: 0.097565
Amount Units: ppb v/v



Reviewer: bunmaa, 07-Jun-2019 18:12:41

Audit Action: Manually Integrated Audit Reason: Assign Peak

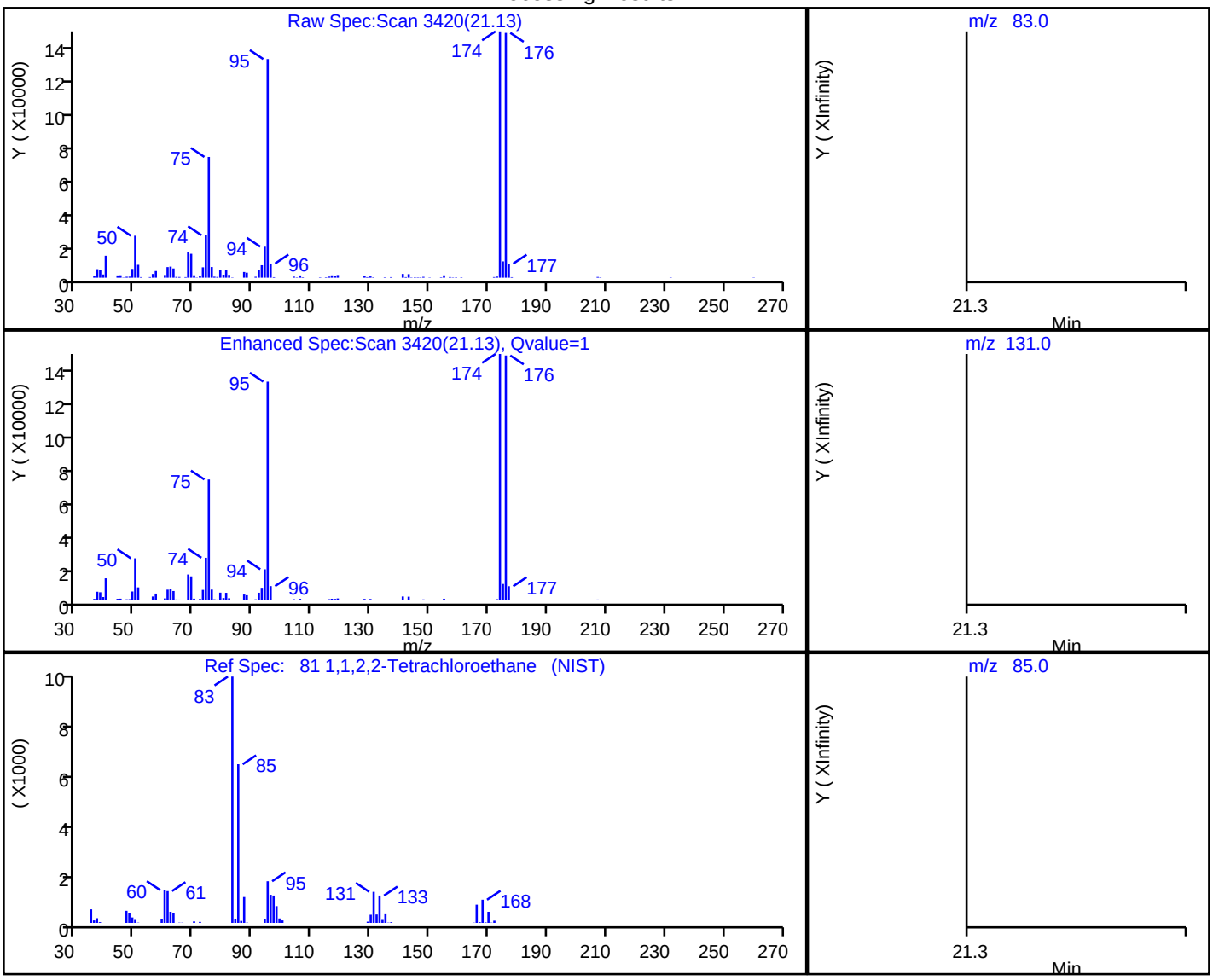
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

81 1,1,2,2-Tetrachloroethane, CAS: 79-34-5

Processing Results



RT	Mass	Response	Amount
21.13	83.00	57	0.001182
21.34	131.00	0	
21.34	85.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:13:18

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403
Tel: (802)660-1990

Laboratory Job ID: 200-49181-1
Laboratory Sample Delivery Group: 200-49181-1
Client Project/Site: Minnesota Air

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
6/20/2019 2:01:37 PM

Kathryn Kelly, Project Manager II
(802)923-1021
kathryn.kelly@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Detection Summary 5
Client Sample Results 8
QC Sample Results 17
QC Association Summary 21
Lab Chronicle 22
Certification Summary 25
Method Summary 26
Sample Summary 27
Chain of Custody 28
Receipt Checklists 32
Clean Canister Certification 33
Pre-Ship Certification 33
Clean Canister Data 36

Definitions/Glossary

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Qualifiers

Air - GC/MS VOA

Qualifier	Qualifier Description
F5	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL. The data are considered valid because the absolute difference is less than the RL.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 200-49181-1

Laboratory: Eurofins TestAmerica, Burlington

Narrative

CASE NARRATIVE

Client: Wenck Associates, Inc

Project: Minnesota Air

Report Number: 200-49181-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 06/13/2019; the samples arrived in good condition.

VOLATILE ORGANIC COMPOUNDS
Samples GS00693, GS00691, GS00692, GS00694, GS00695, GS00696, GS00697, GS00698, GS00712, 061219, GS00713, GS00714, GS00715, GS00716 and GS00717 were analyzed for Volatile Organic Compounds in accordance with EPA Method TO-15. The samples were analyzed on 06/15/2019, 06/16/2019, 06/18/2019 and 06/20/2019.

Tetrachloroethene exceeded the RPD limit for the duplicate of sample GS00693DU. Refer to the QC report for details.

Samples GS00712[1500X], 061219[994.9X], GS00713[10X], GS00714[44.9X], GS00715[25X], GS00716[2500X] and GS00717[200X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00693 — Lab Sample ID: 200-49181-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	0.94		0.20	0.074	ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.18	J	0.20	0.029	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	3.7		0.79	0.29	ug/m3	1		TO-15	Total/NA
Tetrachloroethene	1.2	J	1.4	0.20	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00691 — Lab Sample ID: 200-49181-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.044	J	0.20	0.041	ppb v/v	1		TO-15	Total/NA
trans-1,2-Dichloroethene	15		0.20	0.074	ppb v/v	1		TO-15	Total/NA
1,1-Dichloroethane	0.042	J	0.20	0.026	ppb v/v	1		TO-15	Total/NA
Trichloroethene	0.21		0.20	0.030	ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.069	J	0.20	0.029	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Vinyl chloride	0.11	J	0.51	0.10	ug/m3	1		TO-15	Total/NA
trans-1,2-Dichloroethene	60		0.79	0.29	ug/m3	1		TO-15	Total/NA
1,1-Dichloroethane	0.17	J	0.81	0.11	ug/m3	1		TO-15	Total/NA
Trichloroethene	1.1		1.1	0.16	ug/m3	1		TO-15	Total/NA
Tetrachloroethene	0.47	J	1.4	0.20	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00692 — Lab Sample ID: 200-49181-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	28		0.20	0.074	ppb v/v	1		TO-15	Total/NA
1,2-Dichloroethane	0.089	J	0.20	0.063	ppb v/v	1		TO-15	Total/NA
Trichloroethene	2.1		0.20	0.030	ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.44		0.20	0.029	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	110		0.79	0.29	ug/m3	1		TO-15	Total/NA
1,2-Dichloroethane	0.36	J	0.81	0.25	ug/m3	1		TO-15	Total/NA
Trichloroethene	11		1.1	0.16	ug/m3	1		TO-15	Total/NA
Tetrachloroethene	3.0		1.4	0.20	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00694 — Lab Sample ID: 200-49181-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	33		0.20	0.074	ppb v/v	1		TO-15	Total/NA
Trichloroethene	3.1		0.20	0.030	ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.044	J	0.20	0.029	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	130		0.79	0.29	ug/m3	1		TO-15	Total/NA
Trichloroethene	17		1.1	0.16	ug/m3	1		TO-15	Total/NA
Tetrachloroethene	0.30	J	1.4	0.20	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00695 — Lab Sample ID: 200-49181-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	40		0.20	0.074	ppb v/v	1		TO-15	Total/NA
Trichloroethene	4.3		0.20	0.030	ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	1.3		0.20	0.029	ppb v/v	1		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: GS00695 (Continued) — Lab Sample ID: 200-49181-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	160		0.79	0.29	ug/m3	1		TO-15	Total/NA
Trichloroethene	23		1.1	0.16	ug/m3	1		TO-15	Total/NA
Tetrachloroethene	8.7		1.4	0.20	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00696 — Lab Sample ID: 200-49181-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	0.36		0.20	0.074	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	1.4		0.79	0.29	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00697 — Lab Sample ID: 200-49181-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	35		0.20	0.074	ppb v/v	1		TO-15	Total/NA
1,1-Dichloroethane	0.093	J	0.20	0.026	ppb v/v	1		TO-15	Total/NA
Trichloroethene	3.1		0.20	0.030	ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.052	J	0.20	0.029	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	140		0.79	0.29	ug/m3	1		TO-15	Total/NA
1,1-Dichloroethane	0.38	J	0.81	0.11	ug/m3	1		TO-15	Total/NA
Trichloroethene	17		1.1	0.16	ug/m3	1		TO-15	Total/NA
Tetrachloroethene	0.36	J	1.4	0.20	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00698 — Lab Sample ID: 200-49181-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	35		0.20	0.074	ppb v/v	1		TO-15	Total/NA
Trichloroethene	3.0		0.20	0.030	ppb v/v	1		TO-15	Total/NA
Tetrachloroethene	0.038	J	0.20	0.029	ppb v/v	1		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	140		0.79	0.29	ug/m3	1		TO-15	Total/NA
Trichloroethene	16		1.1	0.16	ug/m3	1		TO-15	Total/NA
Tetrachloroethene	0.26	J	1.4	0.20	ug/m3	1		TO-15	Total/NA

Client Sample ID: GS00712 — Lab Sample ID: 200-49181-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	20000		300	110	ppb v/v	1500		TO-15	Total/NA
Trichloroethene	19000		300	45	ppb v/v	1500		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	78000		1200	440	ug/m3	1500		TO-15	Total/NA
Trichloroethene	100000		1600	240	ug/m3	1500		TO-15	Total/NA

Client Sample ID: 061219 — Lab Sample ID: 200-49181-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	19000		200	74	ppb v/v	994.9		TO-15	Total/NA
Trichloroethene	23000		200	30	ppb v/v	994.9		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	76000		790	290	ug/m3	994.9		TO-15	Total/NA
Trichloroethene	120000		1100	160	ug/m3	994.9		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00713 — Lab Sample ID: 200-49181-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	120		2.0	0.74	ppb v/v	10		TO-15	Total/NA
1,1,1-Trichloroethane	2.9		2.0	0.68	ppb v/v	10		TO-15	Total/NA
Trichloroethene	41		2.0	0.30	ppb v/v	10		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	460		7.9	2.9	ug/m3	10		TO-15	Total/NA
1,1,1-Trichloroethane	16		11	3.7	ug/m3	10		TO-15	Total/NA
Trichloroethene	220		11	1.6	ug/m3	10		TO-15	Total/NA

Client Sample ID: GS00714 — Lab Sample ID: 200-49181-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	1200		9.0	3.3	ppb v/v	44.9		TO-15	Total/NA
Trichloroethene	160		9.0	1.3	ppb v/v	44.9		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	4700		36	13	ug/m3	44.9		TO-15	Total/NA
Trichloroethene	830		48	7.2	ug/m3	44.9		TO-15	Total/NA

Client Sample ID: GS00715 — Lab Sample ID: 200-49181-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	650		5.0	1.9	ppb v/v	25		TO-15	Total/NA
Trichloroethene	310		5.0	0.75	ppb v/v	25		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	2600		20	7.3	ug/m3	25		TO-15	Total/NA
Trichloroethene	1600		27	4.0	ug/m3	25		TO-15	Total/NA

Client Sample ID: GS00716 — Lab Sample ID: 200-49181-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	56000		500	190	ppb v/v	2500		TO-15	Total/NA
Trichloroethene	4700		500	75	ppb v/v	2500		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	220000		2000	730	ug/m3	2500		TO-15	Total/NA
Trichloroethene	25000		2700	400	ug/m3	2500		TO-15	Total/NA

Client Sample ID: GS00717 — Lab Sample ID: 200-49181-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	850		40	15	ppb v/v	200		TO-15	Total/NA
Trichloroethene	3400		40	6.0	ppb v/v	200		TO-15	Total/NA
Tetrachloroethene	5.9	J	40	5.8	ppb v/v	200		TO-15	Total/NA

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	3400		160	59	ug/m3	200		TO-15	Total/NA
Trichloroethene	18000		210	32	ug/m3	200		TO-15	Total/NA
Tetrachloroethene	40	J	270	39	ug/m3	200		TO-15	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00693

Lab Sample ID: 200-49181-1
Matrix: Air

Date Collected: 06/12/19 09:25
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/20/19 07:08	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/20/19 07:08	1
trans-1,2-Dichloroethene	**0.94**		0.20	0.074	ppb v/v			06/20/19 07:08	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/20/19 07:08	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/20/19 07:08	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/20/19 07:08	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/20/19 07:08	1
Trichloroethene	0.20	U	0.20	0.030	ppb v/v			06/20/19 07:08	1
Tetrachloroethene	**0.18**	**J**	0.20	0.029	ppb v/v			06/20/19 07:08	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/20/19 07:08	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/20/19 07:08	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/20/19 07:08	1
trans-1,2-Dichloroethene	**3.7**		0.79	0.29	ug/m3			06/20/19 07:08	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/20/19 07:08	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/20/19 07:08	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/20/19 07:08	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/20/19 07:08	1
Trichloroethene	1.1	U	1.1	0.16	ug/m3			06/20/19 07:08	1
Tetrachloroethene	**1.2**	**J**	1.4	0.20	ug/m3			06/20/19 07:08	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/20/19 07:08	1

Client Sample ID: GS00691

Lab Sample ID: 200-49181-2
Matrix: Air

Date Collected: 06/12/19 09:22
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.044**	**J**	0.20	0.041	ppb v/v			06/15/19 15:11	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 15:11	1
trans-1,2-Dichloroethene	**15**		0.20	0.074	ppb v/v			06/15/19 15:11	1
1,1-Dichloroethane	**0.042**	**J**	0.20	0.026	ppb v/v			06/15/19 15:11	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 15:11	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 15:11	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/15/19 15:11	1
Trichloroethene	**0.21**		0.20	0.030	ppb v/v			06/15/19 15:11	1
Tetrachloroethene	**0.069**	**J**	0.20	0.029	ppb v/v			06/15/19 15:11	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 15:11	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	**0.11**	**J**	0.51	0.10	ug/m3			06/15/19 15:11	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 15:11	1
trans-1,2-Dichloroethene	**60**		0.79	0.29	ug/m3			06/15/19 15:11	1
1,1-Dichloroethane	**0.17**	**J**	0.81	0.11	ug/m3			06/15/19 15:11	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 15:11	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 15:11	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/15/19 15:11	1
Trichloroethene	**1.1**		1.1	0.16	ug/m3			06/15/19 15:11	1

Client Sample ID: GS00691 — Lab Sample ID: 200-49181-2

Date Collected: 06/12/19 09:22 — **Matrix: Air**
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	**0.47**	**J**	1.4	0.20	ug/m3			06/15/19 15:11	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 15:11	1

Client Sample ID: GS00692 — Lab Sample ID: 200-49181-3

Date Collected: 06/12/19 09:49 — **Matrix: Air**
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/15/19 17:42	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 17:42	1
trans-1,2-Dichloroethene	**28**		0.20	0.074	ppb v/v			06/15/19 17:42	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/15/19 17:42	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 17:42	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 17:42	1
1,2-Dichloroethane	**0.089**	**J**	0.20	0.063	ppb v/v			06/15/19 17:42	1
Trichloroethene	**2.1**		0.20	0.030	ppb v/v			06/15/19 17:42	1
Tetrachloroethene	**0.44**		0.20	0.029	ppb v/v			06/15/19 17:42	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 17:42	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/15/19 17:42	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 17:42	1
trans-1,2-Dichloroethene	**110**		0.79	0.29	ug/m3			06/15/19 17:42	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/15/19 17:42	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 17:42	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 17:42	1
1,2-Dichloroethane	**0.36**	**J**	0.81	0.25	ug/m3			06/15/19 17:42	1
Trichloroethene	**11**		1.1	0.16	ug/m3			06/15/19 17:42	1
Tetrachloroethene	**3.0**		1.4	0.20	ug/m3			06/15/19 17:42	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 17:42	1

Client Sample ID: GS00694 — Lab Sample ID: 200-49181-4

Date Collected: 06/12/19 09:49 — **Matrix: Air**
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/15/19 18:33	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 18:33	1
trans-1,2-Dichloroethene	**33**		0.20	0.074	ppb v/v			06/15/19 18:33	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/15/19 18:33	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 18:33	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 18:33	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/15/19 18:33	1
Trichloroethene	**3.1**		0.20	0.030	ppb v/v			06/15/19 18:33	1
Tetrachloroethene	**0.044**	**J**	0.20	0.029	ppb v/v			06/15/19 18:33	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 18:33	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00694 — Lab Sample ID: 200-49181-4

Date Collected: 06/12/19 09:49
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/15/19 18:33	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 18:33	1
trans-1,2-Dichloroethene	**130**		0.79	0.29	ug/m3			06/15/19 18:33	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/15/19 18:33	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 18:33	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 18:33	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/15/19 18:33	1
Trichloroethene	**17**		1.1	0.16	ug/m3			06/15/19 18:33	1
Tetrachloroethene	**0.30**	**J**	1.4	0.20	ug/m3			06/15/19 18:33	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 18:33	1

Client Sample ID: GS00695 — Lab Sample ID: 200-49181-5

Date Collected: 06/12/19 09:50
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/15/19 19:23	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 19:23	1
trans-1,2-Dichloroethene	**40**		0.20	0.074	ppb v/v			06/15/19 19:23	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/15/19 19:23	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 19:23	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 19:23	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/15/19 19:23	1
Trichloroethene	**4.3**		0.20	0.030	ppb v/v			06/15/19 19:23	1
Tetrachloroethene	**1.3**		0.20	0.029	ppb v/v			06/15/19 19:23	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 19:23	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/15/19 19:23	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 19:23	1
trans-1,2-Dichloroethene	**160**		0.79	0.29	ug/m3			06/15/19 19:23	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/15/19 19:23	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 19:23	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 19:23	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/15/19 19:23	1
Trichloroethene	**23**		1.1	0.16	ug/m3			06/15/19 19:23	1
Tetrachloroethene	**8.7**		1.4	0.20	ug/m3			06/15/19 19:23	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 19:23	1

Client Sample ID: GS00696 — Lab Sample ID: 200-49181-6

Date Collected: 06/12/19 09:52
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/15/19 20:14	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 20:14	1
trans-1,2-Dichloroethene	**0.36**		0.20	0.074	ppb v/v			06/15/19 20:14	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00696

Lab Sample ID: 200-49181-6

Date Collected: 06/12/19 09:52
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/15/19 20:14	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 20:14	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 20:14	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/15/19 20:14	1
Trichloroethene	0.20	U	0.20	0.030	ppb v/v			06/15/19 20:14	1
Tetrachloroethene	0.20	U	0.20	0.029	ppb v/v			06/15/19 20:14	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 20:14	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/15/19 20:14	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 20:14	1
trans-1,2-Dichloroethene	**1.4**		0.79	0.29	ug/m3			06/15/19 20:14	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/15/19 20:14	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 20:14	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 20:14	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/15/19 20:14	1
Trichloroethene	1.1	U	1.1	0.16	ug/m3			06/15/19 20:14	1
Tetrachloroethene	1.4	U	1.4	0.20	ug/m3			06/15/19 20:14	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 20:14	1

Client Sample ID: GS00697

Lab Sample ID: 200-49181-7

Date Collected: 06/12/19 09:53
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/15/19 21:04	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 21:04	1
trans-1,2-Dichloroethene	**35**		0.20	0.074	ppb v/v			06/15/19 21:04	1
1,1-Dichloroethane	**0.093**	**J**	0.20	0.026	ppb v/v			06/15/19 21:04	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 21:04	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 21:04	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/15/19 21:04	1
Trichloroethene	**3.1**		0.20	0.030	ppb v/v			06/15/19 21:04	1
Tetrachloroethene	**0.052**	**J**	0.20	0.029	ppb v/v			06/15/19 21:04	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 21:04	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/15/19 21:04	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 21:04	1
trans-1,2-Dichloroethene	**140**		0.79	0.29	ug/m3			06/15/19 21:04	1
1,1-Dichloroethane	**0.38**	**J**	0.81	0.11	ug/m3			06/15/19 21:04	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 21:04	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 21:04	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/15/19 21:04	1
Trichloroethene	**17**		1.1	0.16	ug/m3			06/15/19 21:04	1
Tetrachloroethene	**0.36**	**J**	1.4	0.20	ug/m3			06/15/19 21:04	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 21:04	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00698

Lab Sample ID: 200-49181-8

Date Collected: 06/12/19 09:52
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 6L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/15/19 21:55	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 21:55	1
trans-1,2-Dichloroethene	**35**		0.20	0.074	ppb v/v			06/15/19 21:55	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/15/19 21:55	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 21:55	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 21:55	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/15/19 21:55	1
Trichloroethene	**3.0**		0.20	0.030	ppb v/v			06/15/19 21:55	1
Tetrachloroethene	**0.038**	**J**	0.20	0.029	ppb v/v			06/15/19 21:55	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 21:55	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/15/19 21:55	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 21:55	1
trans-1,2-Dichloroethene	**140**		0.79	0.29	ug/m3			06/15/19 21:55	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/15/19 21:55	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 21:55	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 21:55	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/15/19 21:55	1
Trichloroethene	**16**		1.1	0.16	ug/m3			06/15/19 21:55	1
Tetrachloroethene	**0.26**	**J**	1.4	0.20	ug/m3			06/15/19 21:55	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 21:55	1

Client Sample ID: GS00712

Lab Sample ID: 200-49181-9

Date Collected: 06/12/19 10:36
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	300	U	300	62	ppb v/v			06/15/19 23:36	1500
1,1-Dichloroethene	300	U	300	51	ppb v/v			06/15/19 23:36	1500
trans-1,2-Dichloroethene	**20000**		300	110	ppb v/v			06/15/19 23:36	1500
1,1-Dichloroethane	300	U	300	39	ppb v/v			06/15/19 23:36	1500
cis-1,2-Dichloroethene	300	U	300	56	ppb v/v			06/15/19 23:36	1500
1,1,1-Trichloroethane	300	U	300	100	ppb v/v			06/15/19 23:36	1500
1,2-Dichloroethane	300	U	300	95	ppb v/v			06/15/19 23:36	1500
Trichloroethene	**19000**		300	45	ppb v/v			06/15/19 23:36	1500
Tetrachloroethene	300	U	300	44	ppb v/v			06/15/19 23:36	1500
Chloroethane	750	U	750	320	ppb v/v			06/15/19 23:36	1500

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	770	U	770	160	ug/m3			06/15/19 23:36	1500
1,1-Dichloroethene	1200	U	1200	200	ug/m3			06/15/19 23:36	1500
trans-1,2-Dichloroethene	**78000**		1200	440	ug/m3			06/15/19 23:36	1500
1,1-Dichloroethane	1200	U	1200	160	ug/m3			06/15/19 23:36	1500
cis-1,2-Dichloroethene	1200	U	1200	220	ug/m3			06/15/19 23:36	1500
1,1,1-Trichloroethane	1600	U	1600	560	ug/m3			06/15/19 23:36	1500
1,2-Dichloroethane	1200	U	1200	380	ug/m3			06/15/19 23:36	1500
Trichloroethene	**100000**		1600	240	ug/m3			06/15/19 23:36	1500

Client Sample ID: GS00712 — Lab Sample ID: 200-49181-9

Date Collected: 06/12/19 10:36 — **Matrix: Air**
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	2000	U	2000	300	ug/m3			06/15/19 23:36	1500
Chloroethane	2000	U	2000	830	ug/m3			06/15/19 23:36	1500

Client Sample ID: 061219 — Lab Sample ID: 200-49181-10

Date Collected: 06/12/19 10:42 — **Matrix: Air**
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	200	U	200	41	ppb v/v			06/18/19 16:10	994.9
1,1-Dichloroethene	200	U	200	34	ppb v/v			06/18/19 16:10	994.9
trans-1,2-Dichloroethene	**19000**		200	74	ppb v/v			06/18/19 16:10	994.9
1,1-Dichloroethane	200	U	200	26	ppb v/v			06/18/19 16:10	994.9
cis-1,2-Dichloroethene	200	U	200	37	ppb v/v			06/18/19 16:10	994.9
1,1,1-Trichloroethane	200	U	200	68	ppb v/v			06/18/19 16:10	994.9
1,2-Dichloroethane	200	U	200	63	ppb v/v			06/18/19 16:10	994.9
Trichloroethene	**23000**		200	30	ppb v/v			06/18/19 16:10	994.9
Tetrachloroethene	200	U	200	29	ppb v/v			06/18/19 16:10	994.9
Chloroethane	500	U	500	210	ppb v/v			06/18/19 16:10	994.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	510	U	510	100	ug/m3			06/18/19 16:10	994.9
1,1-Dichloroethene	790	U	790	130	ug/m3			06/18/19 16:10	994.9
trans-1,2-Dichloroethene	**76000**		790	290	ug/m3			06/18/19 16:10	994.9
1,1-Dichloroethane	810	U	810	100	ug/m3			06/18/19 16:10	994.9
cis-1,2-Dichloroethene	790	U	790	150	ug/m3			06/18/19 16:10	994.9
1,1,1-Trichloroethane	1100	U	1100	370	ug/m3			06/18/19 16:10	994.9
1,2-Dichloroethane	810	U	810	250	ug/m3			06/18/19 16:10	994.9
Trichloroethene	**120000**		1100	160	ug/m3			06/18/19 16:10	994.9
Tetrachloroethene	1300	U	1300	200	ug/m3			06/18/19 16:10	994.9
Chloroethane	1300	U	1300	550	ug/m3			06/18/19 16:10	994.9

Client Sample ID: GS00713 — Lab Sample ID: 200-49181-11

Date Collected: 06/12/19 11:00 — **Matrix: Air**
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	2.0	U	2.0	0.41	ppb v/v			06/15/19 22:46	10
1,1-Dichloroethene	2.0	U	2.0	0.34	ppb v/v			06/15/19 22:46	10
trans-1,2-Dichloroethene	**120**		2.0	0.74	ppb v/v			06/15/19 22:46	10
1,1-Dichloroethane	2.0	U	2.0	0.26	ppb v/v			06/15/19 22:46	10
cis-1,2-Dichloroethene	2.0	U	2.0	0.37	ppb v/v			06/15/19 22:46	10
1,1,1-Trichloroethane	**2.9**		2.0	0.68	ppb v/v			06/15/19 22:46	10
1,2-Dichloroethane	2.0	U	2.0	0.63	ppb v/v			06/15/19 22:46	10
Trichloroethene	**41**		2.0	0.30	ppb v/v			06/15/19 22:46	10
Tetrachloroethene	2.0	U	2.0	0.29	ppb v/v			06/15/19 22:46	10
Chloroethane	5.0	U	5.0	2.1	ppb v/v			06/15/19 22:46	10

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00713 — Lab Sample ID: 200-49181-11

Date Collected: 06/12/19 11:00
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	5.1	U	5.1	1.0	ug/m3			06/15/19 22:46	10
1,1-Dichloroethene	7.9	U	7.9	1.3	ug/m3			06/15/19 22:46	10
trans-1,2-Dichloroethene	**460**		7.9	2.9	ug/m3			06/15/19 22:46	10
1,1-Dichloroethane	8.1	U	8.1	1.1	ug/m3			06/15/19 22:46	10
cis-1,2-Dichloroethene	7.9	U	7.9	1.5	ug/m3			06/15/19 22:46	10
1,1,1-Trichloroethane	**16**		11	3.7	ug/m3			06/15/19 22:46	10
1,2-Dichloroethane	8.1	U	8.1	2.5	ug/m3			06/15/19 22:46	10
Trichloroethene	**220**		11	1.6	ug/m3			06/15/19 22:46	10
Tetrachloroethene	14	U	14	2.0	ug/m3			06/15/19 22:46	10
Chloroethane	13	U	13	5.5	ug/m3			06/15/19 22:46	10

Client Sample ID: GS00714 — Lab Sample ID: 200-49181-12

Date Collected: 06/12/19 11:02
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	9.0	U	9.0	1.8	ppb v/v			06/18/19 17:01	44.9
1,1-Dichloroethene	9.0	U	9.0	1.5	ppb v/v			06/18/19 17:01	44.9
trans-1,2-Dichloroethene	**1200**		9.0	3.3	ppb v/v			06/18/19 17:01	44.9
1,1-Dichloroethane	9.0	U	9.0	1.2	ppb v/v			06/18/19 17:01	44.9
cis-1,2-Dichloroethene	9.0	U	9.0	1.7	ppb v/v			06/18/19 17:01	44.9
1,1,1-Trichloroethane	9.0	U	9.0	3.1	ppb v/v			06/18/19 17:01	44.9
1,2-Dichloroethane	9.0	U	9.0	2.8	ppb v/v			06/18/19 17:01	44.9
Trichloroethene	**160**		9.0	1.3	ppb v/v			06/18/19 17:01	44.9
Tetrachloroethene	9.0	U	9.0	1.3	ppb v/v			06/18/19 17:01	44.9
Chloroethane	22	U	22	9.4	ppb v/v			06/18/19 17:01	44.9

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	23	U	23	4.7	ug/m3			06/18/19 17:01	44.9
1,1-Dichloroethene	36	U	36	6.1	ug/m3			06/18/19 17:01	44.9
trans-1,2-Dichloroethene	**4700**		36	13	ug/m3			06/18/19 17:01	44.9
1,1-Dichloroethane	36	U	36	4.7	ug/m3			06/18/19 17:01	44.9
cis-1,2-Dichloroethene	36	U	36	6.6	ug/m3			06/18/19 17:01	44.9
1,1,1-Trichloroethane	49	U	49	17	ug/m3			06/18/19 17:01	44.9
1,2-Dichloroethane	36	U	36	11	ug/m3			06/18/19 17:01	44.9
Trichloroethene	**830**		48	7.2	ug/m3			06/18/19 17:01	44.9
Tetrachloroethene	61	U	61	8.8	ug/m3			06/18/19 17:01	44.9
Chloroethane	59	U	59	25	ug/m3			06/18/19 17:01	44.9

Client Sample ID: GS00715 — Lab Sample ID: 200-49181-13

Date Collected: 06/12/19 11:18
Matrix: Air
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	5.0	U	5.0	1.0	ppb v/v			06/18/19 17:51	25
1,1-Dichloroethene	5.0	U	5.0	0.85	ppb v/v			06/18/19 17:51	25
trans-1,2-Dichloroethene	**650**		5.0	1.9	ppb v/v			06/18/19 17:51	25

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00715

Lab Sample ID: 200-49181-13
Matrix: Air

Date Collected: 06/12/19 11:18
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethane	5.0	U	5.0	0.65	ppb v/v			06/18/19 17:51	25
cis-1,2-Dichloroethene	5.0	U	5.0	0.93	ppb v/v			06/18/19 17:51	25
1,1,1-Trichloroethane	5.0	U	5.0	1.7	ppb v/v			06/18/19 17:51	25
1,2-Dichloroethane	5.0	U	5.0	1.6	ppb v/v			06/18/19 17:51	25
Trichloroethene	**310**		5.0	0.75	ppb v/v			06/18/19 17:51	25
Tetrachloroethene	5.0	U	5.0	0.73	ppb v/v			06/18/19 17:51	25
Chloroethane	13	U	13	5.3	ppb v/v			06/18/19 17:51	25

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	13	U	13	2.6	ug/m3			06/18/19 17:51	25
1,1-Dichloroethene	20	U	20	3.4	ug/m3			06/18/19 17:51	25
trans-1,2-Dichloroethene	**2600**		20	7.3	ug/m3			06/18/19 17:51	25
1,1-Dichloroethane	20	U	20	2.6	ug/m3			06/18/19 17:51	25
cis-1,2-Dichloroethene	20	U	20	3.7	ug/m3			06/18/19 17:51	25
1,1,1-Trichloroethane	27	U	27	9.3	ug/m3			06/18/19 17:51	25
1,2-Dichloroethane	20	U	20	6.4	ug/m3			06/18/19 17:51	25
Trichloroethene	**1600**		27	4.0	ug/m3			06/18/19 17:51	25
Tetrachloroethene	34	U	34	4.9	ug/m3			06/18/19 17:51	25
Chloroethane	33	U	33	14	ug/m3			06/18/19 17:51	25

Client Sample ID: GS00716

Lab Sample ID: 200-49181-14
Matrix: Air

Date Collected: 06/12/19 11:35
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	500	U	500	100	ppb v/v			06/18/19 18:41	2500
1,1-Dichloroethene	500	U	500	85	ppb v/v			06/18/19 18:41	2500
trans-1,2-Dichloroethene	**56000**		500	190	ppb v/v			06/18/19 18:41	2500
1,1-Dichloroethane	500	U	500	65	ppb v/v			06/18/19 18:41	2500
cis-1,2-Dichloroethene	500	U	500	93	ppb v/v			06/18/19 18:41	2500
1,1,1-Trichloroethane	500	U	500	170	ppb v/v			06/18/19 18:41	2500
1,2-Dichloroethane	500	U	500	160	ppb v/v			06/18/19 18:41	2500
Trichloroethene	**4700**		500	75	ppb v/v			06/18/19 18:41	2500
Tetrachloroethene	500	U	500	73	ppb v/v			06/18/19 18:41	2500
Chloroethane	1300	U	1300	530	ppb v/v			06/18/19 18:41	2500

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	1300	U	1300	260	ug/m3			06/18/19 18:41	2500
1,1-Dichloroethene	2000	U	2000	340	ug/m3			06/18/19 18:41	2500
trans-1,2-Dichloroethene	**220000**		2000	730	ug/m3			06/18/19 18:41	2500
1,1-Dichloroethane	2000	U	2000	260	ug/m3			06/18/19 18:41	2500
cis-1,2-Dichloroethene	2000	U	2000	370	ug/m3			06/18/19 18:41	2500
1,1,1-Trichloroethane	2700	U	2700	930	ug/m3			06/18/19 18:41	2500
1,2-Dichloroethane	2000	U	2000	640	ug/m3			06/18/19 18:41	2500
Trichloroethene	**25000**		2700	400	ug/m3			06/18/19 18:41	2500
Tetrachloroethene	3400	U	3400	490	ug/m3			06/18/19 18:41	2500
Chloroethane	3300	U	3300	1400	ug/m3			06/18/19 18:41	2500

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00717

Lab Sample ID: 200-49181-15

Date Collected: 06/12/19 12:46
Date Received: 06/13/19 10:25
Sample Container: Summa Canister 1L

Matrix: Air

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	40	U	40	8.2	ppb v/v			06/16/19 03:49	200
1,1-Dichloroethene	40	U	40	6.8	ppb v/v			06/16/19 03:49	200
trans-1,2-Dichloroethene	**850**		40	15	ppb v/v			06/16/19 03:49	200
1,1-Dichloroethane	40	U	40	5.2	ppb v/v			06/16/19 03:49	200
cis-1,2-Dichloroethene	40	U	40	7.4	ppb v/v			06/16/19 03:49	200
1,1,1-Trichloroethane	40	U	40	14	ppb v/v			06/16/19 03:49	200
1,2-Dichloroethane	40	U	40	13	ppb v/v			06/16/19 03:49	200
Trichloroethene	**3400**		40	6.0	ppb v/v			06/16/19 03:49	200
Tetrachloroethene	**5.9**	**J**	40	5.8	ppb v/v			06/16/19 03:49	200
Chloroethane	100	U	100	42	ppb v/v			06/16/19 03:49	200

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	100	U	100	21	ug/m3			06/16/19 03:49	200
1,1-Dichloroethene	160	U	160	27	ug/m3			06/16/19 03:49	200
trans-1,2-Dichloroethene	**3400**		160	59	ug/m3			06/16/19 03:49	200
1,1-Dichloroethane	160	U	160	21	ug/m3			06/16/19 03:49	200
cis-1,2-Dichloroethene	160	U	160	29	ug/m3			06/16/19 03:49	200
1,1,1-Trichloroethane	220	U	220	74	ug/m3			06/16/19 03:49	200
1,2-Dichloroethane	160	U	160	51	ug/m3			06/16/19 03:49	200
Trichloroethene	**18000**		210	32	ug/m3			06/16/19 03:49	200
Tetrachloroethene	**40**	**J**	270	39	ug/m3			06/16/19 03:49	200
Chloroethane	260	U	260	110	ug/m3			06/16/19 03:49	200

QC Sample Results

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Method: TO-15 - Volatile Organic Compounds in Ambient Air

Lab Sample ID: MB 200-144104/4
Matrix: Air
Analysis Batch: 144104

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/15/19 14:21	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/15/19 14:21	1
trans-1,2-Dichloroethene	0.20	U	0.20	0.074	ppb v/v			06/15/19 14:21	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/15/19 14:21	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/15/19 14:21	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/15/19 14:21	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/15/19 14:21	1
Trichloroethene	0.20	U	0.20	0.030	ppb v/v			06/15/19 14:21	1
Tetrachloroethene	0.20	U	0.20	0.029	ppb v/v			06/15/19 14:21	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/15/19 14:21	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/15/19 14:21	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/15/19 14:21	1
trans-1,2-Dichloroethene	0.79	U	0.79	0.29	ug/m3			06/15/19 14:21	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/15/19 14:21	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/15/19 14:21	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/15/19 14:21	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/15/19 14:21	1
Trichloroethene	1.1	U	1.1	0.16	ug/m3			06/15/19 14:21	1
Tetrachloroethene	1.4	U	1.4	0.20	ug/m3			06/15/19 14:21	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/15/19 14:21	1

Lab Sample ID: LCS 200-144104/3
Matrix: Air
Analysis Batch: 144104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	9.19		ppb v/v		92	61 - 135
1,1-Dichloroethene	10.0	9.08		ppb v/v		91	68 - 120
trans-1,2-Dichloroethene	10.0	8.47		ppb v/v		85	69 - 137
1,1-Dichloroethane	10.0	8.17		ppb v/v		82	66 - 130
cis-1,2-Dichloroethene	10.0	9.00		ppb v/v		90	72 - 121
1,1,1-Trichloroethane	10.0	8.38		ppb v/v		84	72 - 127
1,2-Dichloroethane	10.0	7.05		ppb v/v		70	68 - 135
Trichloroethene	10.0	8.37		ppb v/v		84	73 - 122
Tetrachloroethene	10.0	9.29		ppb v/v		93	70 - 125
Chloroethane	10.0	9.44		ppb v/v		94	68 - 130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	26	23.5		ug/m3		92	61 - 135
1,1-Dichloroethene	40	36.0		ug/m3		91	68 - 120
trans-1,2-Dichloroethene	40	33.6		ug/m3		85	69 - 137
1,1-Dichloroethane	40	33.1		ug/m3		82	66 - 130
cis-1,2-Dichloroethene	40	35.7		ug/m3		90	72 - 121
1,1,1-Trichloroethane	55	45.7		ug/m3		84	72 - 127
1,2-Dichloroethane	40	28.5		ug/m3		70	68 - 135
Trichloroethene	54	45.0		ug/m3		84	73 - 122
Tetrachloroethene	68	63.0		ug/m3		93	70 - 125

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: LCS 200-144104/3
Matrix: Air
Analysis Batch: 144104

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	26	24.9		ug/m3		94	68 - 130

Lab Sample ID: 200-49181-1 DU
Matrix: Air
Analysis Batch: 144104

Client Sample ID: GS00693
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Vinyl chloride	0.20	U	0.20	U	ppb v/v		NC	25
1,1-Dichloroethene	0.20	U	0.20	U	ppb v/v		NC	25
trans-1,2-Dichloroethene	0.94		1.13		ppb v/v		18	25
1,1-Dichloroethane	0.20	U	0.20	U	ppb v/v		NC	25
cis-1,2-Dichloroethene	0.20	U	0.20	U	ppb v/v		NC	25
1,1,1-Trichloroethane	0.20	U	0.20	U	ppb v/v		NC	25
1,2-Dichloroethane	0.20	U	0.20	U	ppb v/v		NC	25
Trichloroethene	0.20	U	0.20	U	ppb v/v		NC	25
Tetrachloroethene	0.18	J	0.0410	J F5	ppb v/v		126	25
Chloroethane	0.50	U	0.50	U	ppb v/v		NC	25

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Vinyl chloride	0.51	U	0.51	U	ug/m3		NC	25
1,1-Dichloroethene	0.79	U	0.79	U	ug/m3		NC	25
trans-1,2-Dichloroethene	3.7		4.46		ug/m3		18	25
1,1-Dichloroethane	0.81	U	0.81	U	ug/m3		NC	25
cis-1,2-Dichloroethene	0.79	U	0.79	U	ug/m3		NC	25
1,1,1-Trichloroethane	1.1	U	1.1	U	ug/m3		NC	25
1,2-Dichloroethane	0.81	U	0.81	U	ug/m3		NC	25
Trichloroethene	1.1	U	1.1	U	ug/m3		NC	25
Tetrachloroethene	1.2	J	0.278	J F5	ug/m3		126	25
Chloroethane	1.3	U	1.3	U	ug/m3		NC	25

Lab Sample ID: MB 200-144183/6
Matrix: Air
Analysis Batch: 144183

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/18/19 15:20	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/18/19 15:20	1
trans-1,2-Dichloroethene	0.20	U	0.20	0.074	ppb v/v			06/18/19 15:20	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/18/19 15:20	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/18/19 15:20	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/18/19 15:20	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/18/19 15:20	1
Trichloroethene	0.20	U	0.20	0.030	ppb v/v			06/18/19 15:20	1
Tetrachloroethene	0.20	U	0.20	0.029	ppb v/v			06/18/19 15:20	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/18/19 15:20	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/18/19 15:20	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/18/19 15:20	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 200-144183/6 — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 144183

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
trans-1,2-Dichloroethene	0.79	U	0.79	0.29	ug/m3			06/18/19 15:20	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/18/19 15:20	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/18/19 15:20	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/18/19 15:20	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/18/19 15:20	1
Trichloroethene	1.1	U	1.1	0.16	ug/m3			06/18/19 15:20	1
Tetrachloroethene	1.4	U	1.4	0.20	ug/m3			06/18/19 15:20	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/18/19 15:20	1

Lab Sample ID: LCS 200-144183/4 — **Client Sample ID: Lab Control Sample**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 144183

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	8.91		ppb v/v		89	61 - 135
1,1-Dichloroethene	10.0	9.01		ppb v/v		90	68 - 120
trans-1,2-Dichloroethene	10.0	8.86		ppb v/v		89	69 - 137
1,1-Dichloroethane	10.0	8.47		ppb v/v		85	66 - 130
cis-1,2-Dichloroethene	10.0	9.48		ppb v/v		95	72 - 121
1,1,1-Trichloroethane	10.0	11.0		ppb v/v		110	72 - 127
1,2-Dichloroethane	10.0	9.09		ppb v/v		91	68 - 135
Trichloroethene	10.0	10.8		ppb v/v		108	73 - 122
Tetrachloroethene	10.0	11.5		ppb v/v		115	70 - 125
Chloroethane	10.0	9.00		ppb v/v		90	68 - 130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	26	22.8		ug/m3		89	61 - 135
1,1-Dichloroethene	40	35.7		ug/m3		90	68 - 120
trans-1,2-Dichloroethene	40	35.1		ug/m3		89	69 - 137
1,1-Dichloroethane	40	34.3		ug/m3		85	66 - 130
cis-1,2-Dichloroethene	40	37.6		ug/m3		95	72 - 121
1,1,1-Trichloroethane	55	59.9		ug/m3		110	72 - 127
1,2-Dichloroethane	40	36.8		ug/m3		91	68 - 135
Trichloroethene	54	57.9		ug/m3		108	73 - 122
Tetrachloroethene	68	77.9		ug/m3		115	70 - 125
Chloroethane	26	23.8		ug/m3		90	68 - 130

Lab Sample ID: MB 200-144244/5 — **Client Sample ID: Method Blank**
Matrix: Air — **Prep Type: Total/NA**
Analysis Batch: 144244

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.20	U	0.20	0.041	ppb v/v			06/19/19 15:57	1
1,1-Dichloroethene	0.20	U	0.20	0.034	ppb v/v			06/19/19 15:57	1
trans-1,2-Dichloroethene	0.20	U	0.20	0.074	ppb v/v			06/19/19 15:57	1
1,1-Dichloroethane	0.20	U	0.20	0.026	ppb v/v			06/19/19 15:57	1
cis-1,2-Dichloroethene	0.20	U	0.20	0.037	ppb v/v			06/19/19 15:57	1
1,1,1-Trichloroethane	0.20	U	0.20	0.068	ppb v/v			06/19/19 15:57	1
1,2-Dichloroethane	0.20	U	0.20	0.063	ppb v/v			06/19/19 15:57	1

Method: TO-15 - Volatile Organic Compounds in Ambient Air (Continued)

Lab Sample ID: MB 200-144244/5
Matrix: Air
Analysis Batch: 144244

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.20	U	0.20	0.030	ppb v/v			06/19/19 15:57	1
Tetrachloroethene	0.20	U	0.20	0.029	ppb v/v			06/19/19 15:57	1
Chloroethane	0.50	U	0.50	0.21	ppb v/v			06/19/19 15:57	1

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51	U	0.51	0.10	ug/m3			06/19/19 15:57	1
1,1-Dichloroethene	0.79	U	0.79	0.13	ug/m3			06/19/19 15:57	1
trans-1,2-Dichloroethene	0.79	U	0.79	0.29	ug/m3			06/19/19 15:57	1
1,1-Dichloroethane	0.81	U	0.81	0.11	ug/m3			06/19/19 15:57	1
cis-1,2-Dichloroethene	0.79	U	0.79	0.15	ug/m3			06/19/19 15:57	1
1,1,1-Trichloroethane	1.1	U	1.1	0.37	ug/m3			06/19/19 15:57	1
1,2-Dichloroethane	0.81	U	0.81	0.25	ug/m3			06/19/19 15:57	1
Trichloroethene	1.1	U	1.1	0.16	ug/m3			06/19/19 15:57	1
Tetrachloroethene	1.4	U	1.4	0.20	ug/m3			06/19/19 15:57	1
Chloroethane	1.3	U	1.3	0.55	ug/m3			06/19/19 15:57	1

Lab Sample ID: LCS 200-144244/3
Matrix: Air
Analysis Batch: 144244

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	10.0	7.84		ppb v/v		78	61 - 135
1,1-Dichloroethene	10.0	7.39		ppb v/v		74	68 - 120
trans-1,2-Dichloroethene	10.0	7.99		ppb v/v		80	69 - 137
1,1-Dichloroethane	10.0	7.34		ppb v/v		73	66 - 130
cis-1,2-Dichloroethene	10.0	7.74		ppb v/v		77	72 - 121
1,1,1-Trichloroethane	10.0	7.89		ppb v/v		79	72 - 127
1,2-Dichloroethane	10.0	7.67		ppb v/v		77	68 - 135
Trichloroethene	10.0	8.29		ppb v/v		83	73 - 122
Tetrachloroethene	10.0	8.87		ppb v/v		89	70 - 125
Chloroethane	10.0	8.57		ppb v/v		86	68 - 130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	26	20.0		ug/m3		78	61 - 135
1,1-Dichloroethene	40	29.3		ug/m3		74	68 - 120
trans-1,2-Dichloroethene	40	31.7		ug/m3		80	69 - 137
1,1-Dichloroethane	40	29.7		ug/m3		73	66 - 130
cis-1,2-Dichloroethene	40	30.7		ug/m3		77	72 - 121
1,1,1-Trichloroethane	55	43.1		ug/m3		79	72 - 127
1,2-Dichloroethane	40	31.0		ug/m3		77	68 - 135
Trichloroethene	54	44.5		ug/m3		83	73 - 122
Tetrachloroethene	68	60.1		ug/m3		89	70 - 125
Chloroethane	26	22.6		ug/m3		86	68 - 130

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Air - GC/MS VOA

Analysis Batch: 144104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-49181-2	GS00691	Total/NA	Air	TO-15	
200-49181-3	GS00692	Total/NA	Air	TO-15	
200-49181-4	GS00694	Total/NA	Air	TO-15	
200-49181-5	GS00695	Total/NA	Air	TO-15	
200-49181-6	GS00696	Total/NA	Air	TO-15	
200-49181-7	GS00697	Total/NA	Air	TO-15	
200-49181-8	GS00698	Total/NA	Air	TO-15	
200-49181-9	GS00712	Total/NA	Air	TO-15	
200-49181-11	GS00713	Total/NA	Air	TO-15	
200-49181-15	GS00717	Total/NA	Air	TO-15	
MB 200-144104/4	Method Blank	Total/NA	Air	TO-15	
LCS 200-144104/3	Lab Control Sample	Total/NA	Air	TO-15	
200-49181-1 DU	GS00693	Total/NA	Air	TO-15	

Analysis Batch: 144183

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-49181-10	061219	Total/NA	Air	TO-15	
200-49181-12	GS00714	Total/NA	Air	TO-15	
200-49181-13	GS00715	Total/NA	Air	TO-15	
200-49181-14	GS00716	Total/NA	Air	TO-15	
MB 200-144183/6	Method Blank	Total/NA	Air	TO-15	
LCS 200-144183/4	Lab Control Sample	Total/NA	Air	TO-15	

Analysis Batch: 144244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
200-49181-1	GS00693	Total/NA	Air	TO-15	
MB 200-144244/5	Method Blank	Total/NA	Air	TO-15	
LCS 200-144244/3	Lab Control Sample	Total/NA	Air	TO-15	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00693 — Lab Sample ID: 200-49181-1

Date Collected: 06/12/19 09:25
Date Received: 06/13/19 10:25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144244	06/20/19 07:08	A1B	TAL BUR

Client Sample ID: GS00691 — Lab Sample ID: 200-49181-2

Date Collected: 06/12/19 09:22
Date Received: 06/13/19 10:25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144104	06/15/19 15:11	GGG	TAL BUR

Client Sample ID: GS00692 — Lab Sample ID: 200-49181-3

Date Collected: 06/12/19 09:49
Date Received: 06/13/19 10:25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144104	06/15/19 17:42	GGG	TAL BUR

Client Sample ID: GS00694 — Lab Sample ID: 200-49181-4

Date Collected: 06/12/19 09:49
Date Received: 06/13/19 10:25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144104	06/15/19 18:33	GGG	TAL BUR

Client Sample ID: GS00695 — Lab Sample ID: 200-49181-5

Date Collected: 06/12/19 09:50
Date Received: 06/13/19 10:25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144104	06/15/19 19:23	GGG	TAL BUR

Client Sample ID: GS00696 — Lab Sample ID: 200-49181-6

Date Collected: 06/12/19 09:52
Date Received: 06/13/19 10:25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144104	06/15/19 20:14	GGG	TAL BUR

Client Sample ID: GS00697 — Lab Sample ID: 200-49181-7

Date Collected: 06/12/19 09:53
Date Received: 06/13/19 10:25
Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144104	06/15/19 21:04	GGG	TAL BUR

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00698 — Lab Sample ID: 200-49181-8

Date Collected: 06/12/19 09:52 — **Matrix: Air**
Date Received: 06/13/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1	144104	06/15/19 21:55	GGG	TAL BUR

Client Sample ID: GS00712 — Lab Sample ID: 200-49181-9

Date Collected: 06/12/19 10:36 — **Matrix: Air**
Date Received: 06/13/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		1500	144104	06/15/19 23:36	GGG	TAL BUR

Client Sample ID: 061219 — Lab Sample ID: 200-49181-10

Date Collected: 06/12/19 10:42 — **Matrix: Air**
Date Received: 06/13/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		994.9	144183	06/18/19 16:10	GGG	TAL BUR

Client Sample ID: GS00713 — Lab Sample ID: 200-49181-11

Date Collected: 06/12/19 11:00 — **Matrix: Air**
Date Received: 06/13/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		10	144104	06/15/19 22:46	GGG	TAL BUR

Client Sample ID: GS00714 — Lab Sample ID: 200-49181-12

Date Collected: 06/12/19 11:02 — **Matrix: Air**
Date Received: 06/13/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		44.9	144183	06/18/19 17:01	GGG	TAL BUR

Client Sample ID: GS00715 — Lab Sample ID: 200-49181-13

Date Collected: 06/12/19 11:18 — **Matrix: Air**
Date Received: 06/13/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		25	144183	06/18/19 17:51	GGG	TAL BUR

Client Sample ID: GS00716 — Lab Sample ID: 200-49181-14

Date Collected: 06/12/19 11:35 — **Matrix: Air**
Date Received: 06/13/19 10:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		2500	144183	06/18/19 18:41	GGG	TAL BUR

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Client Sample ID: GS00717

Date Collected: 06/12/19 12:46
Date Received: 06/13/19 10:25

Lab Sample ID: 200-49181-15

Matrix: Air

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	TO-15		200	144104	06/16/19 03:49	GGG	TAL BUR

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Laboratory: Eurofins TestAmerica, Burlington

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	050-999-436	12-31-19

Method Summary

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Method	Method Description	Protocol	Laboratory
TO-15	Volatile Organic Compounds in Ambient Air	EPA	TAL BUR

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL BUR = Eurofins TestAmerica, Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Minnesota Air

Job ID: 200-49181-1
SDG: 200-49181-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
200-49181-1	GS00693	Air	06/12/19 09:25	06/13/19 10:25	Air Canister (6-Liter) #4566
200-49181-2	GS00691	Air	06/12/19 09:22	06/13/19 10:25	Air Canister (6-Liter) #5077
200-49181-3	GS00692	Air	06/12/19 09:49	06/13/19 10:25	Air Canister (6-Liter) #5449
200-49181-4	GS00694	Air	06/12/19 09:49	06/13/19 10:25	Air Canister (6-Liter) #4814
200-49181-5	GS00695	Air	06/12/19 09:50	06/13/19 10:25	Air Canister (6-Liter) #5420
200-49181-6	GS00696	Air	06/12/19 09:52	06/13/19 10:25	Air Canister (6-Liter) #3414
200-49181-7	GS00697	Air	06/12/19 09:53	06/13/19 10:25	Air Canister (6-Liter) #2885
200-49181-8	GS00698	Air	06/12/19 09:52	06/13/19 10:25	Air Canister (6-Liter) #5158
200-49181-9	GS00712	Air	06/12/19 10:36	06/13/19 10:25	Air Canister (1-Liter) #5891
200-49181-10	061219	Air	06/12/19 10:42	06/13/19 10:25	Air Canister (1-Liter) #4850
200-49181-11	GS00713	Air	06/12/19 11:00	06/13/19 10:25	Air Canister (1-Liter) #4854
200-49181-12	GS00714	Air	06/12/19 11:02	06/13/19 10:25	Air Canister (1-Liter) #4958
200-49181-13	GS00715	Air	06/12/19 11:18	06/13/19 10:25	Air Canister (1-Liter) #3810
200-49181-14	GS00716	Air	06/12/19 11:35	06/13/19 10:25	Air Canister (1-Liter) #3598
200-49181-15	GS00717	Air	06/12/19 12:46	06/13/19 10:25	Air Canister (1-Liter) #6415

TestAmerica Minneapolis SC
213

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403-6809
phone 802.660.1990 fax 802.660.1919

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

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TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Information			
Company Name: WENCK	Client Project Manager: CHRIS PRASCH	Samples Collected By: Kelly Jaworski (KJJ)	COC No: 1 of 2 COCs
Address: 1102 WOODLANE DRIVE	Phone: SHANE WATERMAN		
City/State/Zip: WOODBURY MN 55125	Email:		
Phone:	Site Contact:		For Lab Use Only:
FAX:	Tel/Fax		Walk-in Client:
Project Name: WATER GREMLIN	Analysis Turnaround Time		Lab Sampling:
Site/Location: WHITE BEAR LAKE MN	Standard (Specific): 5 DAY		Job / SDG No.:
P O # 26016-0016	Rush (Specifiy):		(See below for Add'l Items)

Sample Identification	Sample Start Date	Time Start	Sample End Date	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)	TO-15 SIM	EPA 3C	EPA 25C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Sample Type	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
GS00693	6/11	10:48	9:25	6/12	-30	-5	2940	4566							X								AA-2
GS00691	6/11	10:52	6/12	9:22	-30	-4	4506	5077							X								AA-1
GS00692	6/11	11:11	6/12	9:49	-26	-6.5	5449	3859							X								AA-3
GS00694	6/11	11:14	6/12	9:49	-35	-5.5	3977	4814							X								AA-4
GS00695	6/11	11:16	6/12	9:50	-30	-5	3174	5420							X								AA-5
GS00696	6/11	11:19	6/12	952	-29	-3	5207	3414							X								AA-6
GS00697	6/11	11:21	6/12	953	-30	-9	3701	2885							X								AA-7
GS00698	6/11	11:22	6/12	952	-28	-5	3127	5158							X								AA-8
GS00712	6/12	1031	6/12	1036	-26	-2	6366	5891							X								SS-10
061219	6/12	1037	6/12	1042	-28	-3	4675	4850							X								

Temperature (Fahrenheit)			
Start	Interior	Ambient	
Stop			

Pressure (inches of Hg)			
Start	Interior	Ambient	
Stop			

Special Instructions/QC Requirements & Comments:
TO-15 Modified List

Samples Shipped by: Kelly Jaworski	Date / Time: 06/12/2019 13:40	Samples Received by: [signature]	6-12-19 1340
Samples Relinquished by: [signature]	Date / Time: 6-12-19 1700	Received by: [signature] TABard	6/13/19 10:25
Relinquished by:	Date / Time:	Received by:	
Lab Use Only: Shipper Name:	Opened by:	Condition:	

200-49181 COC

Form No. CA-C-WI-003, Rev. 2.13, dated 4/10/2019

TestAmerica Minneapolis SC
213

Eurofins TestAmerica, Burlington
30 Community Drive
Suite 11
South Burlington, VT 05403-6809
phone 802.660.1990 fax 802.660.1919

Canister Samples Chain of Custody Record

TestAmerica Laboratories, Inc. assumes no liability with respect to the collection and shipment of these samples.

eurofins | Environment Testing TestAmerica

TestAmerica Laboratories, Inc. d/b/a Eurofins TestAmerica

Client Contact Information		Client Project Manager: Chris Bratsch	Samples Collected By: Kelly Jaworski (KJJ)	COC No:
Company Name: WENCK		Phone: Shane Waterman		2 of 2 COCs
Address: 1802 Wooddale Drive		Email:		
City/State/Zip Woodbury/MN/55125				For Lab Use Only:
Phone:		Site Contact:		Walk-in Client:
FAX:		Tel/Fax		Lab Sampling:
Project Name: Water Gremlin		Analysis Turnaround Time		
Site/Location: White Bear Lake, MN		Standard (Specific): 5 Day		Job / SDG No.:
P O # 2606-0016		Rush (Specifiy):		(See below for Add'l Items)

Sample Identification	Sample Start Date	Time Start	Sample End Date	Time Stop	Canister Vacuum in Field, "Hg (Start)	Canister Vacuum in Field, "Hg (Stop)	Flow Controller ID	Canister ID	TO-14/15 (Standard / Low Level)	TO-15 SIM	EPA 3C	EPA 25C	ASTM D-1946	EPA 15/16	Other (Please specify in notes section)	Sample Type	Indoor Air/Ambient Air	Sub-Slab	Soil Gas	Soil Vapor Extraction (SVE)	Landfill Gas	Other (Please specify in notes section)	Sample Specific Notes:
GS00713	6/12	10:54	6/12	11:00	-30	-3	5960	4854							X								SS-21
GS00714	6/12	10:57	6/12	11:02	-30	-2	6370	4958							X								SS-23
GS00715	6/12	11:11	6/12	11:18	-28	-4	5339	3810							X								SS-22
GS00716	6/12	11:27	6/12	11:35	-30	-3	5952	3598							X								SS-24
GS00717	6/12	1237	6/12	1246	-25	-3	5597	6415							X								SS-25

Temperature (Fahrenheit)			
Start	Interior	Ambient	
Stop			

Pressure (inches of Hg)			
Start	Interior	Ambient	
Stop			

Special Instructions/QC Requirements & Comments:
TO-15 - Modified List

Samples Shipped by: Kelly Jaworski	Date / Time: 06/12/2019 1340	Samples Received by: [signature] 06-12-19 1340	
Samples Relinquished by: [signature]	Date / Time: 6-12-19 1700	Received by: [signature] TA Bwl 6/13/19 10:25	
Relinquished by:	Date / Time:	Received by:	

Lab Use Only: Shipper Name: Opened by: Condition:

Form No. CA-C-WI-003, Rev. 2.13, dated 4/10/2019

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RIT2 EXP 12/19

RIGIN ID:GPZA (111) 111-1111
AMPLE RECEIVING
ESTAMERICA
600 WEST 27TH STREET
UITE 209
INNEAPOLIS, MN 55426
NITED STATES US

SHIP DATE: 12JUN19
ACTWGT: 26.05 LB
CAD: 399920/CAFE3211

BILL RECIPIENT

551C1/D210/104C

SAMPLE RECEIVING
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE

BURLINGTON VT 05403

(802) 660-1990 REF:
INV:
PO: DEPT:

FedEx Express

E

J181118060501uv

THU - 13 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 0201 4114 9906 4749

NC BTVA

05403
VT-US BTV

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RIT2 EXP 12/19

ORIGIN ID:GPZA (111) 111-1111
SAMPLE RECEIVING
TESTAMERICA
7600 WEST 27TH STREET
SUITE 209
MINNEAPOLIS, MN 55426
UNITED STATES US

SHIP DATE: 12JUN19
ACTWGT: 40.15 LB
CAD: 399920/CAFE3211

BILL RECIPIENT

551C1/D210/104C

TO SAMPLE RECEIVING
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE

BURLINGTON VT 05403

(802) 660-1990 REF:
INV:
PO: DEPT:

FedEx Express

E

J181118060501uv

THU - 13 JUN 10:30A
PRIORITY OVERNIGHT

TRK# 0201 4114 9906 4760

NC BTVA

05403
VT-US BTV

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RIT2 EXP 12/19

ORIGIN ID:GPZA (111) 111-1111
SAMPLE RECEIVING
TESTAMERICA
7600 WEST 27TH STREET
SUITE 209
MINNEAPOLIS, MN 55426
UNITED STATES US

SHIP DATE: 12JUN19
ACTWGT: 40.15 LB
CAD: 399920/CAFE3211

BILL RECIPIENT

TO SAMPLE RECEIVING
TESTAMERICA BURLINGTON
30 COMMUNITY DRIVE

BURLINGTON VT 05403

(802) 660-1990 REF:
INV:
PO: DEPT:

551C1/D210/104C

FedEx Express

E

J181118060501uv

TRK# 0201 4114 9906 4750

THU - 13 JUN 10:30A
PRIORITY OVERNIGHT

NC BTVA

05403
VT-US BTV

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 200-49181-1
SDG Number: 200-49181-1

Login Number: 49181
List Number: 1
Creator: Lavigne, Scott M

List Source: Eurofins TestAmerica, Burlington

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	169537,536,539
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	Thermal preservation not required.
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	N/A	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	N/A	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician	Can Size	Certification Type:
Bottom Rack	0	25	5/20/2019	1646	20	20	TM	6 liter	batch

Port	Can ID	Initial[1] (psia)	Final (psia)	Diff.[3]	Final ("Hg)	Initial Reading Gauge:	Date:	Time:	Tech:	Temp:	Final Reading Gauge:	Date:	Time:	Tech:	Temp:
1	5094	.02	.02	.00	29.9	G26	5/21/19	1415	SL	21.0	G26	6/7/19	1044	SCH	21
2	2885	↓	.02	.00	↓	G26	↓	↓	↓	↓	G26	↓	↓	↓	21
3	6310	.02	.02	.00	30.1	G26	~~6/7~~ 6/7/19	1044	SCH	21	G26	6/10/19	1544	SCH	21
4	5420	.02	.02	.00	29.9	G26	5/21/19 SH	1415	SL	21.0	G26	6/7/19	1044	SCH	21
5	5077					G26					G26				
6	4814		↓	↓		G26					G26				
7	5158		.13	.11		G26					G26				
8	3230		.02	.00		G26					G26				
9	3414					G26					G26				
10	4277					G26					G26				
11	4566					G26					G26				
12	5449	↓	↓	↓	↓	G26	↓	↓	↓	↓	G26	↓	↓	↓	↓

[1] Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

[3] Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister **PM Authorization** **Date:**

Clean Canister Certification Analysis & Authorization of Release to Inventory

Test Method: ☐ TO15 Routine ☐ TO15 LL

Can ID	Date	Sequence	Analyst	Inventory Level 1	2	3	4	Secondary Review Limited	Review Date	Reviewer
6310	6/5/19	36207	BK		XXX				6/6/19	EKT

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Dup Tees/Vac gauges (enter IDs if included):

Comments:

200-48844-A-3
6310
Location: Air-Storage
Bottle: Summa Canister 6L
Sampled 5/20/2019 12:00 AM
200-1285923

Loc: 200
48844
#3
A

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician	Can Size	Certification Type:
Oven 1/2	5000	200	5/28/2019	1200	20	20	SML	6 liter 5/29/19	batch

Port	Can ID	Initial[1] (psia)	Final (psia)	Diff.[3]	Final ("Hg)	Initial Reading Gauge:	Initial Reading Date:	Initial Reading Time:	Initial Reading Tech:	Initial Reading Temp:	Final Reading Gauge:	Final Reading Date:	Final Reading Time:	Final Reading Tech:	Final Reading Temp:
1	3598	.04	.04	.00	29.9	G26	5/29/19	1300	SML	20.0	G26	6/7/19	1130	SCH	21
2	4962		-.04	.00		G26					G26				
3	8499		.12	.08		G26					G26				
4	3814		.18	.14		G26					G26				
5	3579	.04	0.11	.07	29.8	G26	6/7/19	1155	SCH	21	G26	6/11/19	1704	SCH	21
6	5891	.04	.04	.00	29.9	G26	5/29/19	1300	SML	20.0	G26	6/7/19	1130	SCH	21
7	4485		.17	.13		G26					G26				
8	4958		.04	.00		G26					G26				
9	6281		.04	.00		G26					G26				
10	3722		.04	.00		G26					G26				
11	5912		.04	.00		G26					G26				
12	6363		.04	.00		G26					G26				

[1] Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

[3] Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister **PM Authorization** **Date:**

Clean Canister Certification Analysis & Authorization of Release to Inventory

Test Method: ☐TO15 Routine ☐ TO15 LL

Can ID	Date	Sequence	Analyst	Inventory Level 1	Inventory Level 2	Inventory Level 3	Inventory Level 4	Secondary Review Limited	Secondary Review Review Date	Secondary Review Reviewer
3579	6/6/19	36230	BK			XXXX			6/7/19	EKF

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Dup Tees/Vac gauges (enter IDs if included):

Comments:

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

200-48938-A-5
3579
Location: Air-Storage
Bottle: Summa Canister 1L
Sampled: 5/28/2019 12:00 AM 200-1288102

Loc: 200
48938
#5
A

Pre-Shipment Clean Canister Certification Report

Canister Cleaning & Pre-Shipment Leak Test

System ID	Max DF#	# Cycles	Cleaning Start Date/Time		System Start Temp(s):		Technician	Can Size	Certification Type:
Oven 1/2	80	25	6/5/2019	16:44	21	21	SCH	1 liter	batch

Port	Can ID	Initial[1] (psia)	Final (psia)	Diff.[3]	Final ("Hg)	Initial Reading Gauge:	Date:	Time:	Tech:	Temp:	Final Reading Gauge:	Date:	Time:	Tech:	Temp:
1	6423	.02	.24	.22	29.9	G26	6/6/19	10:41	SCH	21	G26	6/7/19	1126	SCH	21
2	6413		.05	.03		G26					G26				
3	3810		.25	.23		G26					G26				
4	4854		.27	.25		G26					G26				
5	6283	.02	.17	.15	29.8	G26	6/7/19	1202	SCH	21	G26	6/11/19	1705	SCH	21
6	6415	.02	.02	.00	29.9	G26	6/6/19	10:41	SCH	21	G26	6/7/19	1126	SCH	21
7	6298		.11	.09		G26					G26				
8	4662		.02	.00		G26					G26				
9	4953		.04	.02		G26					G26				
10	3599		.05	.03		G26					G26				
11	6453		.03	.01		G26					G26				
12	6279		.02	.00		G26					G26				

[1] Batch Certification: The reading is taken on the "batch" canister and this value is used as the initial pressure for all canisters in the batch.

[3] Difference = Final Pressure - Initial Pressure . Acceptance Criteria: (1) The difference must be less than or equal to + 0.25psi. (2) Pressure readings must be at least 24 hours apart.

If time frame was not met, the PM must authorize shipment of canister **PM Authorization** **Date:**

Clean Canister Certification Analysis & Authorization of Release to Inventory

Test Method: ☑ TO15 Routine ☐ TO15 LL

Can ID	Date	Sequence	Analyst	Inventory Level 1	2	3	4	Secondary Review Limited	Review Date	Reviewer
6283	6/6/19	36230	BK		~~XXXX~~ SH 6/7/19	XXXX			6/7/19	EKT

Inventory Level 1: Individual Canister Certification (TO15LL 0.01).

Inventory Level 2: Individual or Batch Certification (TO15 0.04 ppbv).

Inventory Level 3: Individual or Batch Certification (TO15 0.2 ppbv).

Inventory Level Limited: Canisters may only be used for certain projects.

Comments:

☐ **Dup Tees/Vac gauges (enter IDs if included):**

Form ID: FAI023:12
Revision Date: 12/18/2018

TestAmerica Burlington

200-49051-A-5
6283
Location: Air-Storage
Bottle: Summa Canister 1L
Sampled: 6/5/2019 4:44 PM
200-1290186

Loc: 200
49051
#5
A

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48844-1

SDG No.:

Client Sample ID: 6310 Lab Sample ID: 200-48844-3

Matrix: Air Lab File ID: 36207-007.d

Analysis Method: TO-15 Date Collected: 05/20/2019 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 06/05/2019 21:02

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143786 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	1.0	U	1.0	1.0
75-71-8	Dichlorodifluoromethane	0.10	U	0.10	0.10
75-45-6	Freon 22	0.10	U	0.10	0.10
76-14-2	1,2-Dichlorotetrafluoroethane	0.040	U	0.040	0.040
74-87-3	Chloromethane	0.10	U	0.10	0.10
106-97-8	n-Butane	0.10	U	0.10	0.10
75-01-4	Vinyl chloride	0.040	U	0.040	0.040
106-99-0	1,3-Butadiene	0.040	U	0.040	0.040
74-83-9	Bromomethane	0.040	U	0.040	0.040
75-00-3	Chloroethane	0.10	U	0.10	0.10
593-60-2	Bromoethene(Vinyl Bromide)	0.040	U	0.040	0.040
75-69-4	Trichlorofluoromethane	0.040	U	0.040	0.040
64-17-5	Ethanol	1.0	U	1.0	1.0
76-13-1	Freon TF	0.040	U	0.040	0.040
75-35-4	1,1-Dichloroethene	0.040	U	0.040	0.040
67-64-1	Acetone	1.0	U	1.0	1.0
67-63-0	Isopropyl alcohol	1.0	U	1.0	1.0
75-15-0	Carbon disulfide	0.10	U	0.10	0.10
107-05-1	3-Chloropropene	0.10	U	0.10	0.10
75-09-2	Methylene Chloride	0.10	U	0.10	0.10
75-65-0	tert-Butyl alcohol	1.0	U	1.0	1.0
1634-04-4	Methyl tert-butyl ether	0.040	U	0.040	0.040
156-60-5	trans-1,2-Dichloroethene	0.040	U	0.040	0.040
110-54-3	n-Hexane	0.040	U	0.040	0.040
75-34-3	1,1-Dichloroethane	0.040	U	0.040	0.040
108-05-4	Vinyl acetate	1.0	U	1.0	1.0
141-78-6	Ethyl acetate	1.0	U	1.0	1.0
78-93-3	Methyl Ethyl Ketone	0.10	U	0.10	0.10
156-59-2	cis-1,2-Dichloroethene	0.040	U	0.040	0.040
540-59-0	1,2-Dichloroethene, Total	0.080	U	0.080	0.080
67-66-3	Chloroform	0.040	U	0.040	0.040
109-99-9	Tetrahydrofuran	1.0	U	1.0	1.0
71-55-6	1,1,1-Trichloroethane	0.040	U	0.040	0.040
110-82-7	Cyclohexane	0.040	U	0.040	0.040
56-23-5	Carbon tetrachloride	0.040	U	0.040	0.040
540-84-1	2,2,4-Trimethylpentane	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48844-1

SDG No.:

Client Sample ID: 6310 Lab Sample ID: 200-48844-3

Matrix: Air Lab File ID: 36207-007.d

Analysis Method: TO-15 Date Collected: 05/20/2019 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 06/05/2019 21:02

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143786 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.040	U	0.040	0.040
107-06-2	1,2-Dichloroethane	0.040	U	0.040	0.040
142-82-5	n-Heptane	0.040	U	0.040	0.040
79-01-6	Trichloroethene	0.040	U	0.040	0.040
80-62-6	Methyl methacrylate	0.10	U	0.10	0.10
78-87-5	1,2-Dichloropropane	0.040	U	0.040	0.040
123-91-1	1,4-Dioxane	1.0	U	1.0	1.0
75-27-4	Bromodichloromethane	0.040	U	0.040	0.040
10061-01-5	cis-1,3-Dichloropropene	0.040	U	0.040	0.040
108-10-1	methyl isobutyl ketone	0.10	U	0.10	0.10
108-88-3	Toluene	0.040	U	0.040	0.040
10061-02-6	trans-1,3-Dichloropropene	0.040	U	0.040	0.040
79-00-5	1,1,2-Trichloroethane	0.040	U	0.040	0.040
127-18-4	Tetrachloroethene	0.040	U	0.040	0.040
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.10	U	0.10	0.10
124-48-1	Dibromochloromethane	0.040	U	0.040	0.040
106-93-4	1,2-Dibromoethane	0.040	U	0.040	0.040
108-90-7	Chlorobenzene	0.040	U	0.040	0.040
100-41-4	Ethylbenzene	0.040	U	0.040	0.040
179601-23-1	m,p-Xylene	0.10	U	0.10	0.10
95-47-6	Xylene, o-	0.040	U	0.040	0.040
1330-20-7	Xylene (total)	0.14	U	0.14	0.14
100-42-5	Styrene	0.040	U	0.040	0.040
75-25-2	Bromoform	0.040	U	0.040	0.040
98-82-8	Cumene	0.040	U	0.040	0.040
79-34-5	1,1,2,2-Tetrachloroethane	0.040	U	0.040	0.040
103-65-1	n-Propylbenzene	0.040	U	0.040	0.040
622-96-8	4-Ethyltoluene	0.040	U	0.040	0.040
108-67-8	1,3,5-Trimethylbenzene	0.040	U	0.040	0.040
95-49-8	2-Chlorotoluene	0.040	U	0.040	0.040
98-06-6	tert-Butylbenzene	0.040	U	0.040	0.040
95-63-6	1,2,4-Trimethylbenzene	0.040	U	0.040	0.040
135-98-8	sec-Butylbenzene	0.040	U	0.040	0.040
99-87-6	4-Isopropyltoluene	0.040	U	0.040	0.040
541-73-1	1,3-Dichlorobenzene	0.040	U	0.040	0.040
106-46-7	1,4-Dichlorobenzene	0.040	U	0.040	0.040

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48844-1

SDG No.:

Client Sample ID: 6310 Lab Sample ID: 200-48844-3

Matrix: Air Lab File ID: 36207-007.d

Analysis Method: TO-15 Date Collected: 05/20/2019 00:00

Sample wt/vol: 1000(mL) Date Analyzed: 06/05/2019 21:02

Soil Aliquot Vol: Dilution Factor: 0.2

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143786 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.040	U	0.040	0.040
104-51-8	n-Butylbenzene	0.040	U	0.040	0.040
95-50-1	1,2-Dichlorobenzene	0.040	U	0.040	0.040
120-82-1	1,2,4-Trichlorobenzene	0.10	U	0.10	0.10
87-68-3	Hexachlorobutadiene	0.040	U	0.040	0.040
91-20-3	Naphthalene	0.10	U	0.10	0.10

Eurofins TestAmerica, Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d
Lims ID: 200-48844-A-3
Client ID: 6310
Sample Type: Client
Inject. Date: 05-Jun-2019 21:02:30 ALS Bottle#: 6 Worklist Smp#: 7
Purge Vol: 200.000 mL Dil. Factor: 0.2000
Sample Info: 200-0036207-007
Misc. Info.: 48844-3
Operator ID: ert Instrument ID: CHW.i

Method: \\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\TO15_MasterMethod_(v1).m
Limit Group: AI_TO15_ICAL
Last Update: 06-Jun-2019 13:40:44 Calib Date: 30-Apr-2019 01:52:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Burlington\ChromData\CHW.i\20190429-35688.b\35688-012.d

Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
Process Host: CTX0316

First Level Reviewer: puangmaleek Date: 06-Jun-2019 13:40:44

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		2.901				ND	U
2 Dichlorodifluoromethane	85	2.997	2.976	0.021	98	5132	0.0593	
3 Chlorodifluoromethane	51	3.030	3.008	0.022	91	2021	0.0642	
4 1,2-Dichloro-1,1,2,2-tetra	85		3.244				ND	
5 Chloromethane	50	3.345	3.324	0.021	95	2533	0.1839	
6 Vinyl chloride	62		3.564				ND	U
7 Butane	43	3.591	3.570	0.021	96	5756	0.2903	
21 Butadiene	54		3.655				ND	U
8 Bromomethane	94		4.244				ND	
9 Chloroethane	64		4.495				ND	
11 Vinyl bromide	106		4.897				ND	
12 Trichlorofluoromethane	101		5.068				ND	
14 Ethanol	45	5.581	5.549	0.032	95	6532	1.39	
17 1,1-Dichloroethene	96		6.239				ND	
19 1,1,2-Trichloro-1,2,2-trif	101		6.298				ND	U
20 Acetone	43	6.389	6.373	0.016	98	54096	2.28	
22 Carbon disulfide	76		6.667				ND	U
23 Isopropyl alcohol	45	6.785	6.758	0.027	92	9121	0.4224	
25 3-Chloro-1-propene	41		7.074				ND	U
26 Methylene Chloride	49	7.357	7.357	0.000	78	6132	0.3342	
27 2-Methyl-2-propanol	59		7.662				ND	
29 trans-1,2-Dichloroethene	61		7.941				ND	
30 Methyl tert-butyl ether	73		7.957				ND	
32 Hexane	57	8.534	8.536	-0.011	41	2292	0.0990	
33 1,1-Dichloroethane	63		8.861				ND	
34 Vinyl acetate	43		8.909				ND	
36 cis-1,2-Dichloroethene	96		10.048				ND	
35 2-Butanone (MEK)	72		10.054				ND	
37 Ethyl acetate	88		10.161				ND	
S 38 1,2-Dichloroethene, Total	61		10.200				ND	
* 39 Chlorobromomethane	128	10.541	10.546	-0.005	76	284596	10.0	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
40 Tetrahydrofuran	42		10.578				ND	
41 Chloroform	83		10.781				ND	
42 1,1,1-Trichloroethane	97		11.108				ND	
43 Cyclohexane	84		11.252				ND	
44 Carbon tetrachloride	117		11.434				ND	U
45 Benzene	78		11.873				ND	MU
46 1,2-Dichloroethane	62		11.996				ND	
47 Isooctane	57		12.145				ND	
48 n-Heptane	43	12.536	12.536	0.000	76	1335	0.0452	
* 49 1,4-Difluorobenzene	114	12.798	12.798	0.000	93	1396636	10.0	
51 Trichloroethene	95		13.274				ND	
53 1,2-Dichloropropane	63		13.809				ND	
54 Methyl methacrylate	69		13.943				ND	
55 1,4-Dioxane	88		13.954				ND	
56 Dibromomethane	174		13.980				ND	U
57 Dichlorobromomethane	83		14.349				ND	
60 cis-1,3-Dichloropropene	75		15.243				ND	
61 4-Methyl-2-pentanone (MIBK	43		15.542				ND	
62 Toluene	92	15.922	15.922	0.000	91	2682	0.0356	M
64 trans-1,3-Dichloropropene	75		16.398				ND	U
65 1,1,2-Trichloroethane	83		16.800				ND	
66 Tetrachloroethene	166		16.971				ND	U
67 2-Hexanone	43		17.238				ND	U
68 Chlorodibromomethane	129		17.565				ND	U
69 Ethylene Dibromide	107	17.811	17.811	0.000	1	974	0.0123	
* 70 Chlorobenzene-d5	117	18.758	18.758	0.000	84	1277102	10.0	
71 Chlorobenzene	112	18.822	18.816	0.006	83	1686	0.0128	
72 Ethylbenzene	91		19.025				ND	MU
74 m-Xylene & p-Xylene	106	19.298	19.298	-0.005	0	1230	0.0164	M
77 o-Xylene	106		20.095				ND	U
S 76 Xylenes, Total	106				0		0.0164	7
78 Styrene	104		20.133				ND	U
79 Bromoform	173		20.486				ND	
80 Isopropylbenzene	105		20.807				ND	U
81 1,1,2,2-Tetrachloroethane	83	21.347	21.347	0.000	75	1638	0.0178	
83 N-Propylbenzene	91	21.523	21.523	-0.011	95	2196	0.0099	7M
84 2-Chlorotoluene	91		21.679				ND	U
85 4-Ethyltoluene	105		21.732				ND	
86 1,3,5-Trimethylbenzene	105		21.828				ND	U
89 tert-Butylbenzene	119		22.315				ND	U
90 1,2,4-Trimethylbenzene	105	22.406	22.401	0.005	86	1751	0.009364	
91 sec-Butylbenzene	105		22.642				ND	U
92 1,3-Dichlorobenzene	146	22.807	22.813	-0.006	94	6031	0.0419	
93 4-Isopropyltoluene	119		22.856				ND	
94 1,4-Dichlorobenzene	146	22.957	22.957	0.000	93	6023	0.0451	
95 Benzyl chloride	91	23.107	23.107	0.000	98	5058	0.0440	
96 n-Butylbenzene	91	23.412	23.417	-0.005	85	2765	0.0150	
97 1,2-Dichlorobenzene	146	23.444	23.449	-0.005	94	6178	0.0406	
100 1,2,4-Trichlorobenzene	180	25.932	25.932	0.000	94	11308	0.1054	
101 Hexachlorobutadiene	225		26.183				ND	
102 Naphthalene	128	26.434	26.440	-0.006	98	13349	0.0637	

QC Flag Legend

Processing Flags

7 - Failed Limit of Detection

Review Flags

M - Manually Integrated

U - Marked Undetected

Reagents:

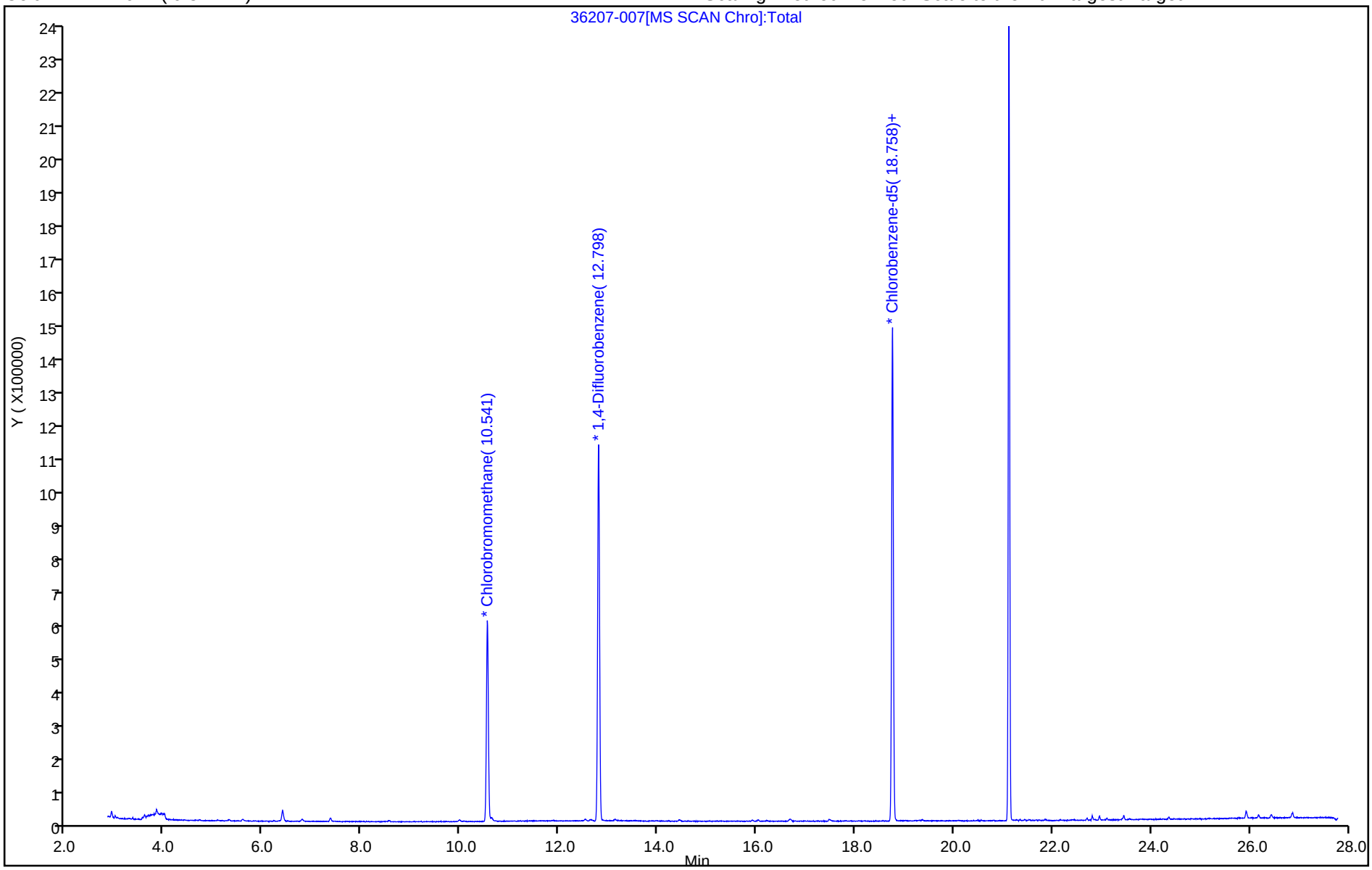
ATTO15WISs_00004	Amount Added: 20.00	Units: mL	Run Reagent

Report Date: 06-Jun-2019 13:40:44 Chrom Revision: 2.3 03-May-2019 15:52:00

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i	Operator ID:	ert
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3	Worklist Smp#:	7
Client ID:	6310				
Purge Vol:	200.000 mL	Dil. Factor:	0.2000	ALS Bottle#:	6
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		

Column: RTX-624 (0.32 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



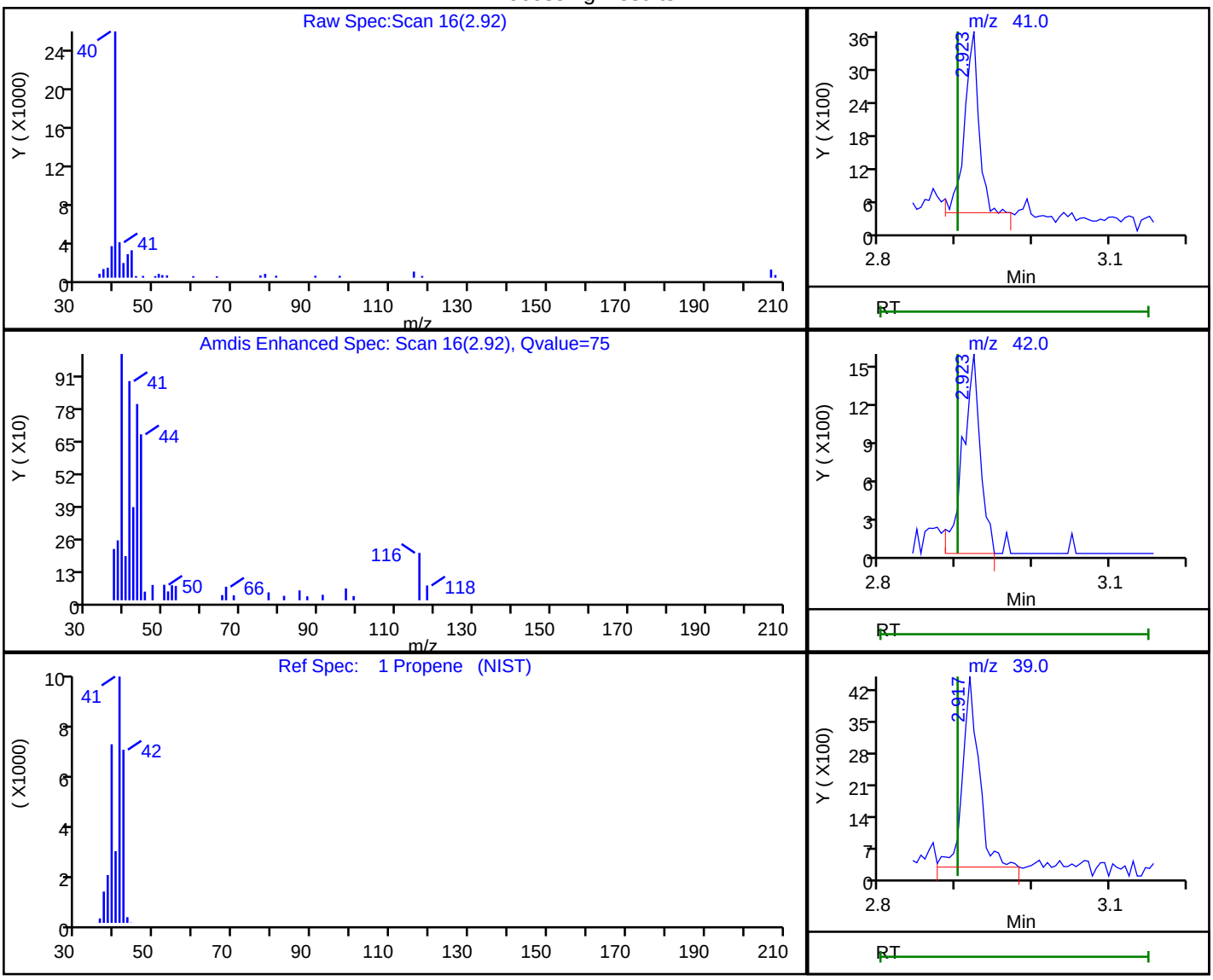
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

1 Propene, CAS: 115-07-1

Processing Results



RT	Mass	Response	Amount
2.92	41.00	4270	0.455188
2.92	42.00	2377	
2.92	39.00	6371	

Reviewer: puangmaleek, 06-Jun-2019 13:35:04

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

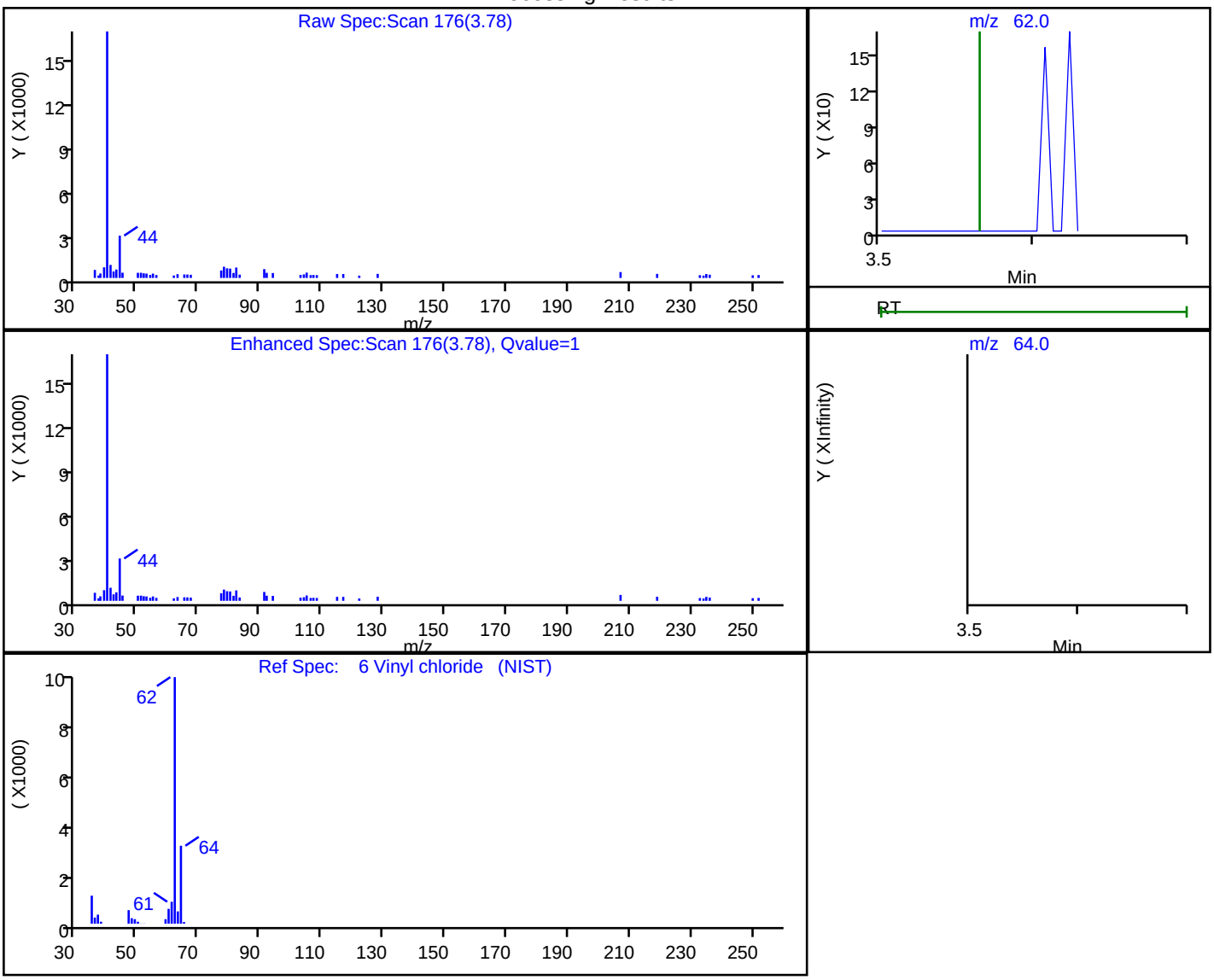
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

6 Vinyl chloride, CAS: 75-01-4

Processing Results



RT	Mass	Response	Amount
3.78	62.00	105	0.004749
3.57	64.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:35:14

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

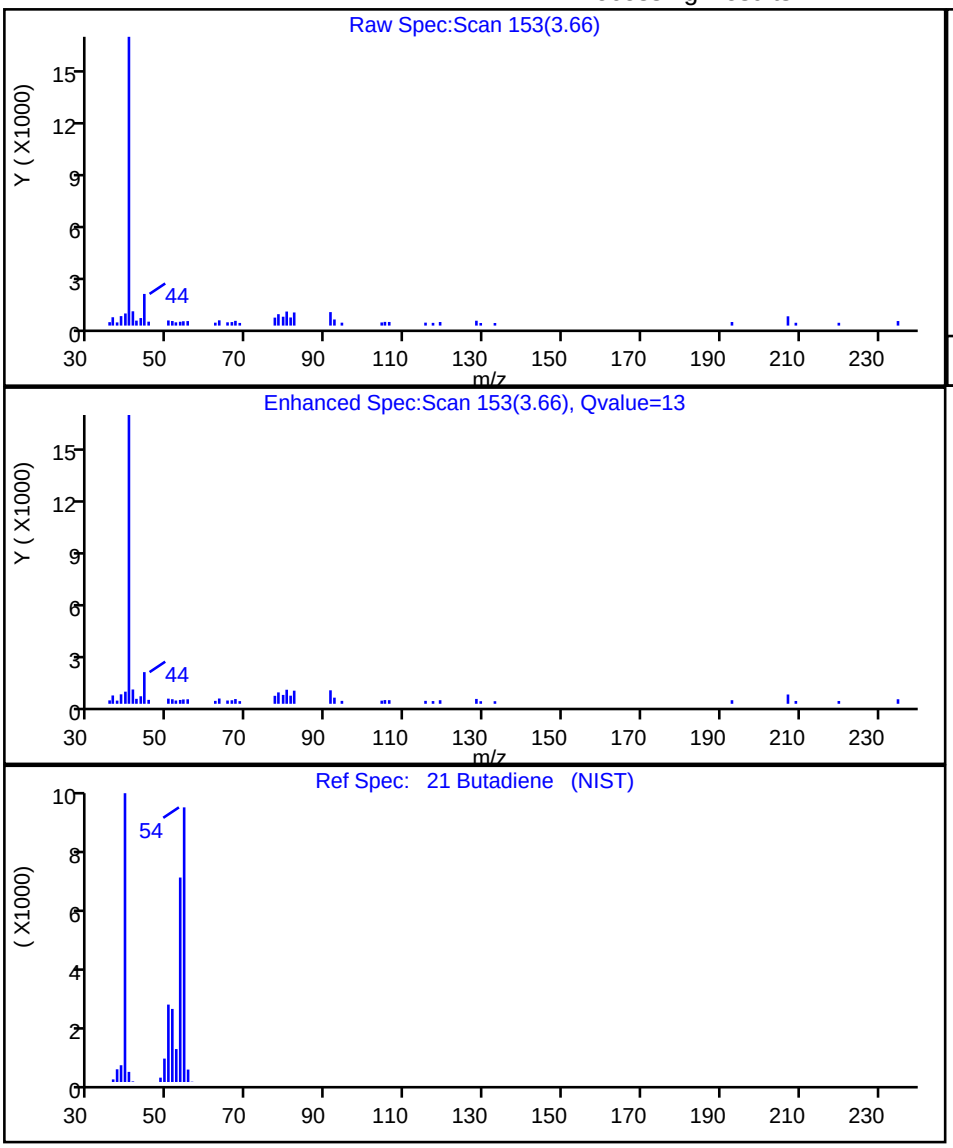
User Disabled Compound Report

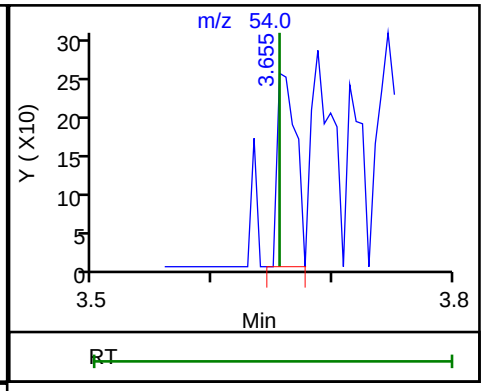
Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

21 Butadiene, CAS: 106-99-0

Processing Results





RT	Mass	Response	Amount
3.66	54.00	274	0.020331

Reviewer: puangmaleek, 06-Jun-2019 13:35:23

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

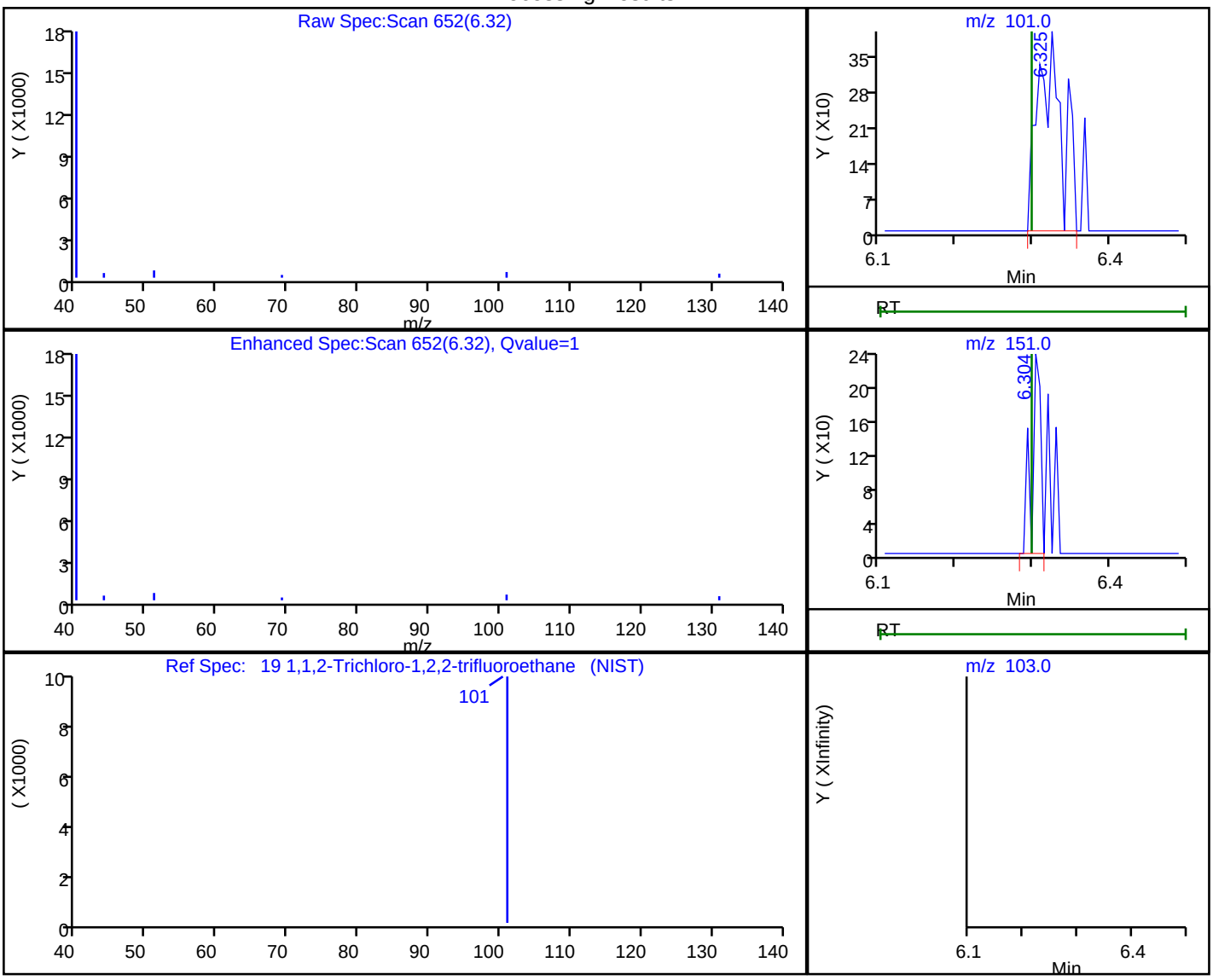
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

19 1,1,2-Trichloro-1,2,2-trifluoroethane, CAS: 76-13-1

Processing Results



RT	Mass	Response	Amount
6.32	101.00	875	0.012123
6.30	151.00	190	
6.30	103.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:35:30

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

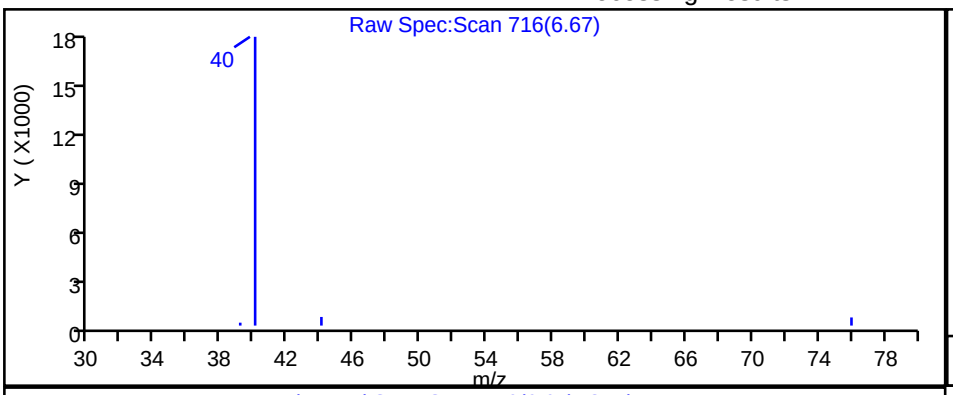
User Disabled Compound Report

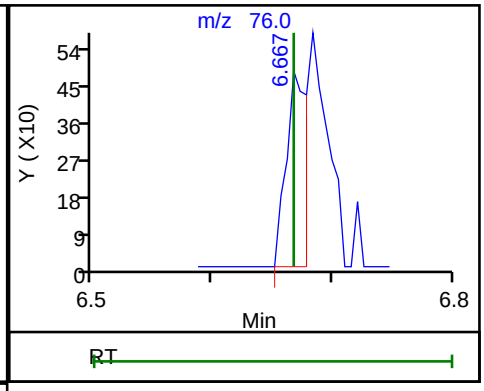
Eurofins TestAmerica, Burlington

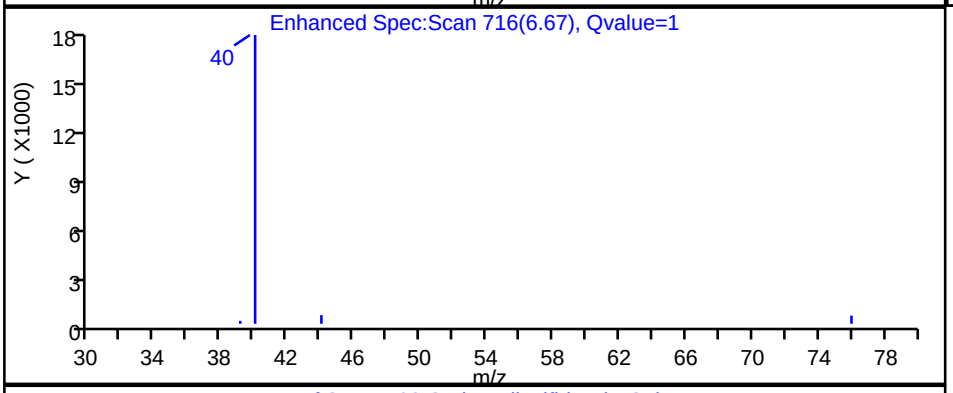
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

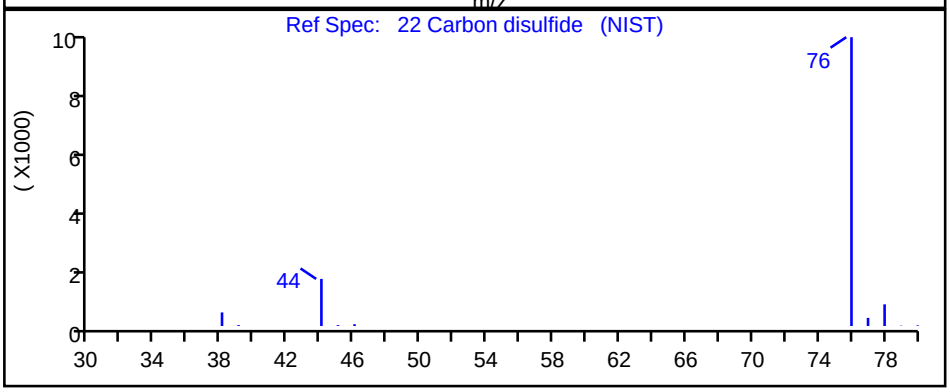
22 Carbon disulfide, CAS: 75-15-0

Processing Results









RT	Mass	Response	Amount
6.67	76.00	571	0.009379

Reviewer: puangmaleek, 06-Jun-2019 13:35:43

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

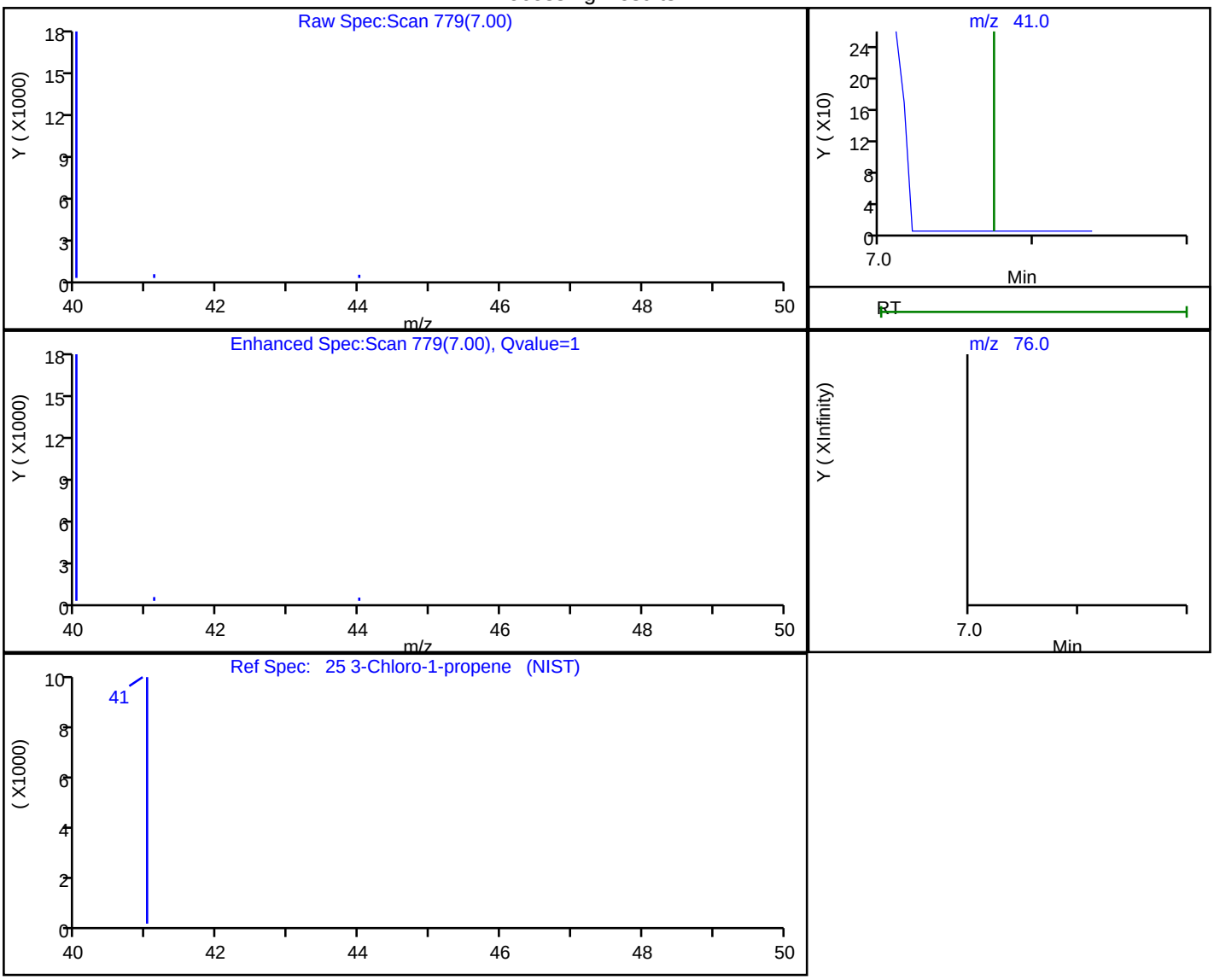
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

25 3-Chloro-1-propene, CAS: 107-05-1

Processing Results



RT	Mass	Response	Amount
7.00	41.00	222	0.016166
7.07	76.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:35:48

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

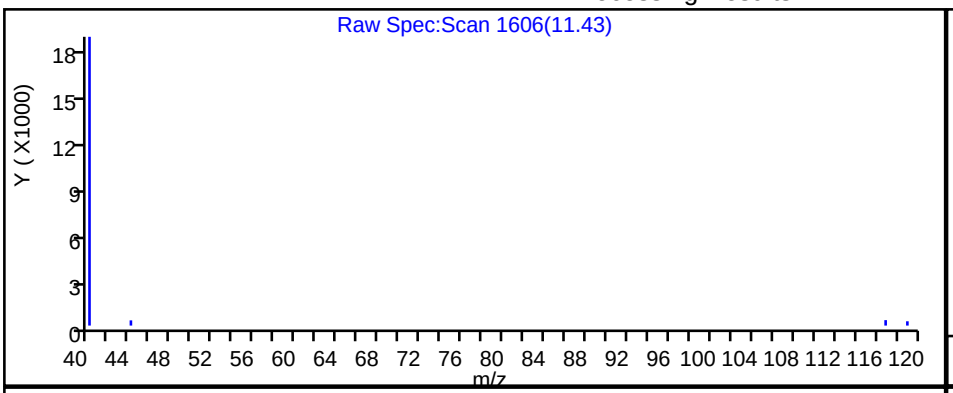
User Disabled Compound Report

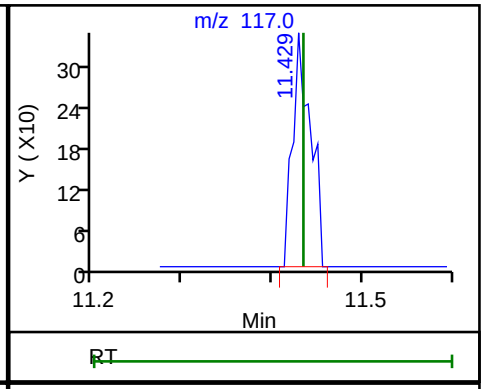
Eurofins TestAmerica, Burlington

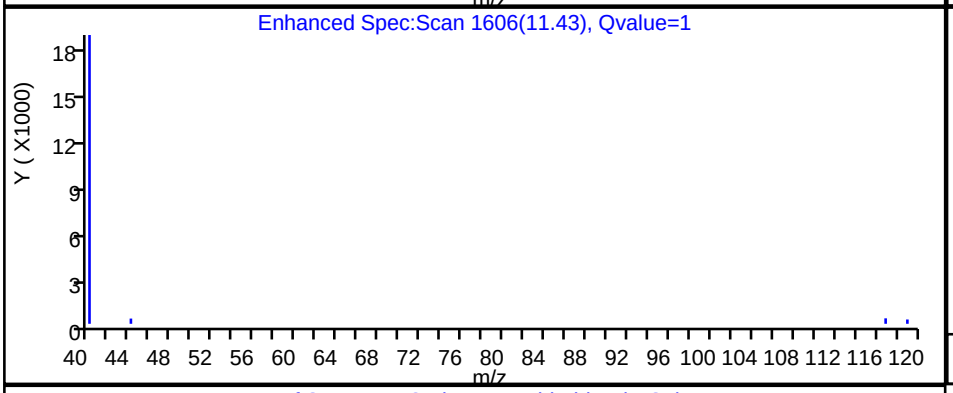
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

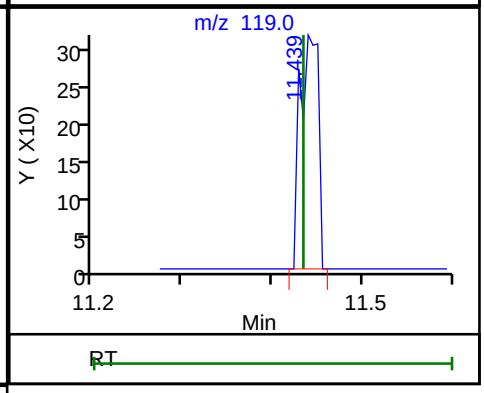
44 Carbon tetrachloride, CAS: 56-23-5

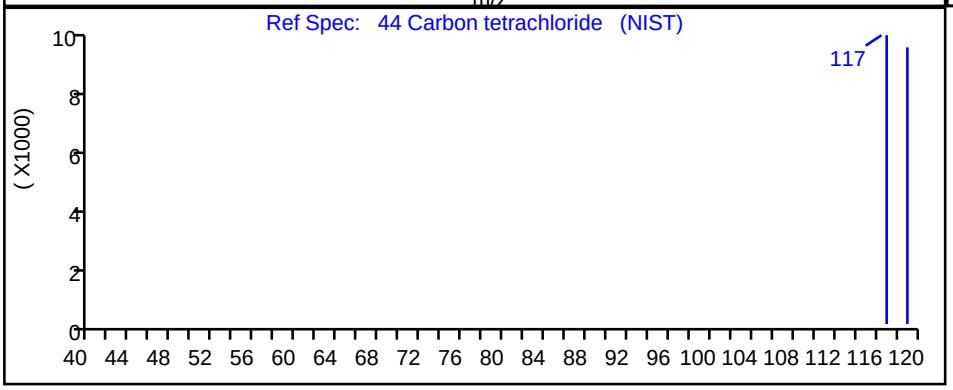
Processing Results











RT	Mass	Response	Amount
11.43	117.00	482	0.004173
11.44	119.00	450	

Reviewer: puangmaleek, 06-Jun-2019 13:36:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

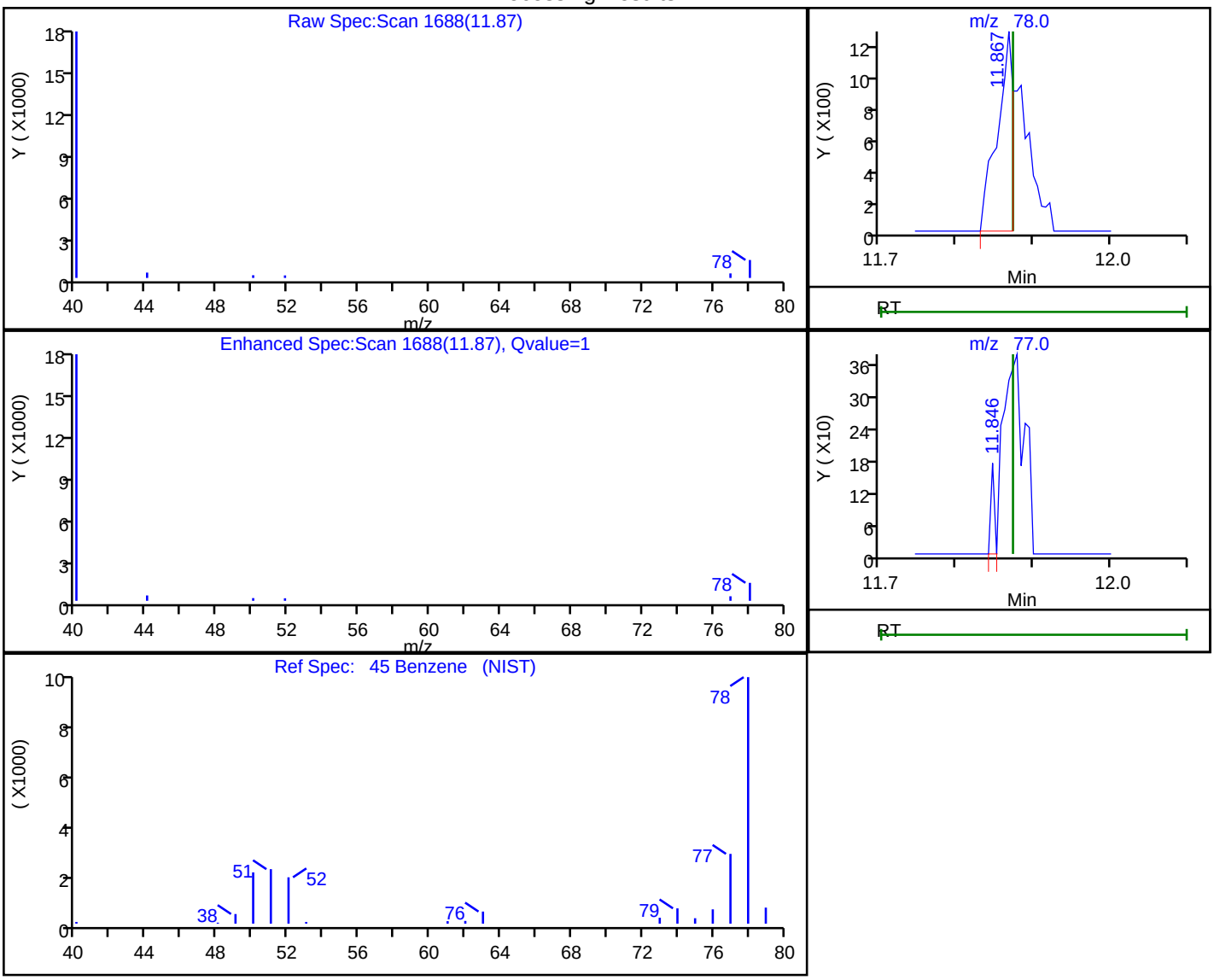
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

45 Benzene, CAS: 71-43-2

Processing Results



RT	Mass	Response	Amount
11.87	78.00	1837	0.019397
11.85	77.00	55	

Reviewer: puangmaleek, 06-Jun-2019 13:36:36

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

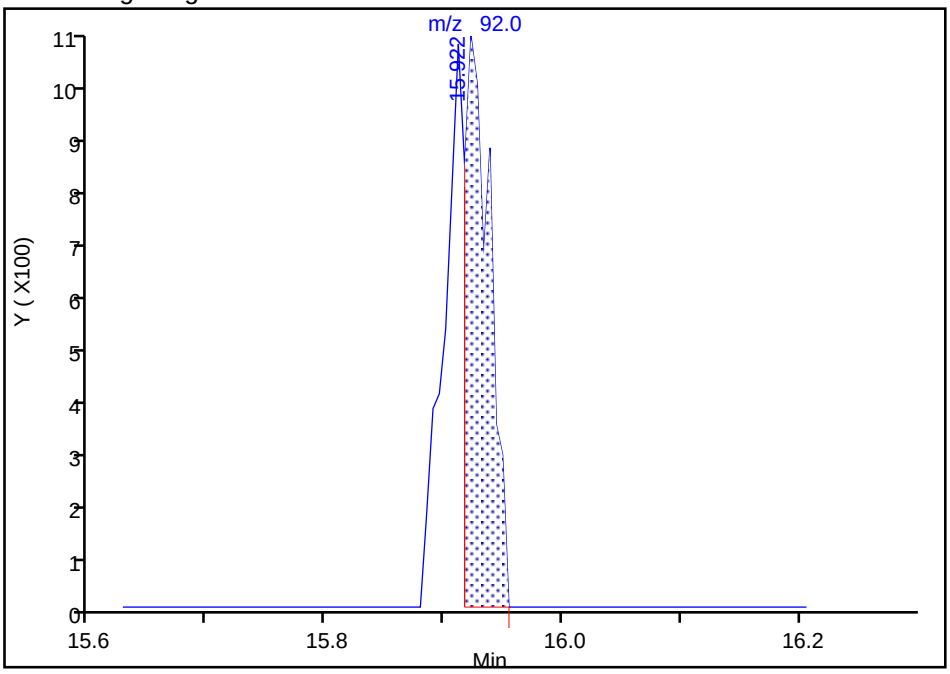
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

62 Toluene, CAS: 108-88-3

Signal: 1

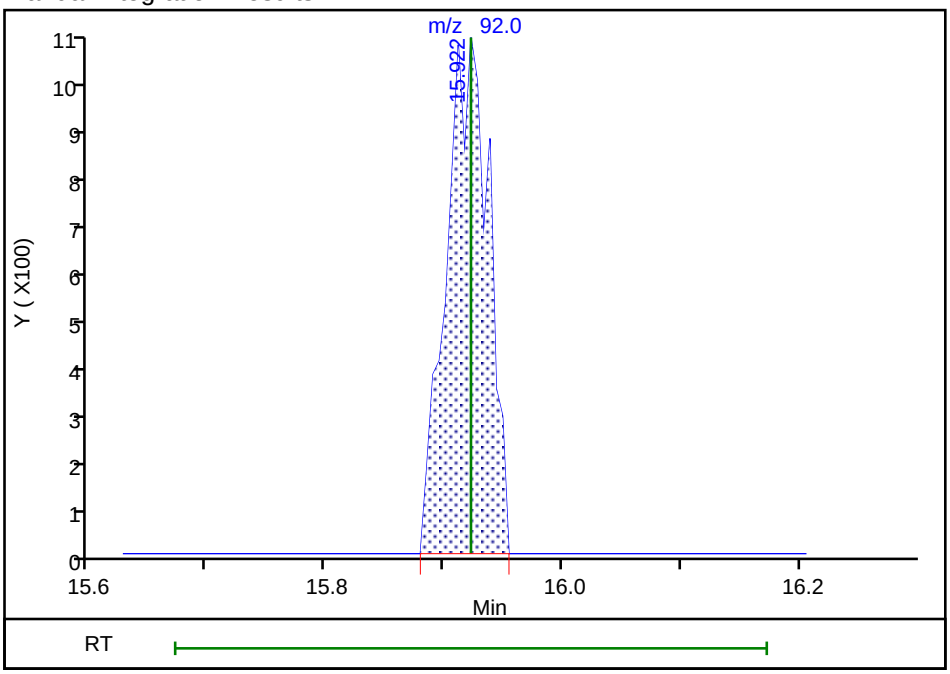
Processing Integration Results

RT: 15.92
Area: 1617
Amount: 0.021478
Amount Units: ppb v/v



Manual Integration Results

RT: 15.92
Area: 2682
Amount: 0.035623
Amount Units: ppb v/v



Reviewer: puangmaleek, 06-Jun-2019 13:37:23

Audit Action: Manually Integrated Audit Reason: Assign Peak

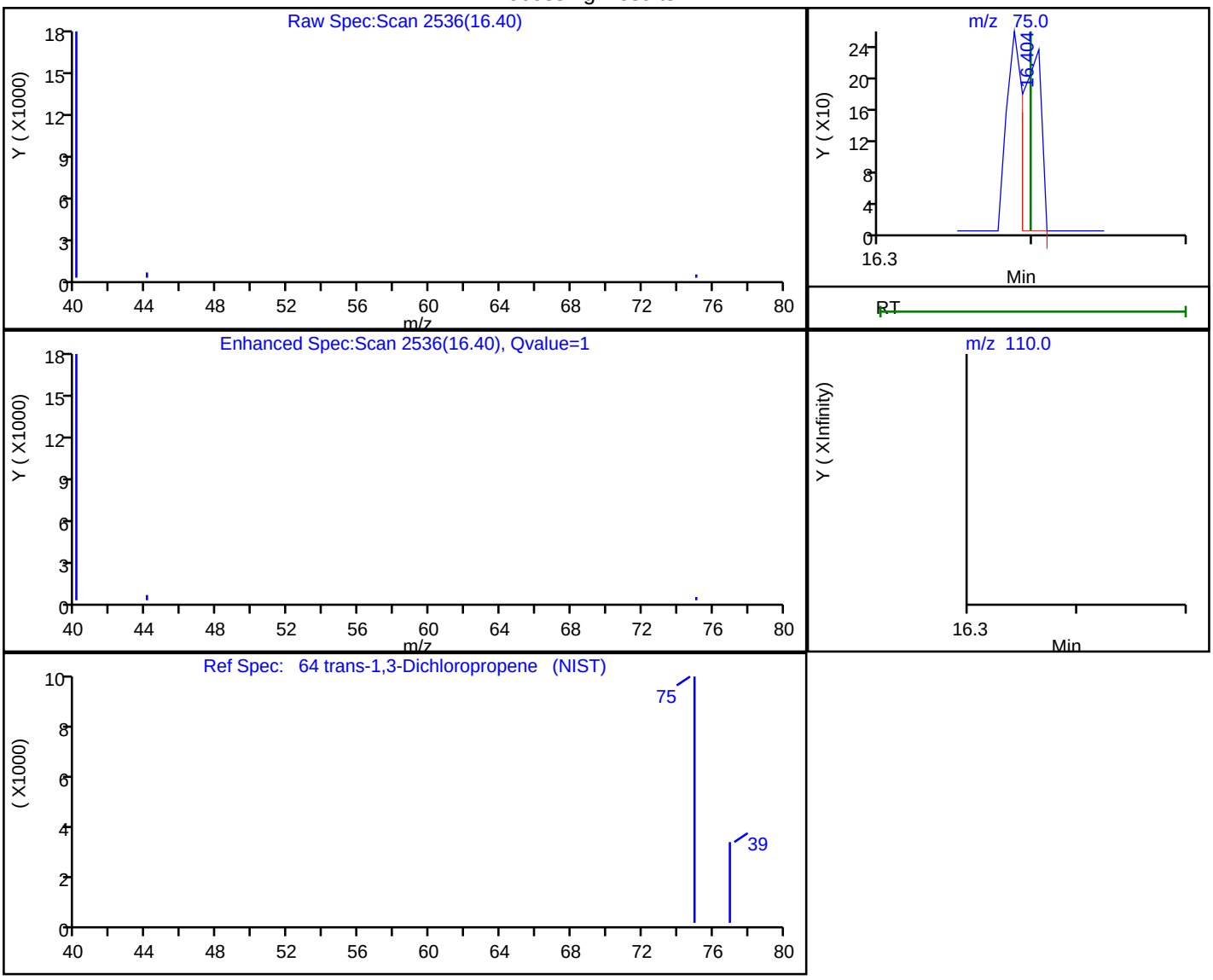
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

64 trans-1,3-Dichloropropene, CAS: 10061-02-6

Processing Results



RT	Mass	Response	Amount
16.40	75.00	194	0.003560
16.40	110.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:37:28

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

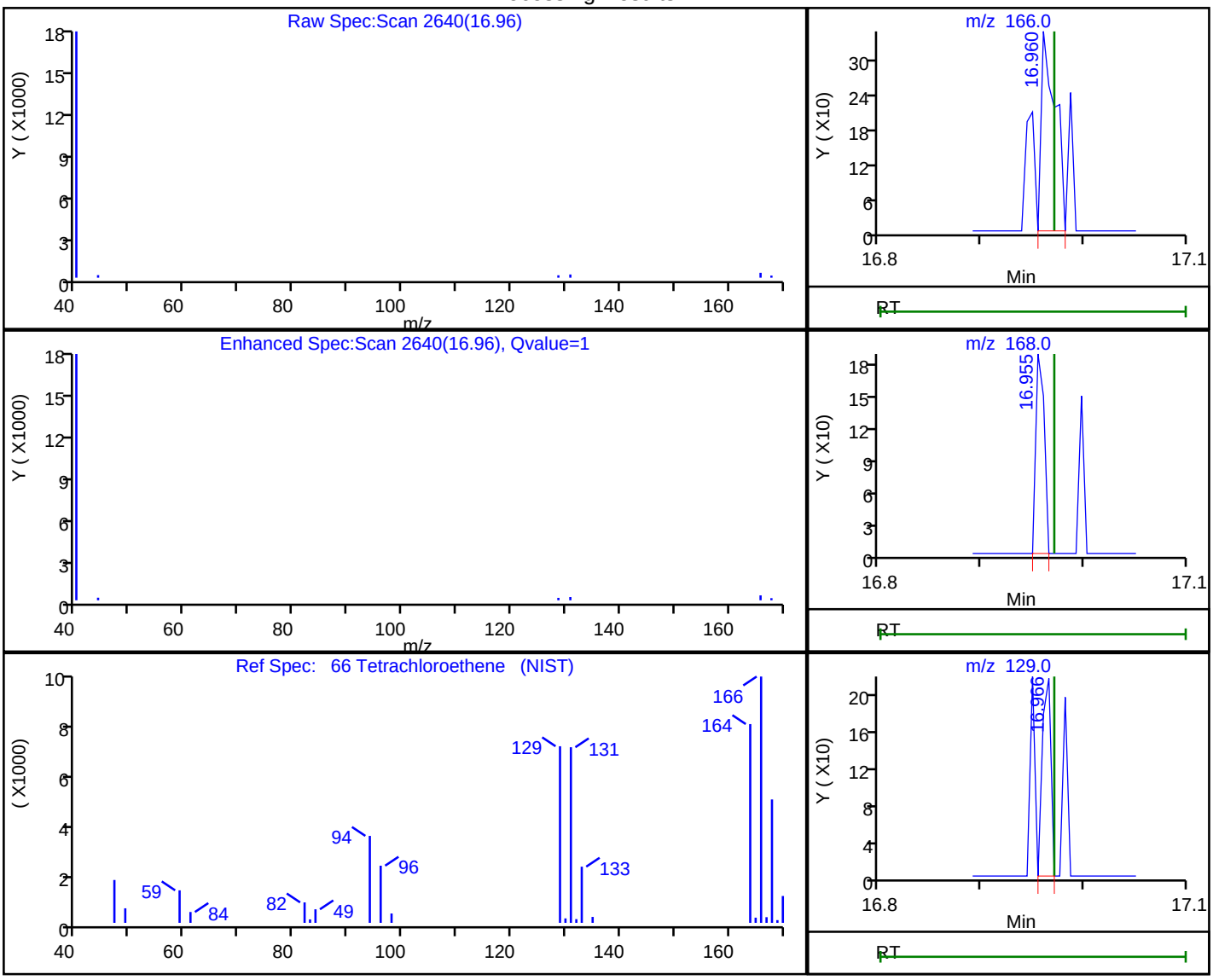
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

66 Tetrachloroethene, CAS: 127-18-4

Processing Results



RT	Mass	Response	Amount
16.96	166.00	334	0.002920
16.95	168.00	109	
16.97	129.00	123	

Reviewer: puangmaleek, 06-Jun-2019 13:37:36

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

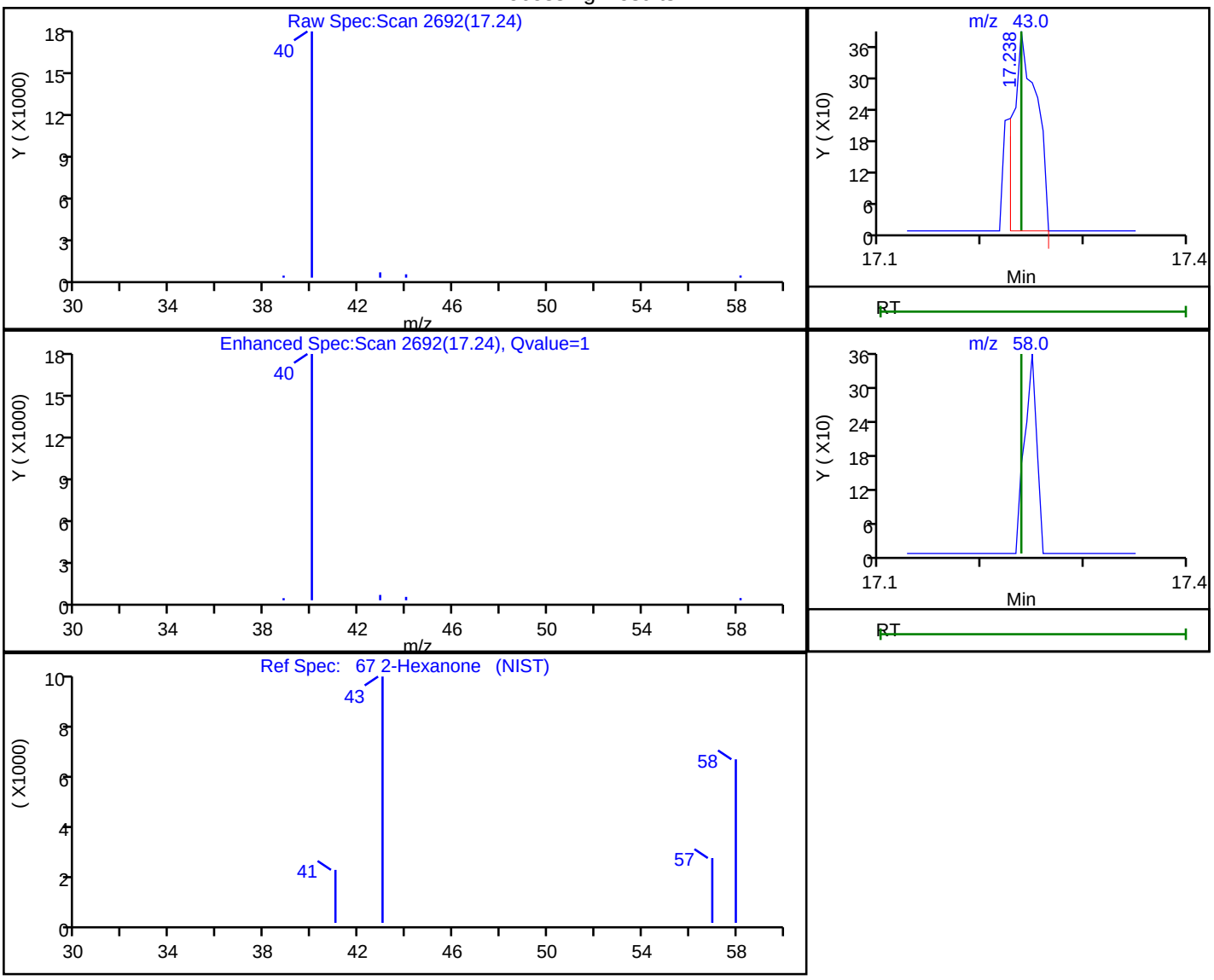
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

67 2-Hexanone, CAS: 591-78-6

Processing Results



RT	Mass	Response	Amount
17.24	43.00	600	0.016376
17.23	58.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:37:38

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

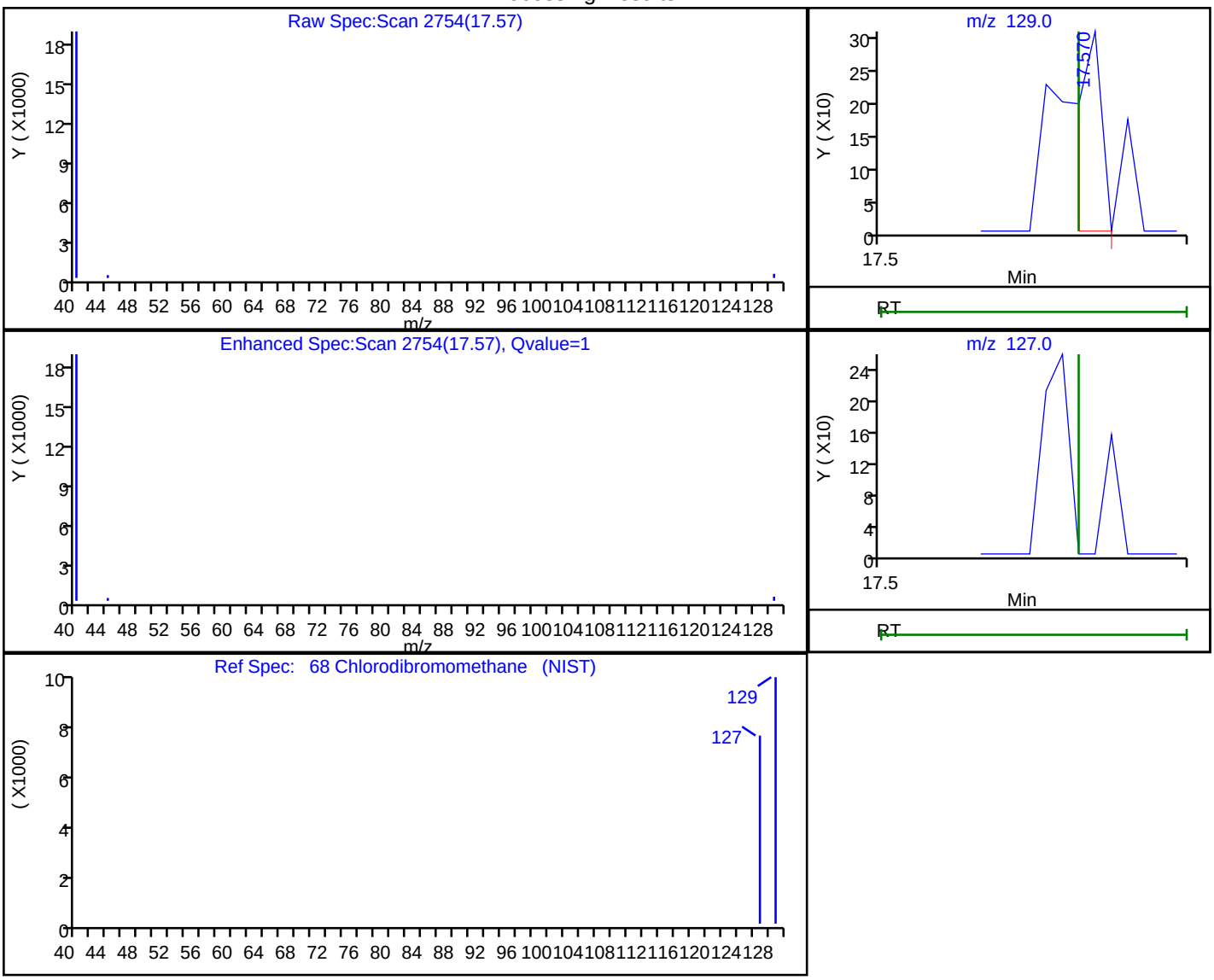
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

68 Chlorodibromomethane, CAS: 124-48-1

Processing Results



RT	Mass	Response	Amount
17.57	129.00	162	0.001525
17.56	127.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:37:47

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

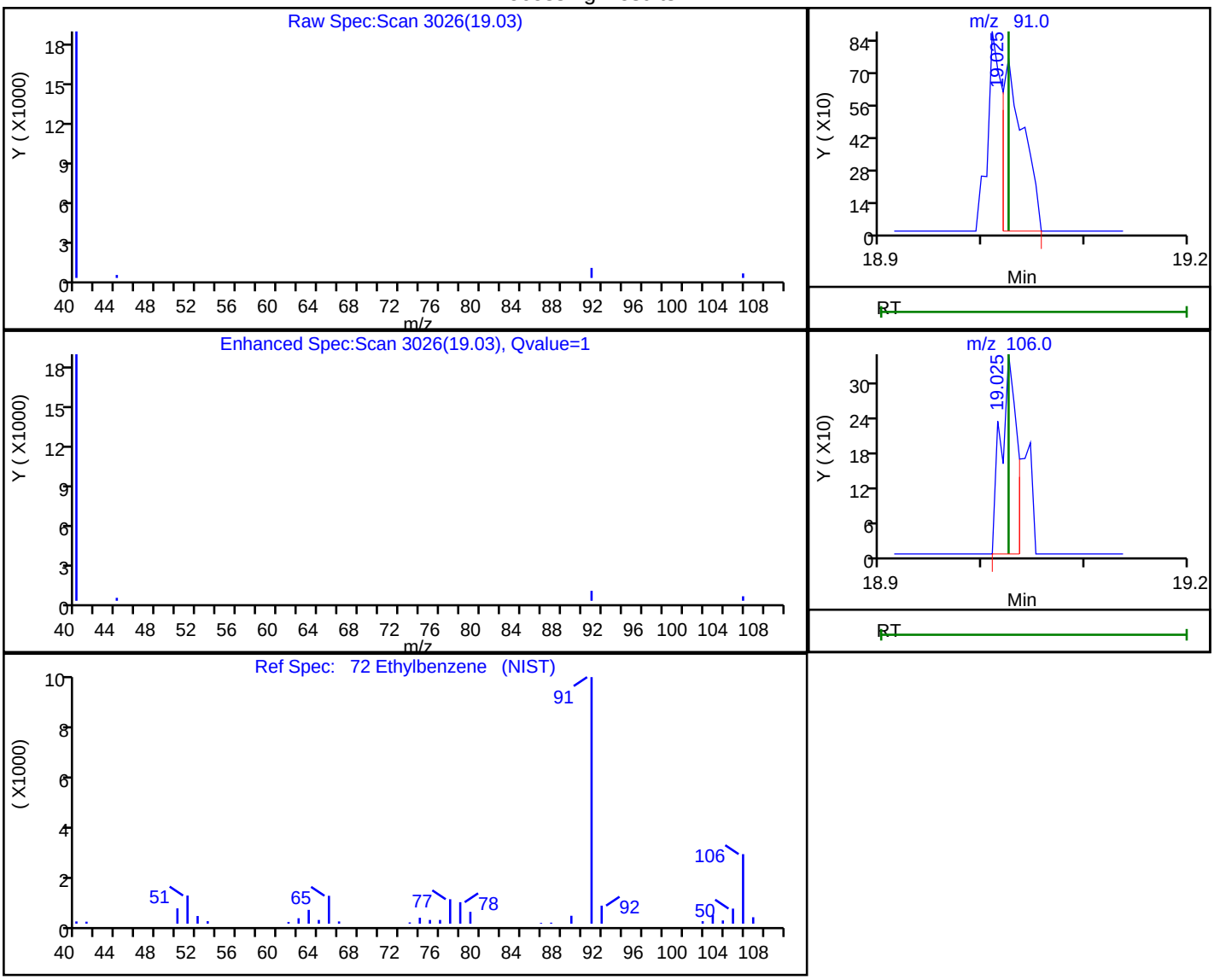
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

72 Ethylbenzene, CAS: 100-41-4

Processing Results



RT	Mass	Response	Amount
19.03	91.00	1081	0.006430
19.03	106.00	369	

Reviewer: puangmaleek, 06-Jun-2019 13:38:13

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Eurofins TestAmerica, Burlington

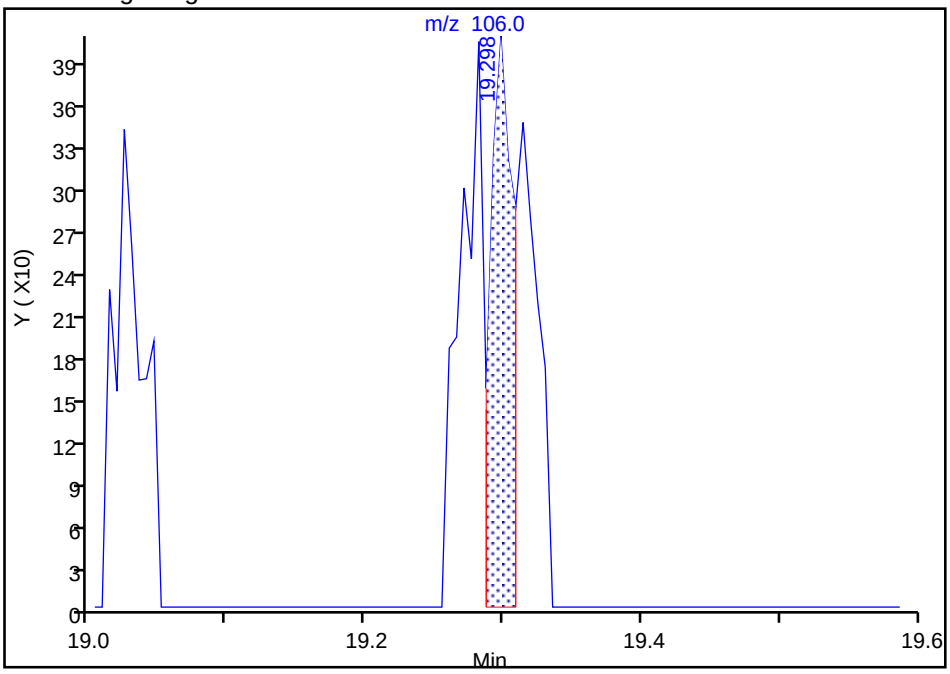
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

74 m-Xylene & p-Xylene, CAS: 179601-23-1

Signal: 1

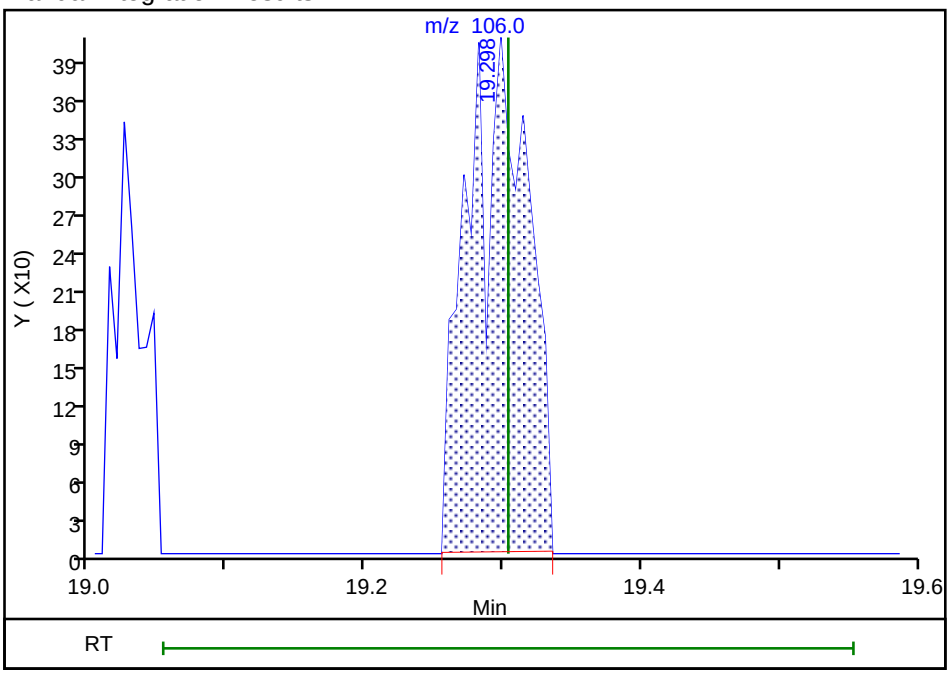
Processing Integration Results

RT: 19.30
Area: 482
Amount: 0.006435
Amount Units: ppb v/v



Manual Integration Results

RT: 19.30
Area: 1230
Amount: 0.016420
Amount Units: ppb v/v



Reviewer: puangmaleek, 06-Jun-2019 13:38:29
Audit Action: Manually Integrated Audit Reason: Assign Peak

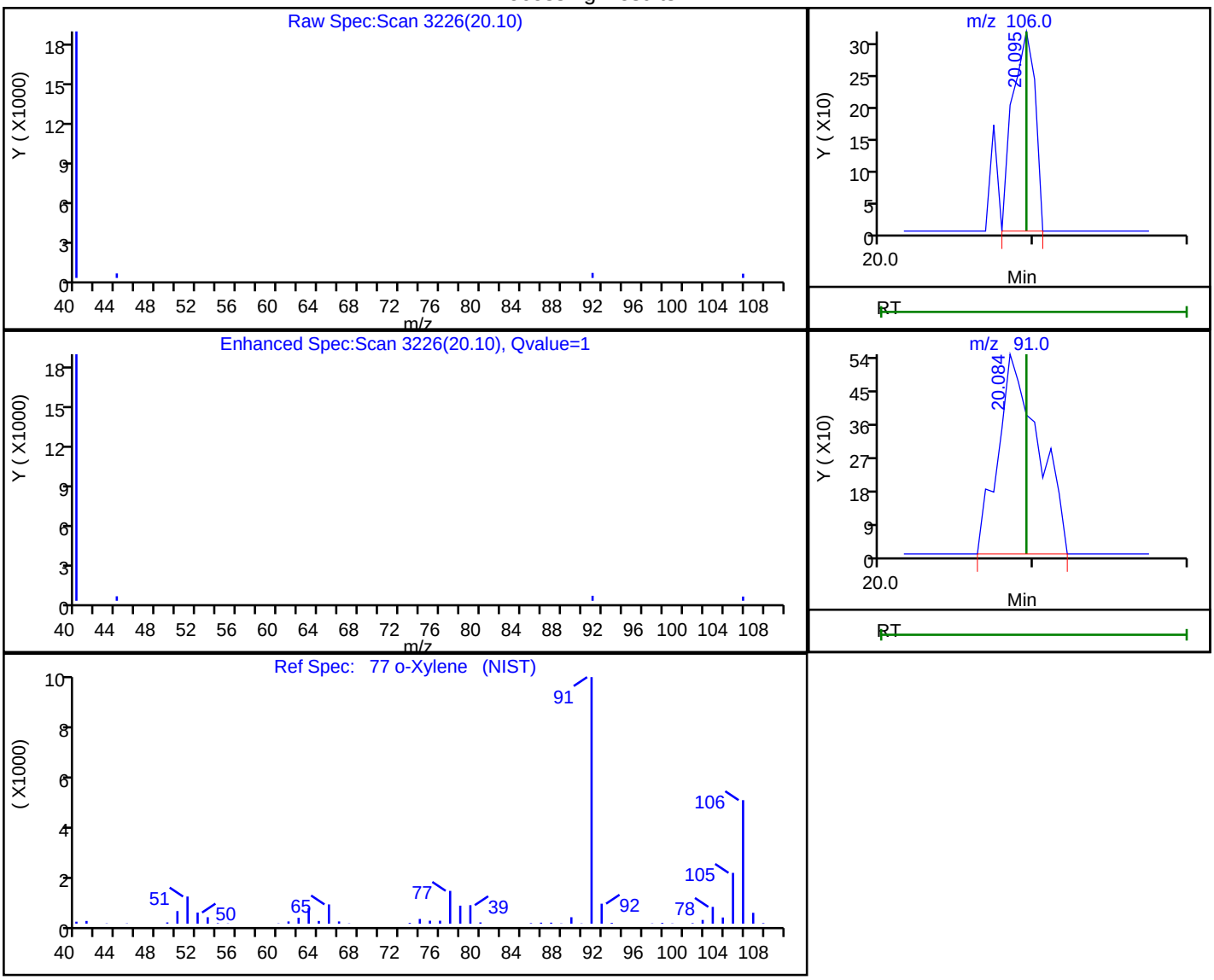
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

77 o-Xylene, CAS: 95-47-6

Processing Results



RT	Mass	Response	Amount
20.10	106.00	326	0.004563
20.08	91.00	991	

Reviewer: puangmaleek, 06-Jun-2019 13:38:57

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

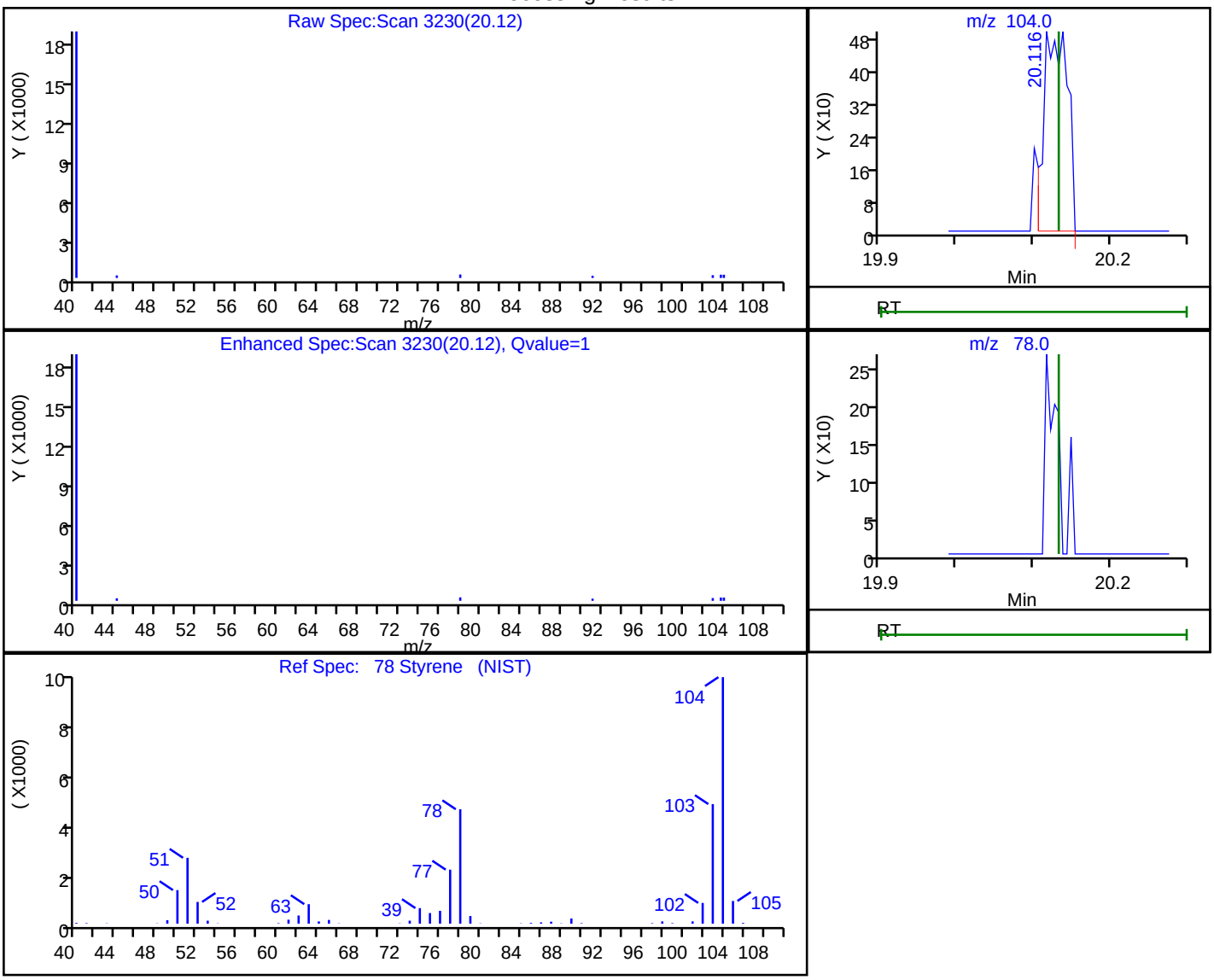
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

78 Styrene, CAS: 100-42-5

Processing Results



RT	Mass	Response	Amount
20.12	104.00	1062	0.010167
20.13	78.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:39:00

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

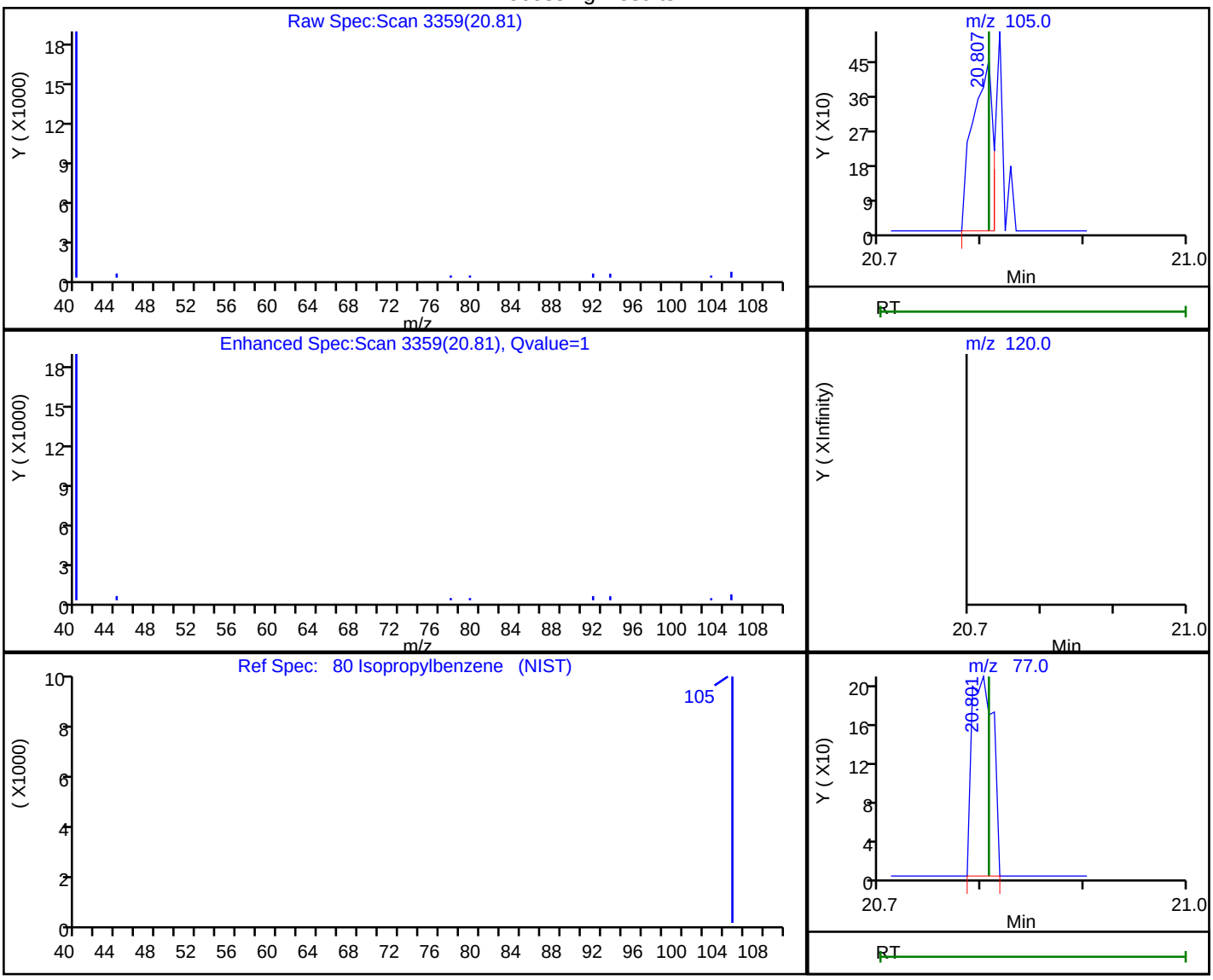
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

80 Isopropylbenzene, CAS: 98-82-8

Processing Results



RT	Mass	Response	Amount
20.81	105.00	609	0.002966
20.81	120.00	0	
20.80	77.00	300	

Reviewer: puangmaleek, 06-Jun-2019 13:39:14

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

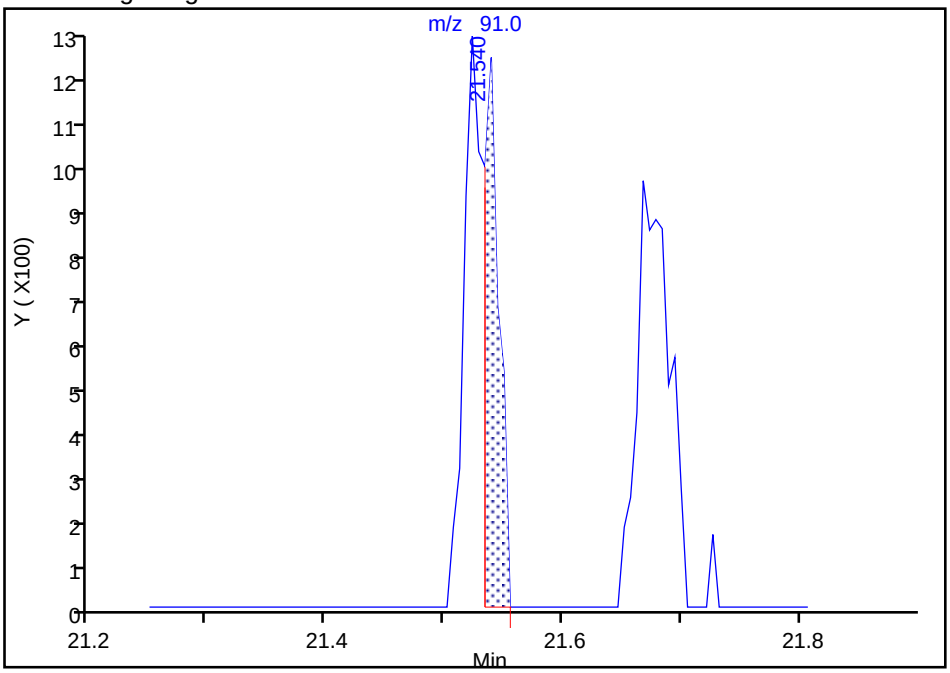
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

83 N-Propylbenzene, CAS: 103-65-1

Signal: 1

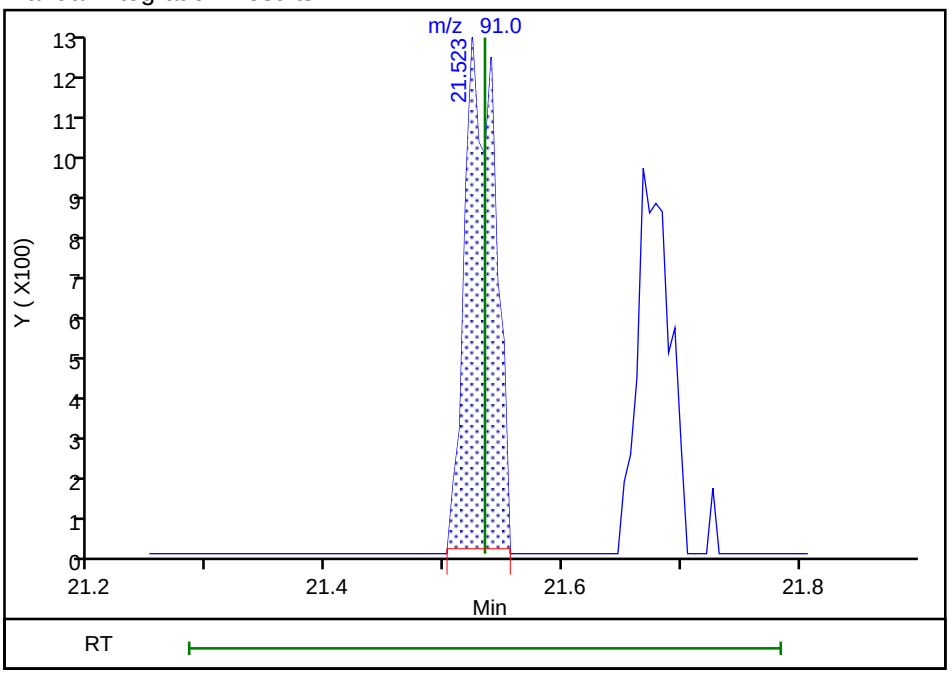
Processing Integration Results

RT: 21.54
Area: 1074
Amount: 0.004849
Amount Units: ppb v/v



Manual Integration Results

RT: 21.52
Area: 2196
Amount: 0.009915
Amount Units: ppb v/v



Reviewer: puangmaleek, 06-Jun-2019 13:39:42

Audit Action: Manually Integrated Audit Reason: Assign Peak

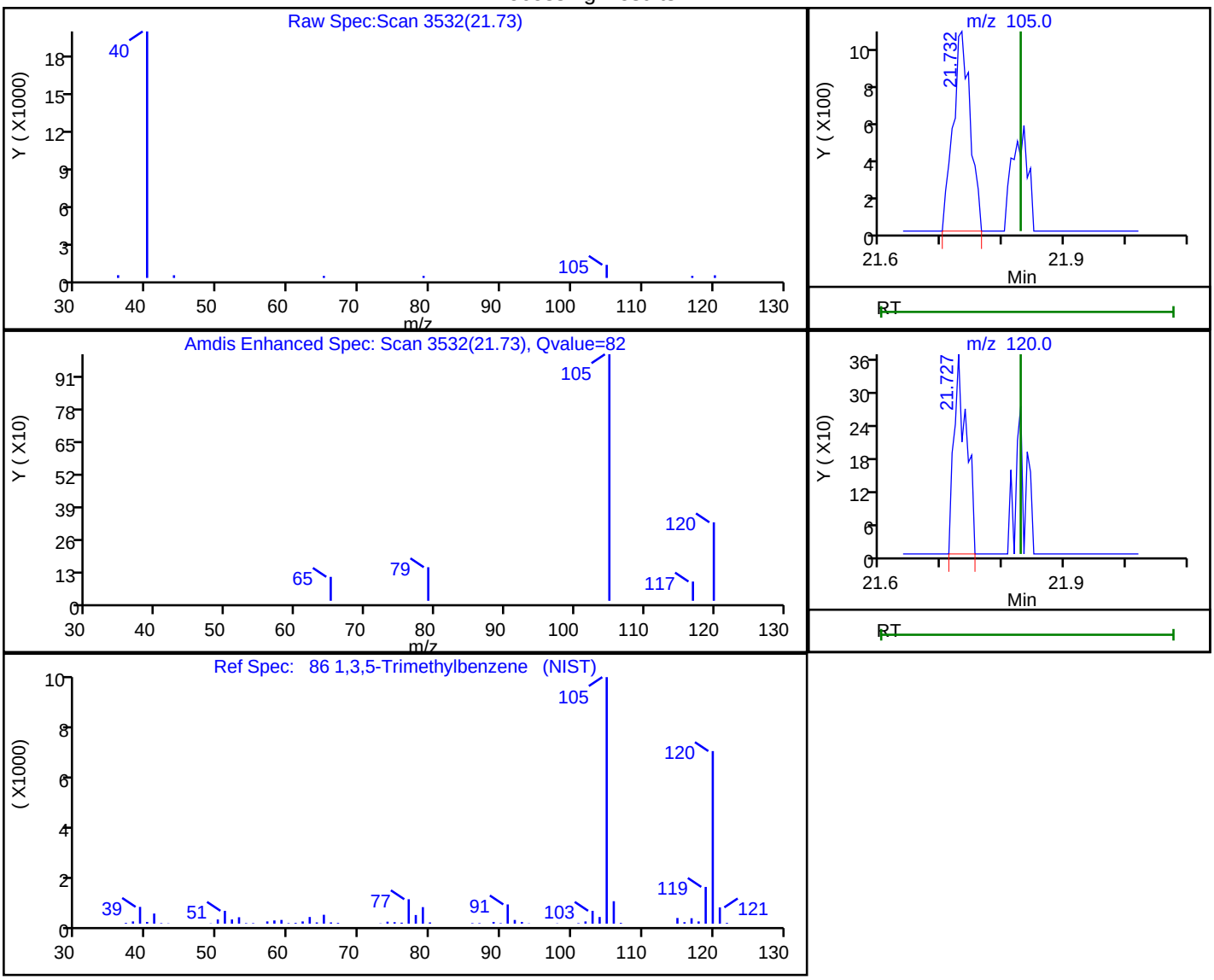
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

86 1,3,5-Trimethylbenzene, CAS: 108-67-8

Processing Results



RT	Mass	Response	Amount
21.73	105.00	1985	0.010760
21.73	120.00	516	

Reviewer: puangmaleek, 06-Jun-2019 13:39:50

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

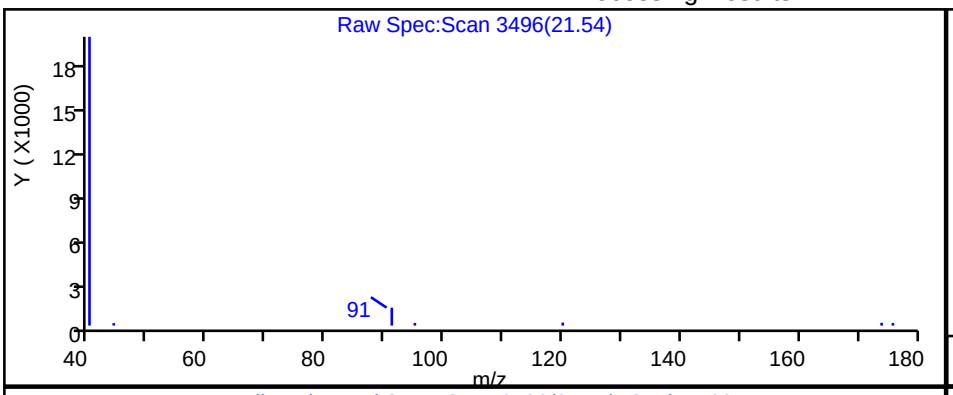
User Disabled Compound Report

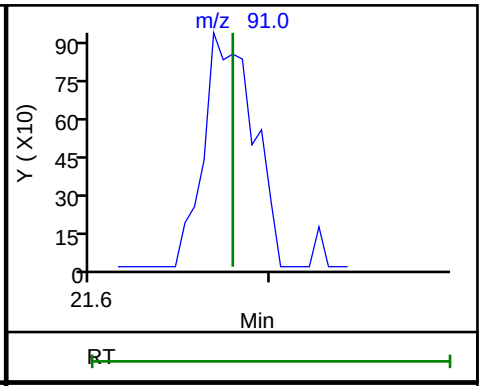
Eurofins TestAmerica, Burlington

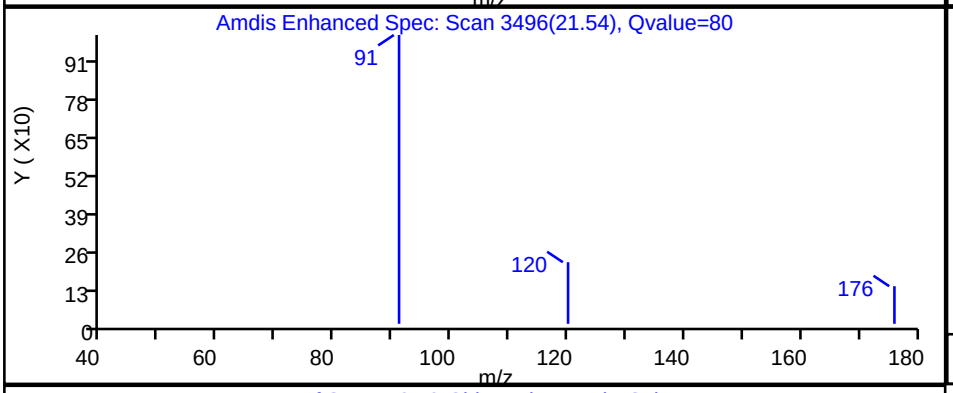
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

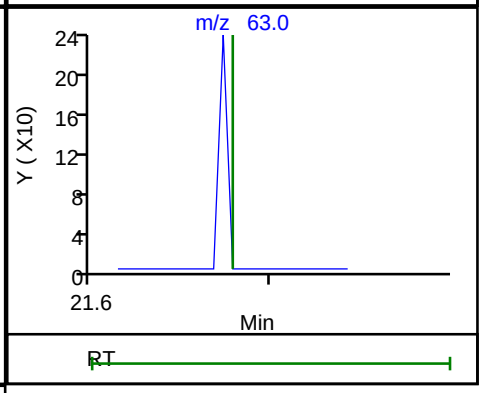
84 2-Chlorotoluene, CAS: 95-49-8

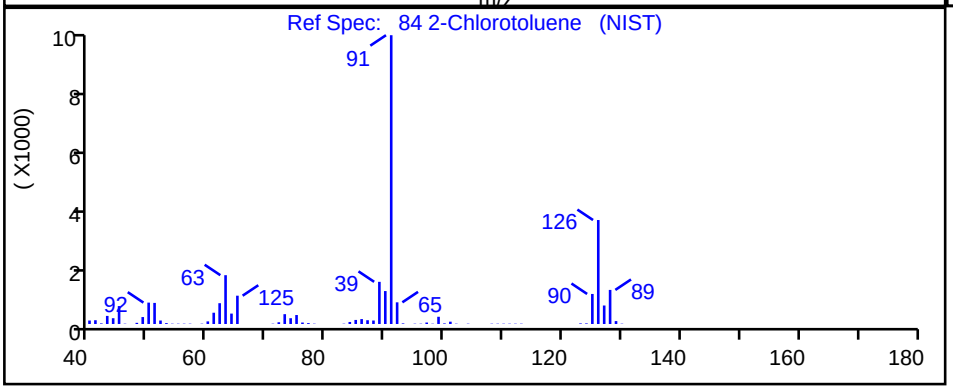
Processing Results











RT	Mass	Response	Amount
21.54	91.00	1074	0.006970
21.68	63.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:39:47

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

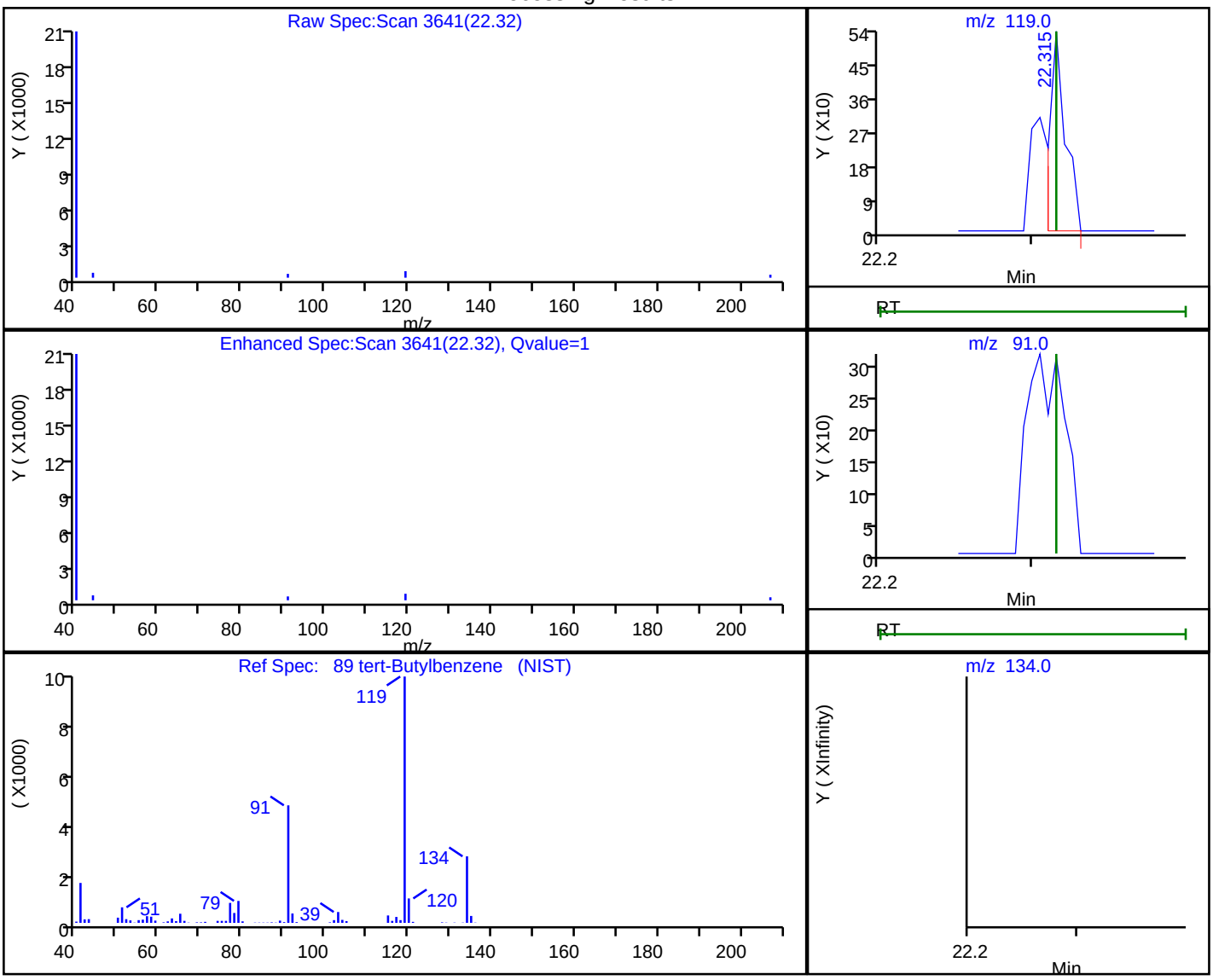
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

89 tert-Butylbenzene, CAS: 98-06-6

Processing Results



RT	Mass	Response	Amount
22.32	119.00	378	0.001897
22.32	91.00	0	
22.32	134.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:39:52

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

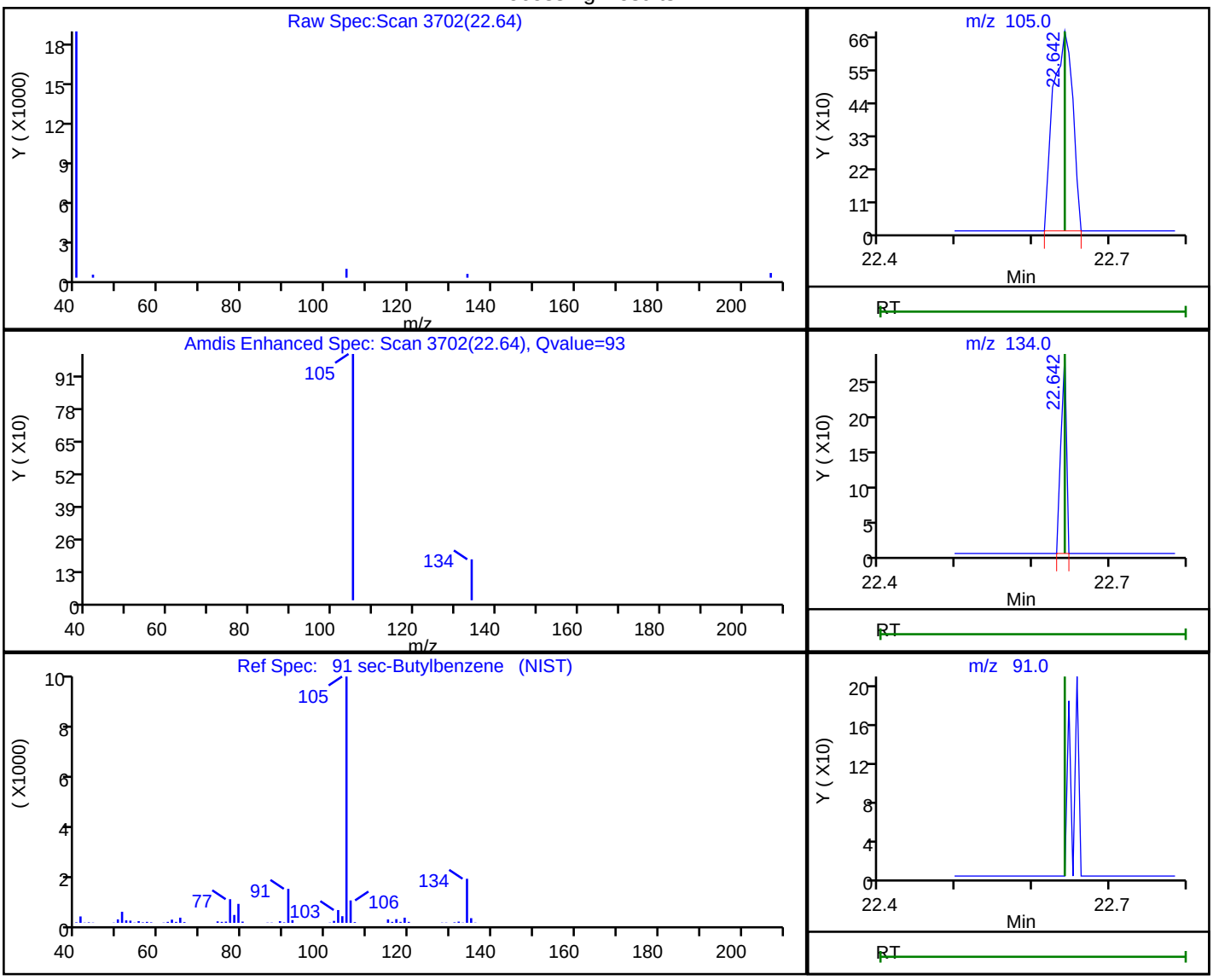
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190605-36207.b\36207-007.d				
Injection Date:	05-Jun-2019 21:02:30	Instrument ID:	CHW.i		
Lims ID:	200-48844-A-3	Lab Sample ID:	200-48844-3		
Client ID:	6310				
Operator ID:	ert	ALS Bottle#:	6	Worklist Smp#:	7
Purge Vol:	200.000 mL	Dil. Factor:	0.2000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

91 sec-Butylbenzene, CAS: 135-98-8

Processing Results



RT	Mass	Response	Amount
22.64	105.00	1191	0.004595
22.64	134.00	144	
22.64	91.00	0	

Reviewer: puangmaleek, 06-Jun-2019 13:39:59

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48938-1

SDG No.:

Client Sample ID: 3579 Lab Sample ID: 200-48938-5

Matrix: Air Lab File ID: 36131-11.D

Analysis Method: TO-15 Date Collected: 05/28/2019 00:00

Sample wt/vol: 200(mL) Date Analyzed: 05/30/2019 19:30

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	5.0	U	5.0	5.0
75-71-8	Dichlorodifluoromethane	0.50	U	0.50	0.50
75-45-6	Freon 22	0.50	U	0.50	0.50
76-14-2	1,2-Dichlorotetrafluoroethane	0.20	U	0.20	0.20
74-87-3	Chloromethane	0.50	U	0.50	0.50
106-97-8	n-Butane	0.50	U	0.50	0.50
75-01-4	Vinyl chloride	0.20	U	0.20	0.20
106-99-0	1,3-Butadiene	0.20	U	0.20	0.20
74-83-9	Bromomethane	0.20	U	0.20	0.20
75-00-3	Chloroethane	0.50	U	0.50	0.50
593-60-2	Bromoethene(Vinyl Bromide)	0.20	U	0.20	0.20
75-69-4	Trichlorofluoromethane	0.20	U	0.20	0.20
64-17-5	Ethanol	5.0	U	5.0	5.0
76-13-1	Freon TF	0.20	U	0.20	0.20
75-35-4	1,1-Dichloroethene	0.20	U	0.20	0.20
67-64-1	Acetone	5.0	U	5.0	5.0
67-63-0	Isopropyl alcohol	5.0	U	5.0	5.0
75-15-0	Carbon disulfide	0.50	U	0.50	0.50
107-05-1	3-Chloropropene	0.50	U	0.50	0.50
75-09-2	Methylene Chloride	0.50	U	0.50	0.50
75-65-0	tert-Butyl alcohol	5.0	U	5.0	5.0
1634-04-4	Methyl tert-butyl ether	0.20	U	0.20	0.20
156-60-5	trans-1,2-Dichloroethene	0.20	U	0.20	0.20
110-54-3	n-Hexane	0.20	U	0.20	0.20
75-34-3	1,1-Dichloroethane	0.20	U	0.20	0.20
108-05-4	Vinyl acetate	5.0	U	5.0	5.0
141-78-6	Ethyl acetate	5.0	U	5.0	5.0
78-93-3	Methyl Ethyl Ketone	0.50	U	0.50	0.50
156-59-2	cis-1,2-Dichloroethene	0.20	U	0.20	0.20
540-59-0	1,2-Dichloroethene, Total	0.40	U	0.40	0.40
67-66-3	Chloroform	0.20	U	0.20	0.20
109-99-9	Tetrahydrofuran	5.0	U	5.0	5.0
71-55-6	1,1,1-Trichloroethane	0.20	U	0.20	0.20
110-82-7	Cyclohexane	0.20	U	0.20	0.20
56-23-5	Carbon tetrachloride	0.20	U	0.20	0.20
540-84-1	2,2,4-Trimethylpentane	0.20	U	0.20	0.20

FORM I TO-15

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-48938-1

SDG No.:

Client Sample ID: 3579 Lab Sample ID: 200-48938-5

Matrix: Air Lab File ID: 36131-11.D

Analysis Method: TO-15 Date Collected: 05/28/2019 00:00

Sample wt/vol: 200(mL) Date Analyzed: 05/30/2019 19:30

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.20	U	0.20	0.20
107-06-2	1,2-Dichloroethane	0.20	U	0.20	0.20
142-82-5	n-Heptane	0.20	U	0.20	0.20
79-01-6	Trichloroethene	0.20	U	0.20	0.20
80-62-6	Methyl methacrylate	0.50	U	0.50	0.50
78-87-5	1,2-Dichloropropane	0.20	U	0.20	0.20
123-91-1	1,4-Dioxane	5.0	U	5.0	5.0
75-27-4	Bromodichloromethane	0.20	U	0.20	0.20
10061-01-5	cis-1,3-Dichloropropene	0.20	U	0.20	0.20
108-10-1	methyl isobutyl ketone	0.50	U	0.50	0.50
108-88-3	Toluene	0.20	U	0.20	0.20
10061-02-6	trans-1,3-Dichloropropene	0.20	U	0.20	0.20
79-00-5	1,1,2-Trichloroethane	0.20	U	0.20	0.20
127-18-4	Tetrachloroethene	0.20	U	0.20	0.20
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.50	U	0.50	0.50
124-48-1	Dibromochloromethane	0.20	U	0.20	0.20
106-93-4	1,2-Dibromoethane	0.20	U	0.20	0.20
108-90-7	Chlorobenzene	0.20	U	0.20	0.20
100-41-4	Ethylbenzene	0.20	U	0.20	0.20
179601-23-1	m,p-Xylene	0.50	U	0.50	0.50
95-47-6	Xylene, o-	0.20	U	0.20	0.20
1330-20-7	Xylene (total)	0.70	U	0.70	0.70
100-42-5	Styrene	0.20	U	0.20	0.20
75-25-2	Bromoform	0.20	U	0.20	0.20
98-82-8	Cumene	0.20	U	0.20	0.20
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U	0.20	0.20
103-65-1	n-Propylbenzene	0.20	U	0.20	0.20
622-96-8	4-Ethyltoluene	0.20	U	0.20	0.20
108-67-8	1,3,5-Trimethylbenzene	0.20	U	0.20	0.20
95-49-8	2-Chlorotoluene	0.20	U	0.20	0.20
98-06-6	tert-Butylbenzene	0.20	U	0.20	0.20
95-63-6	1,2,4-Trimethylbenzene	0.20	U	0.20	0.20
135-98-8	sec-Butylbenzene	0.20	U	0.20	0.20
99-87-6	4-Isopropyltoluene	0.20	U	0.20	0.20
541-73-1	1,3-Dichlorobenzene	0.20	U	0.20	0.20
106-46-7	1,4-Dichlorobenzene	0.20	U	0.20	0.20

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

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Client Sample ID: 3579 Lab Sample ID: 200-48938-5

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Analysis Method: TO-15 Date Collected: 05/28/2019 00:00

Sample wt/vol: 200(mL) Date Analyzed: 05/30/2019 19:30

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143578 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.20	U	0.20	0.20
104-51-8	n-Butylbenzene	0.20	U	0.20	0.20
95-50-1	1,2-Dichlorobenzene	0.20	U	0.20	0.20
120-82-1	1,2,4-Trichlorobenzene	0.50	U	0.50	0.50
87-68-3	Hexachlorobutadiene	0.20	U	0.20	0.20
91-20-3	Naphthalene	0.50	U	0.50	0.50

Eurofins TestAmerica, Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D
Lims ID: 200-48938-A-5
Client ID: 3579
Sample Type: Client
Inject. Date: 30-May-2019 19:30:30 ALS Bottle#: 12 Worklist Smp#: 11
Purge Vol: 200.000 mL Dil. Factor: 1.0000
Sample Info: 200-0036131-011
Operator ID: ert Instrument ID: CHC.i

Method: \\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\TO15_MasterMethod_(v1)_CHC.i.m
Limit Group: AI_TO15_ICAL
Last Update: 31-May-2019 12:51:27 Calib Date: 21-May-2019 07:22:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Burlington\ChromData\CHC.i\20190520-36004.b\36004-12.D

Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
Process Host: CTX0304

First Level Reviewer: puangmaleek Date: 31-May-2019 12:51:27

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		2.957				ND	
2 Dichlorodifluoromethane	85		3.026				ND	U
3 Chlorodifluoromethane	51		3.069				ND	U
4 1,2-Dichloro-1,1,2,2-tetra	85		3.277				ND	U
5 Chloromethane	50		3.405				ND	U
6 Butane	43		3.603				ND	U
7 Vinyl chloride	62		3.640				ND	
8 Butadiene	54		3.715				ND	
10 Bromomethane	94		4.371				ND	
11 Chloroethane	64		4.601				ND	
13 Vinyl bromide	106		4.990				ND	
14 Trichlorofluoromethane	101		5.102				ND	
17 Ethanol	45		5.668				ND	U
20 1,1,2-Trichloro-1,2,2-trif	101		6.186				ND	
21 1,1-Dichloroethene	96		6.212				ND	
22 Acetone	43		6.420				ND	U
23 Carbon disulfide	76		6.586				ND	
24 Isopropyl alcohol	45		6.746				ND	
25 3-Chloro-1-propene	41		6.991				ND	U
27 Methylene Chloride	49		7.280				ND	U
28 2-Methyl-2-propanol	59		7.520				ND	
29 Methyl tert-butyl ether	73		7.707				ND	
31 trans-1,2-Dichloroethene	61		7.733				ND	U
33 Hexane	57		8.144				ND	
34 1,1-Dichloroethane	63		8.593				ND	
35 Vinyl acetate	43		8.683				ND	U
37 cis-1,2-Dichloroethene	96		9.703				ND	U
38 2-Butanone (MEK)	72		9.740				ND	
39 Ethyl acetate	88		9.815				ND	
* 40 Chlorobromomethane	128	10.161	10.162	-0.001	79	327722	10.0	
41 Tetrahydrofuran	42		10.172				ND	
S 30 1,2-Dichloroethene, Total	61		10.200				ND	

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
42 Chloroform	83		10.311				ND	
43 Cyclohexane	84		10.573				ND	
44 1,1,1-Trichloroethane	97		10.583				ND	
45 Carbon tetrachloride	117		10.839				ND	
47 Benzene	78		11.288				ND	U
46 Isooctane	57		11.298				ND	
48 1,2-Dichloroethane	62		11.458				ND	
49 n-Heptane	43		11.704				ND	U
* 50 1,4-Difluorobenzene	114	12.141	12.142	-0.001	93	1764530	10.0	
53 Trichloroethene	95	12.622	12.622	0.011	1	3282	0.0907	M
54 1,2-Dichloropropane	63		13.145				ND	
55 Methyl methacrylate	69		13.348				ND	
56 1,4-Dioxane	88		13.385				ND	
57 Dibromomethane	174		13.406				ND	U
58 Dichlorobromomethane	83		13.727				ND	
60 cis-1,3-Dichloropropene	75		14.677				ND	
61 4-Methyl-2-pentanone (MIBK	43		14.959				ND	
65 Toluene	92		15.274				ND	
66 trans-1,3-Dichloropropene	75		15.872				ND	
67 1,1,2-Trichloroethane	83		16.240				ND	
68 Tetrachloroethene	166	16.379	16.379	0.000	94	6113	0.0829	M
69 2-Hexanone	43		16.694				ND	U
71 Chlorodibromomethane	129		17.009				ND	
72 Ethylene Dibromide	107		17.265				ND	
* 74 Chlorobenzene-d5	117	18.177	18.178	-0.001	83	2067406	10.0	
75 Chlorobenzene	112		18.236				ND	
76 Ethylbenzene	91		18.396				ND	U
78 m-Xylene & p-Xylene	106		18.647				ND	
79 o-Xylene	106		19.485				ND	
80 Styrene	104		19.533				ND	
81 Bromoform	173		19.965				ND	
S 73 Xylenes, Total	106		20.100				ND	
82 Isopropylbenzene	105		20.206				ND	
84 1,1,2,2-Tetrachloroethane	83		20.873				ND	
85 N-Propylbenzene	91		20.953				ND	U
88 4-Ethyltoluene	105		21.150				ND	
89 2-Chlorotoluene	91		21.150				ND	U
90 1,3,5-Trimethylbenzene	105		21.262				ND	
92 tert-Butylbenzene	119		21.764				ND	
93 1,2,4-Trimethylbenzene	105		21.860				ND	U
94 sec-Butylbenzene	105		22.095				ND	U
95 4-Isopropyltoluene	119		22.303				ND	U
96 1,3-Dichlorobenzene	146		22.324				ND	U
97 1,4-Dichlorobenzene	146		22.463				ND	U
98 Benzyl chloride	91		22.650				ND	U
100 n-Butylbenzene	91		22.874				ND	U
101 1,2-Dichlorobenzene	146		22.981				ND	U
103 1,2,4-Trichlorobenzene	180		25.372				ND	
104 Hexachlorobutadiene	225		25.564				ND	
105 Naphthalene	128		25.815				ND	U

QC Flag Legend

Review Flags

M - Manually Integrated

U - Marked Undetected

Reagents:

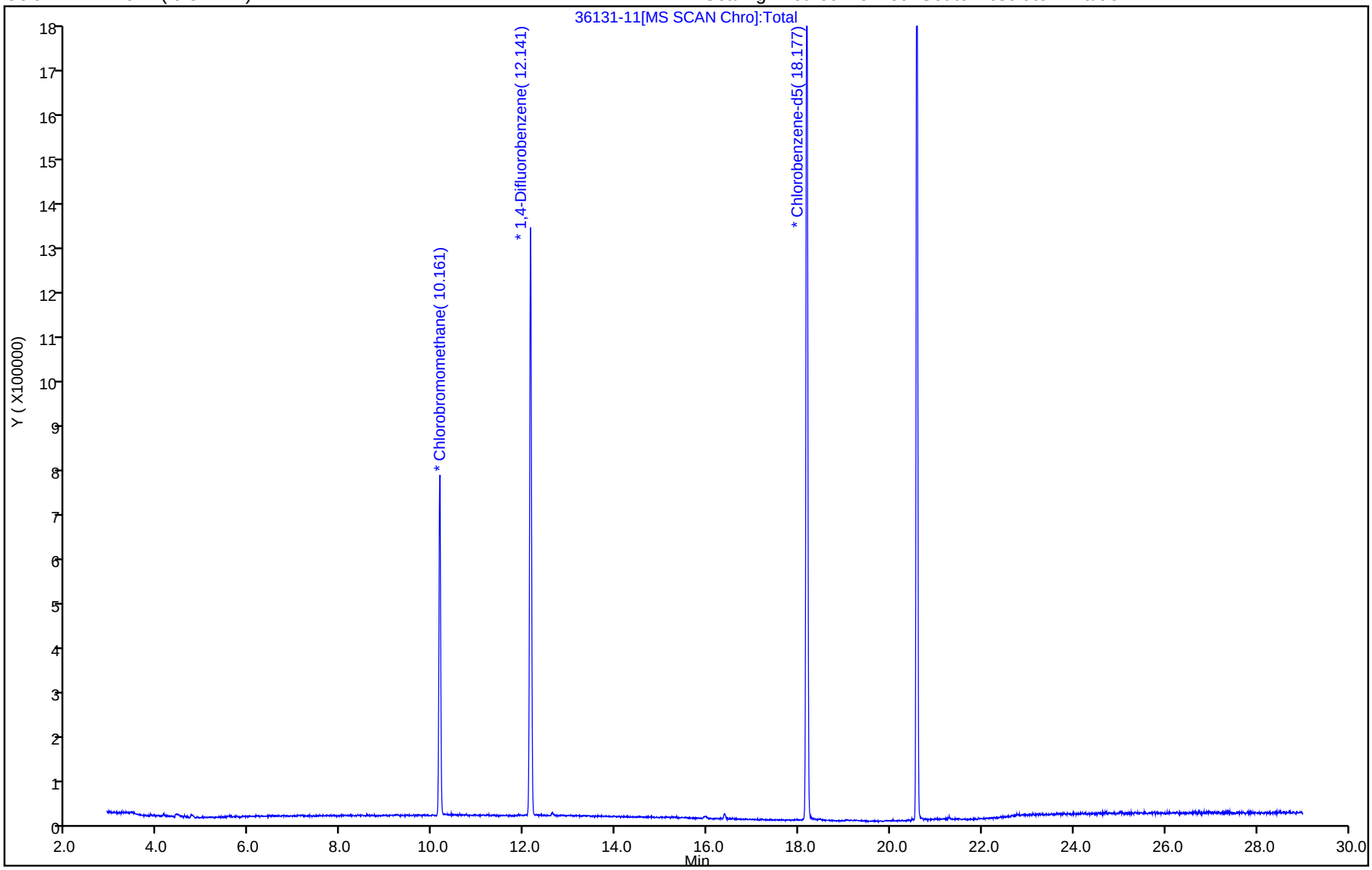
ATTO15CISs_00010	Amount Added: 20.00	Units: mL	Run Reagent

Report Date: 31-May-2019 12:51:27 Chrom Revision: 2.3 03-May-2019 15:52:00

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i	Operator ID:	ert
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5	Worklist Smp#:	11
Client ID:	3579				
Purge Vol:	200.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	12
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		

Column: RTX-624 (0.32 mm) Y Scaling: Method Defined: Set to Absolute Y Value



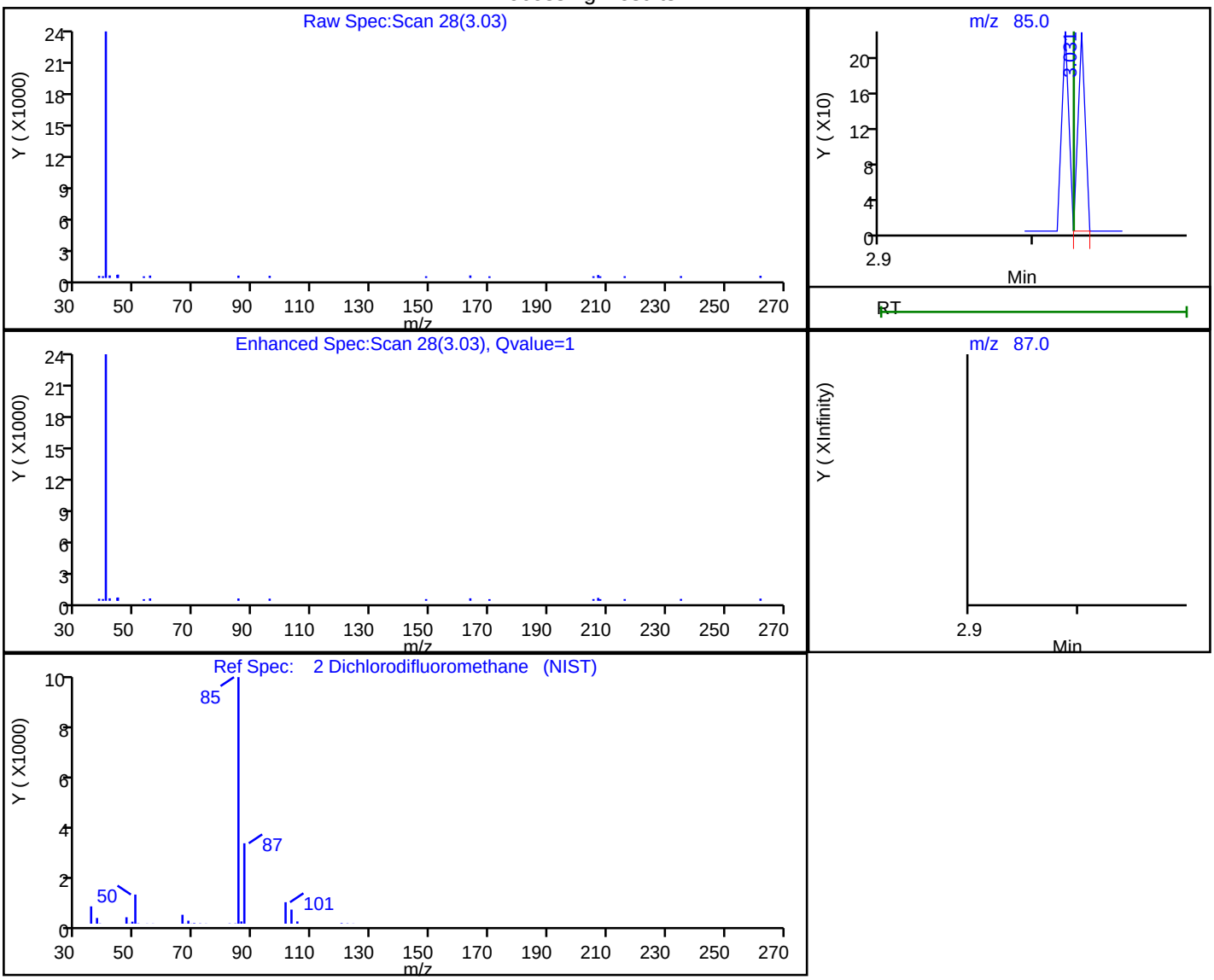
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

2 Dichlorodifluoromethane, CAS: 75-71-8

Processing Results



RT	Mass	Response	Amount
3.03	85.00	71	0.001876
3.03	87.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:55

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

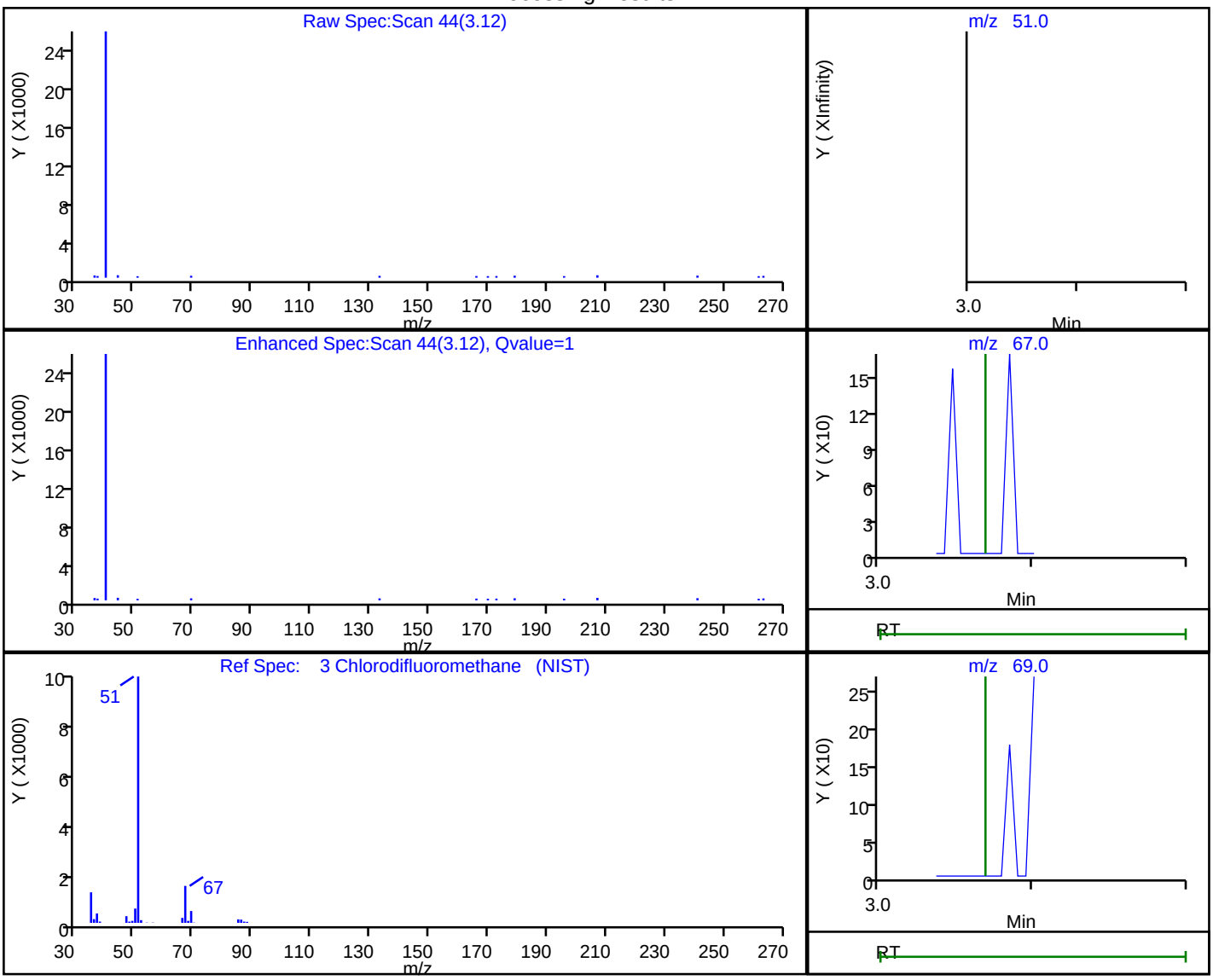
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

3 Chlorodifluoromethane, CAS: 75-45-6

Processing Results



RT	Mass	Response	Amount
3.12	51.00	48	0.002156
3.07	67.00	0	
3.07	69.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:56

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

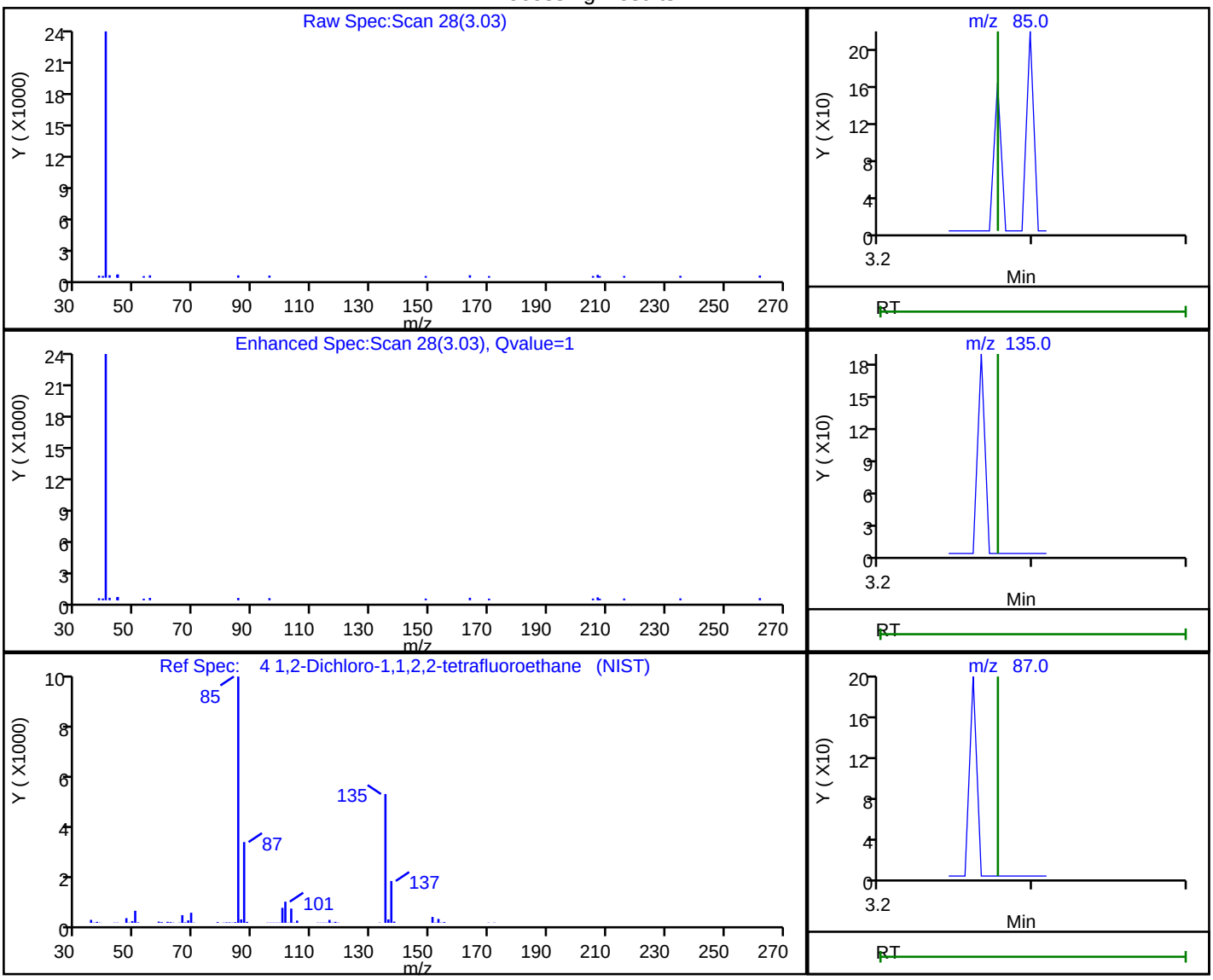
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

4 1,2-Dichloro-1,1,2,2-tetrafluoroethane, CAS: 76-14-2

Processing Results



RT	Mass	Response	Amount
3.03	85.00	71	0.001448
3.28	135.00	0	
3.28	87.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:57

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

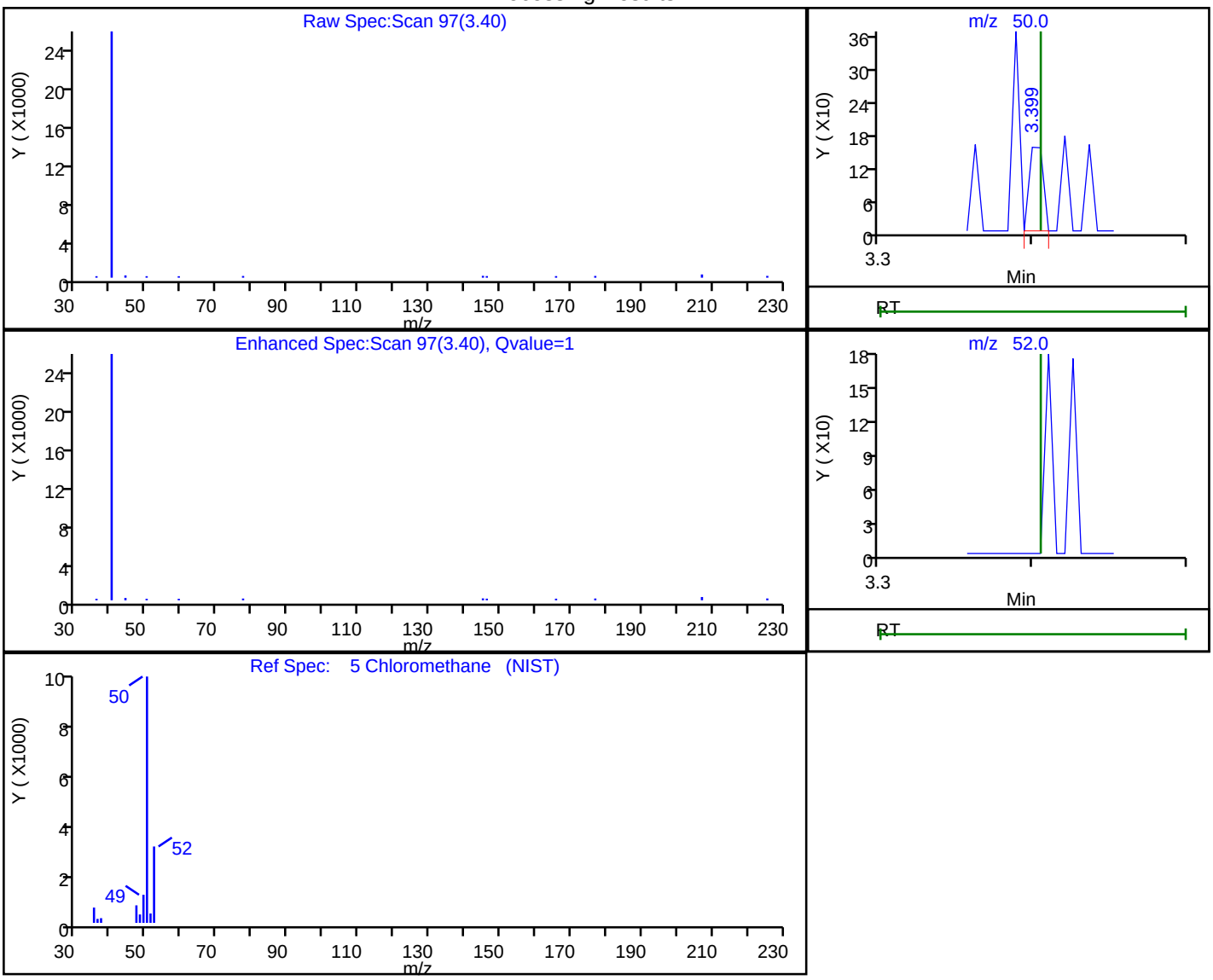
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

5 Chloromethane, CAS: 74-87-3

Processing Results



RT	Mass	Response	Amount
3.40	50.00	98	0.007018
3.41	52.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:58

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

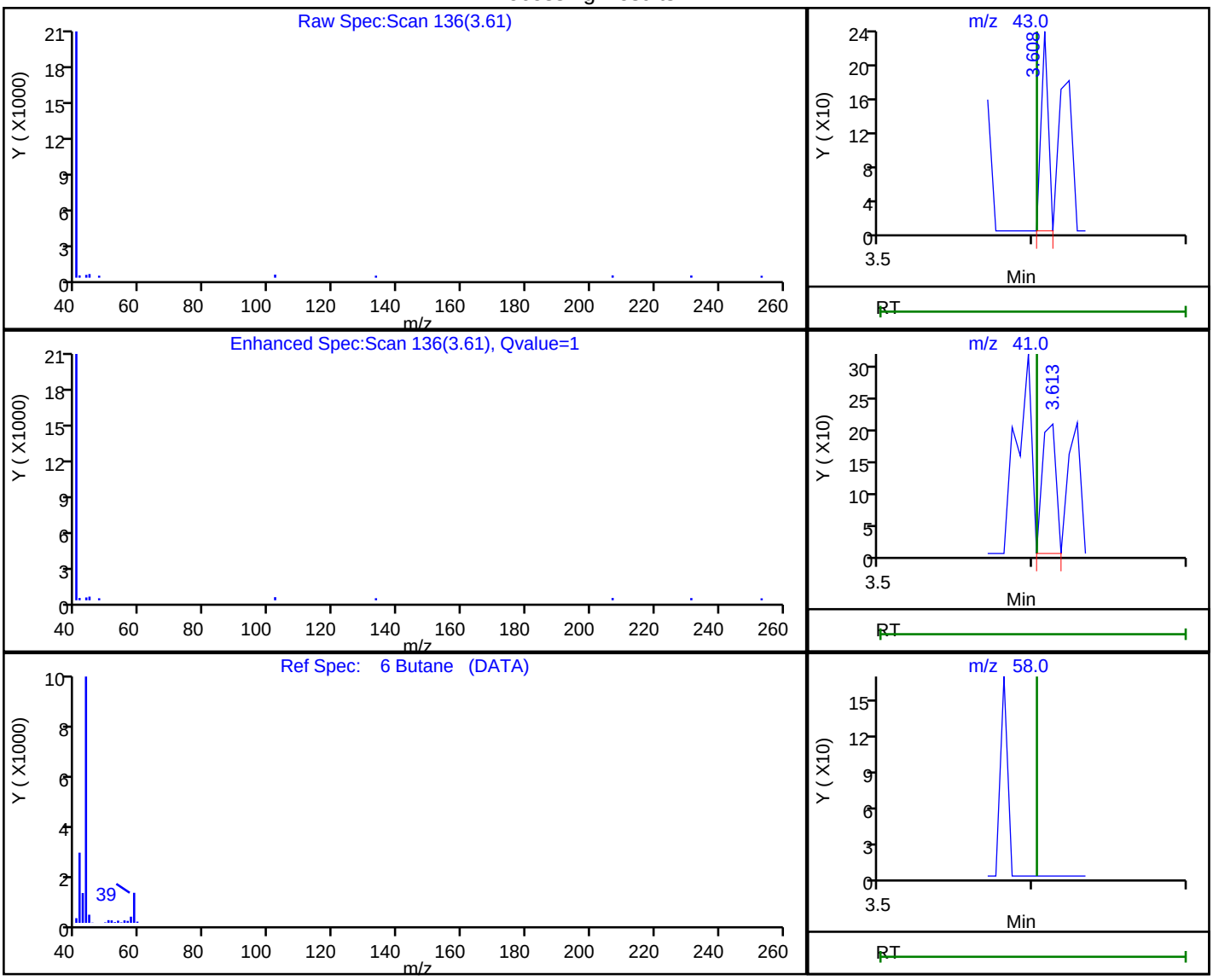
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

6 Butane, CAS: 106-97-8

Processing Results



RT	Mass	Response	Amount
3.61	43.00	74	0.003386
3.61	41.00	126	
3.60	58.00	0	

Reviewer: puangmaleek, 31-May-2019 12:49:59

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

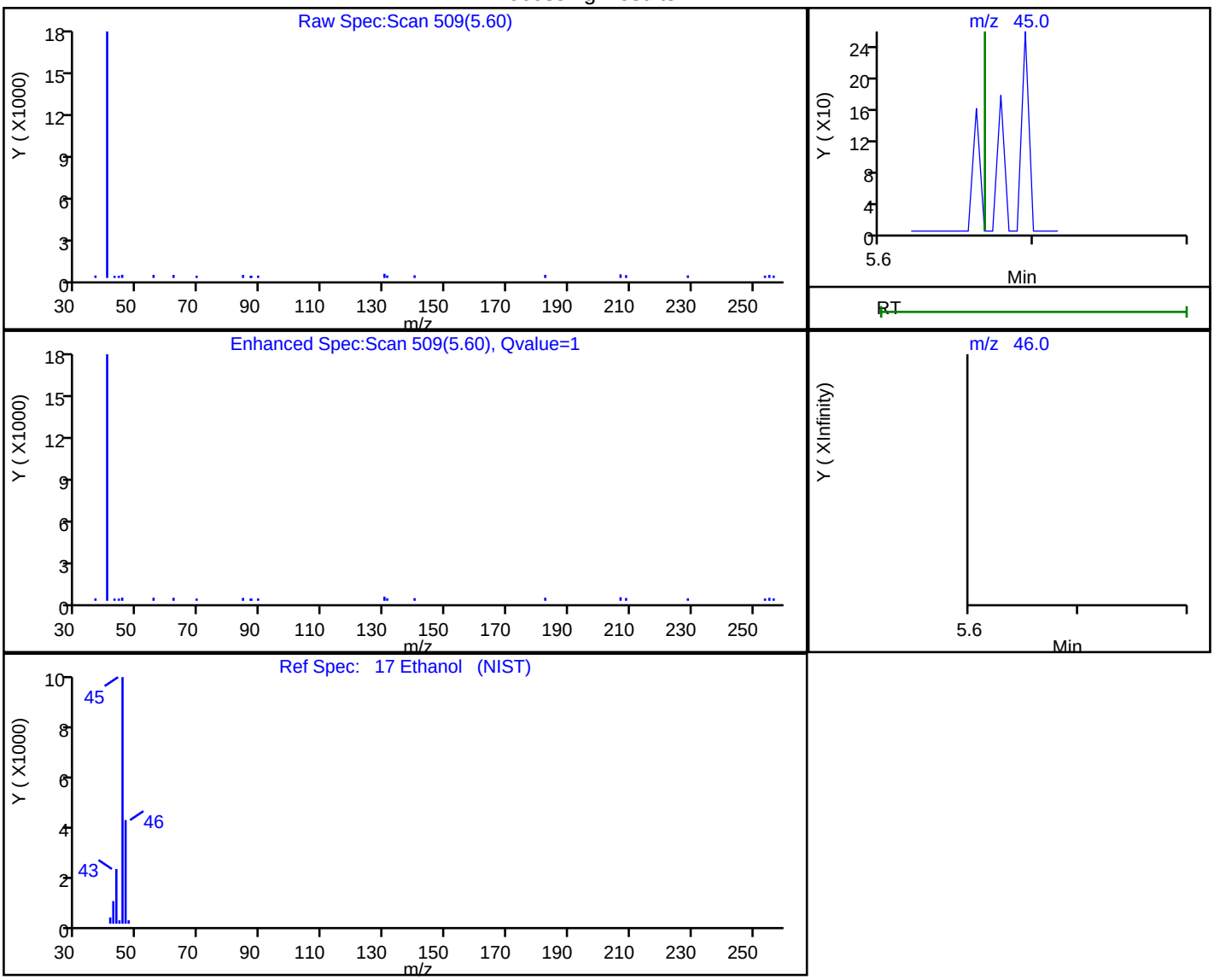
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

17 Ethanol, CAS: 64-17-5

Processing Results



RT	Mass	Response	Amount
5.60	45.00	119	0.022829
5.66	46.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:01

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

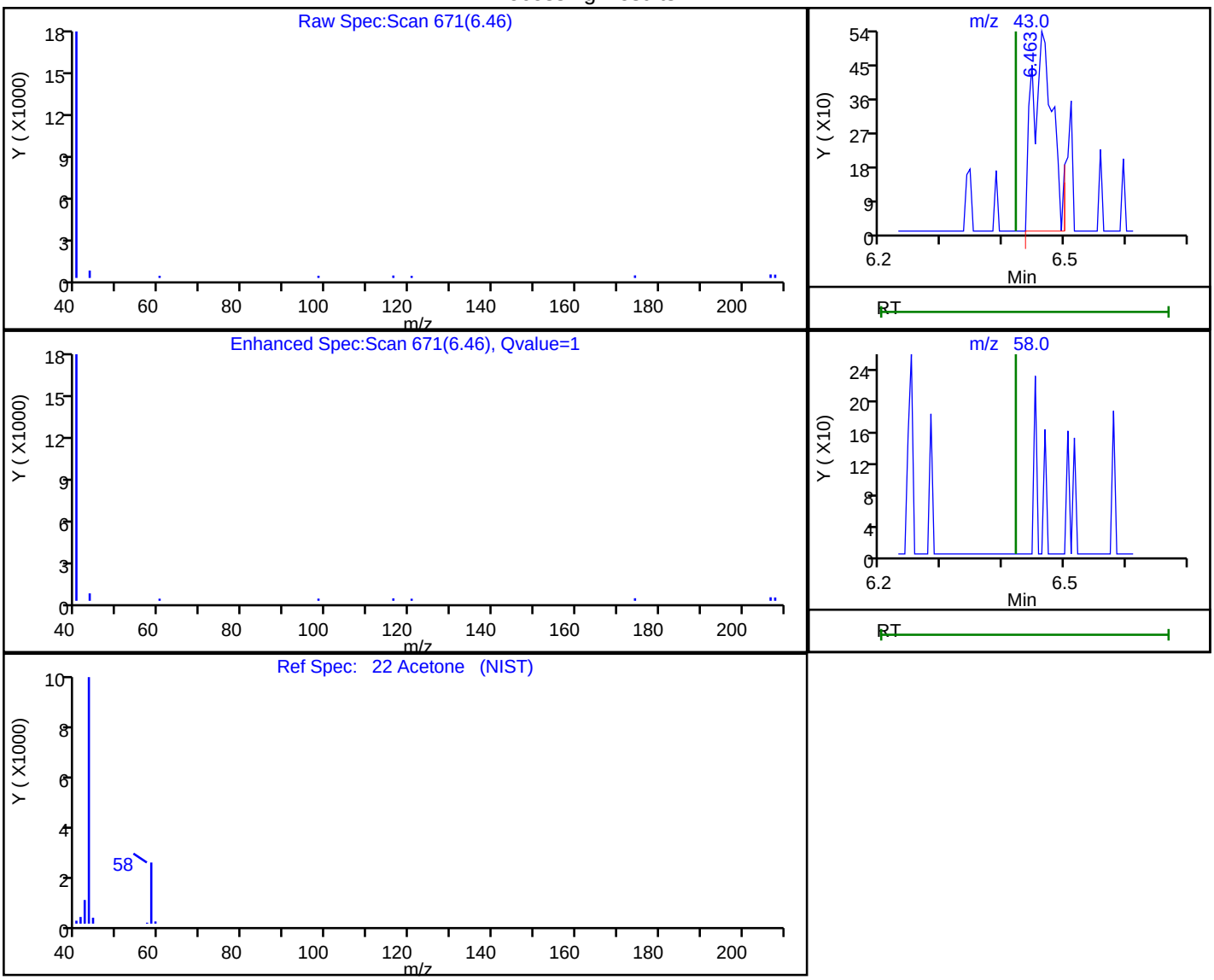
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

22 Acetone, CAS: 67-64-1

Processing Results



RT	Mass	Response	Amount
6.46	43.00	1224	0.054700
6.42	58.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:03

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

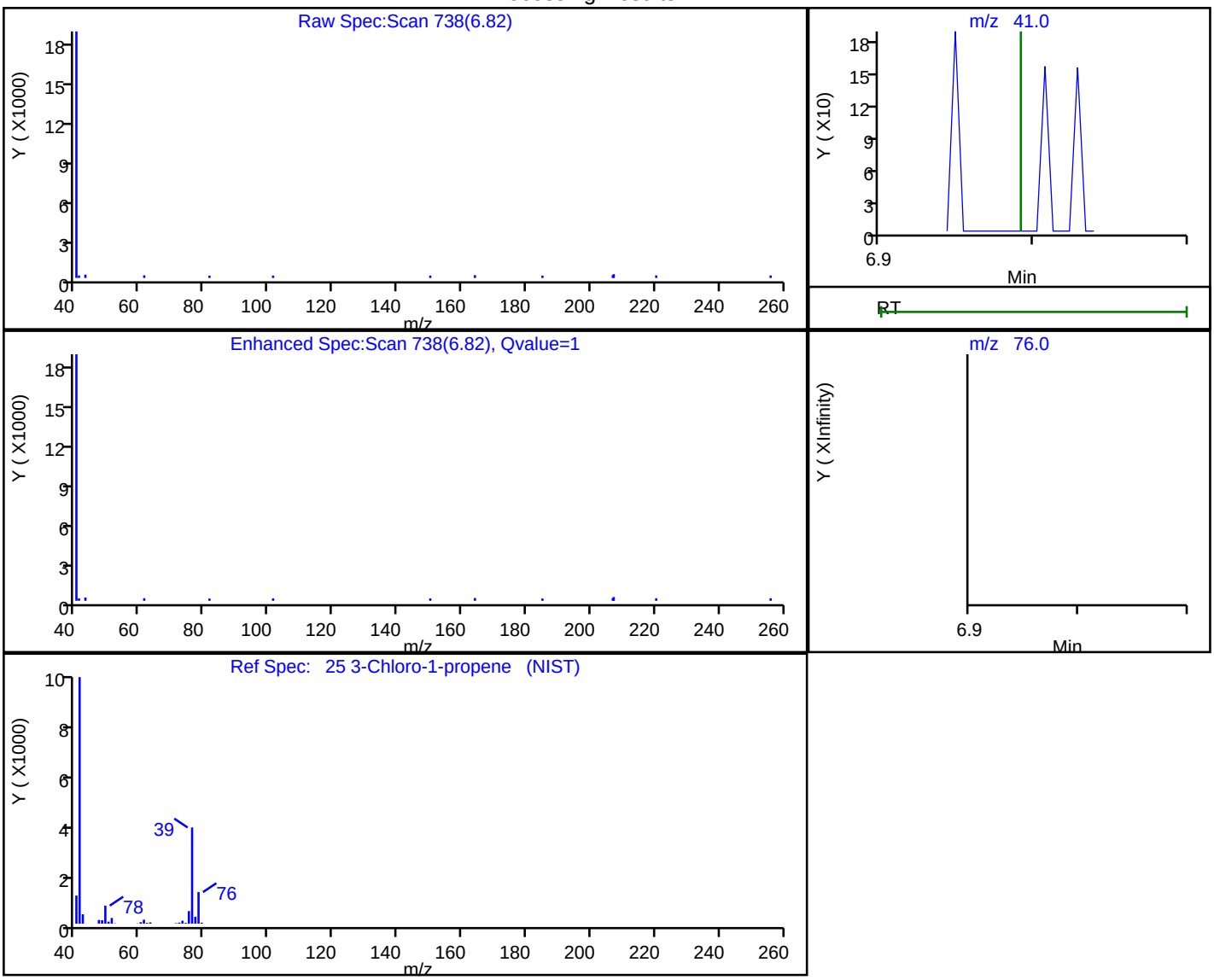
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

25 3-Chloro-1-propene, CAS: 107-05-1

Processing Results



RT	Mass	Response	Amount
6.82	41.00	110	0.006167
6.99	76.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:08

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

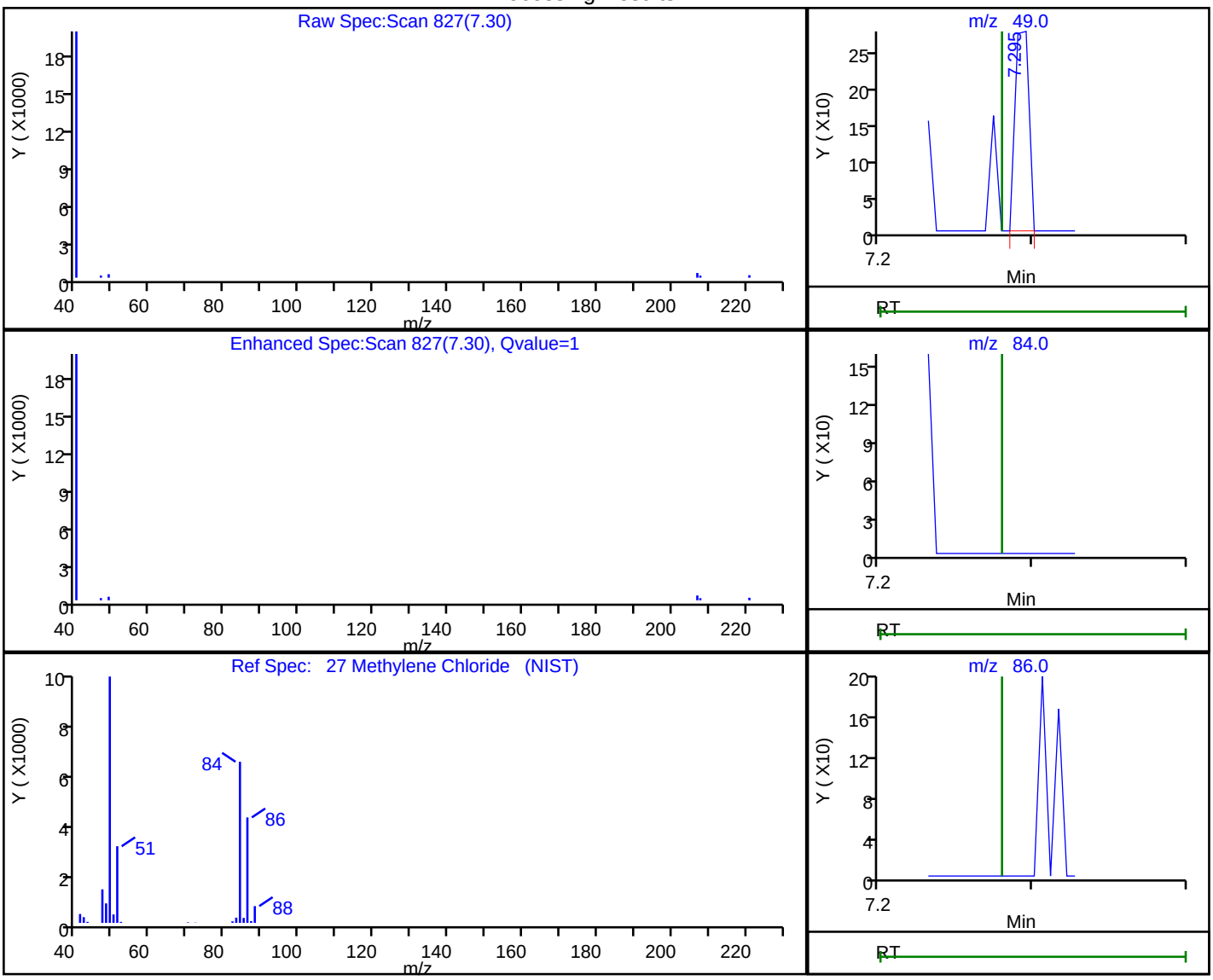
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

27 Methylene Chloride, CAS: 75-09-2

Processing Results



RT	Mass	Response	Amount
7.30	49.00	177	0.009897
7.29	84.00	0	
7.29	86.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:09

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

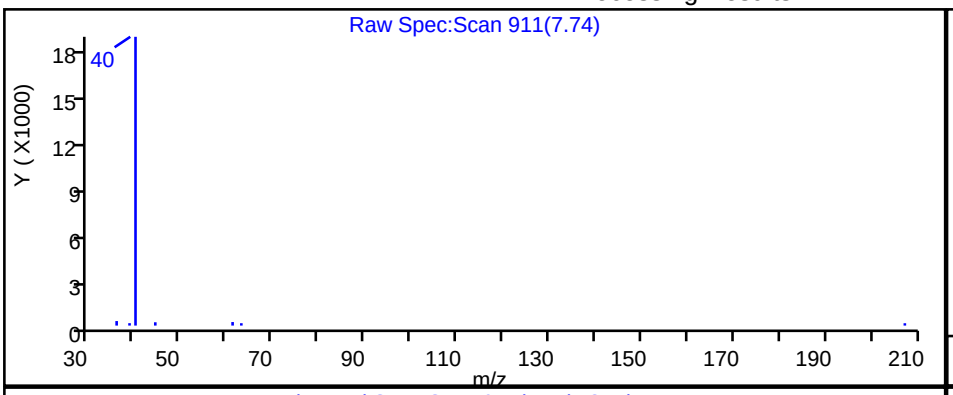
User Disabled Compound Report

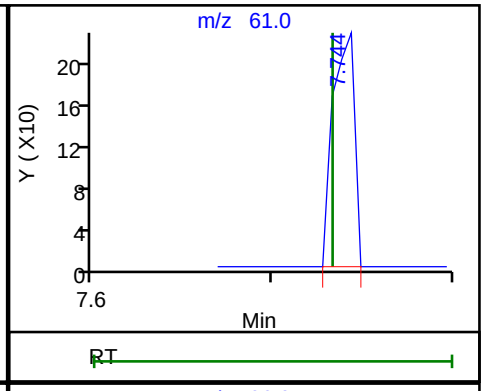
Eurofins TestAmerica, Burlington

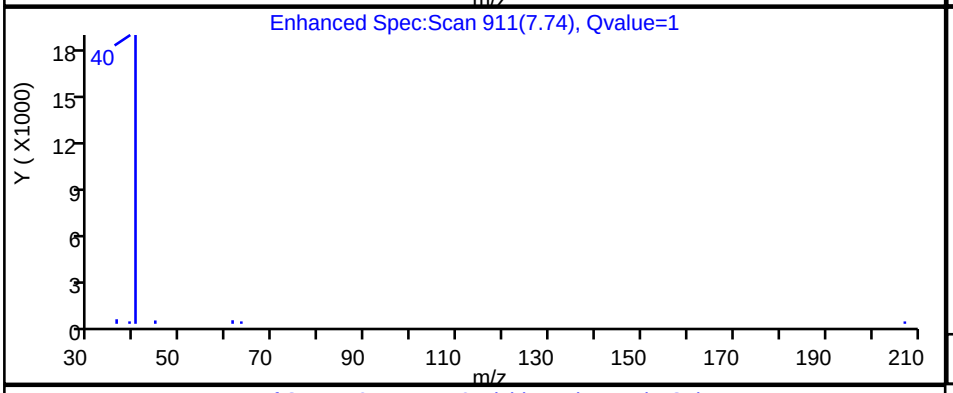
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

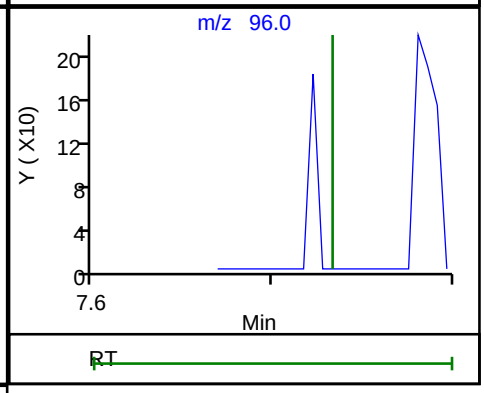
31 trans-1,2-Dichloroethene, CAS: 156-60-5

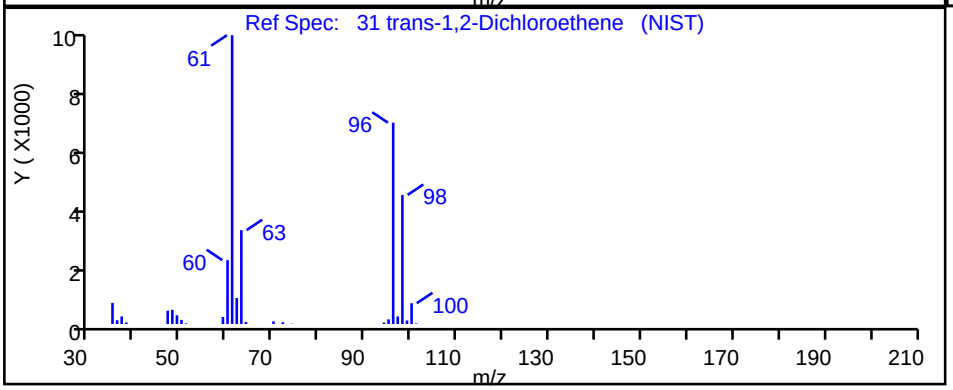
Processing Results











RT	Mass	Response	Amount
7.74	61.00	192	0.007573
7.73	96.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:11

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

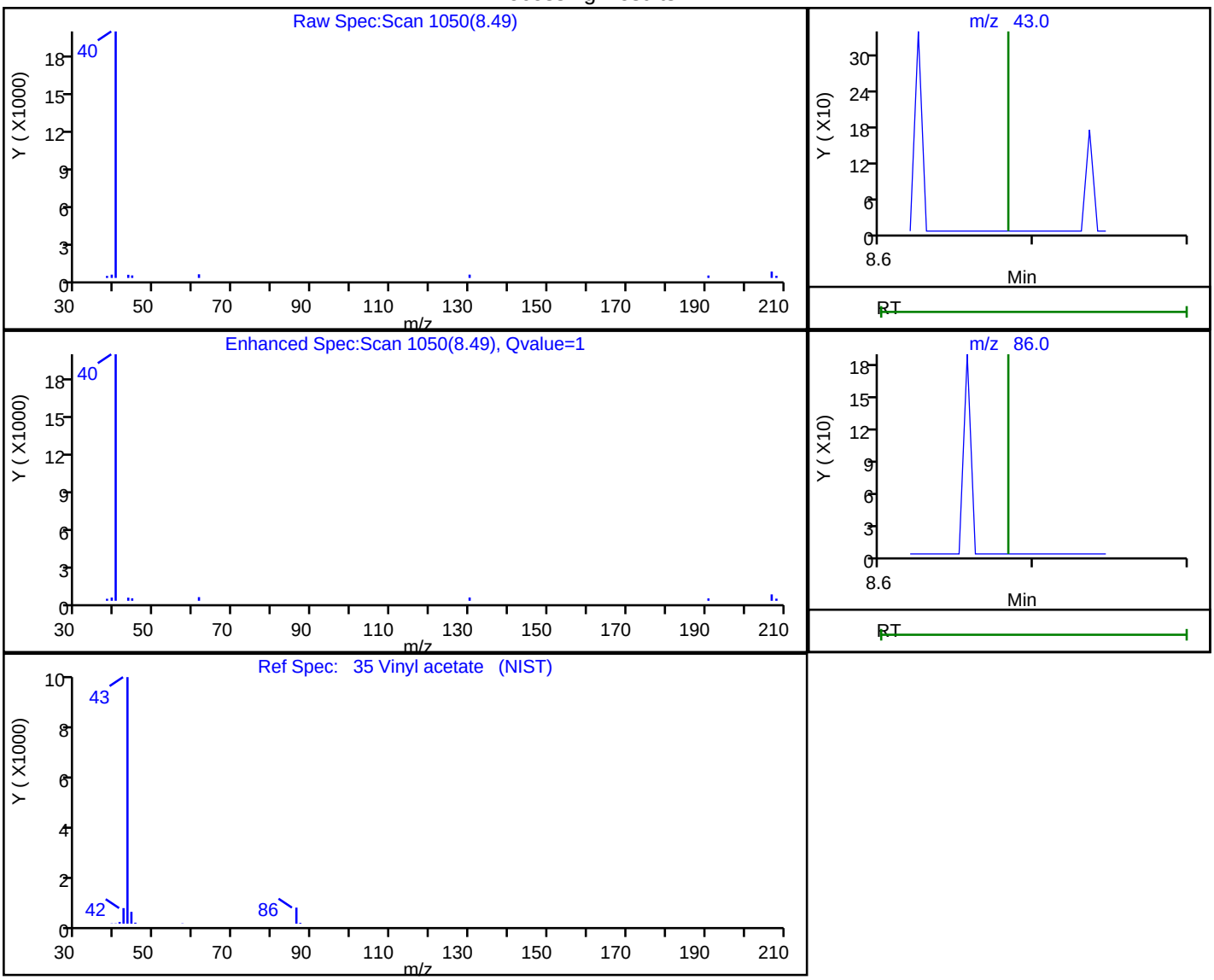
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

35 Vinyl acetate, CAS: 108-05-4

Processing Results



RT	Mass	Response	Amount
8.49	43.00	136	0.003759
8.68	86.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:14

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

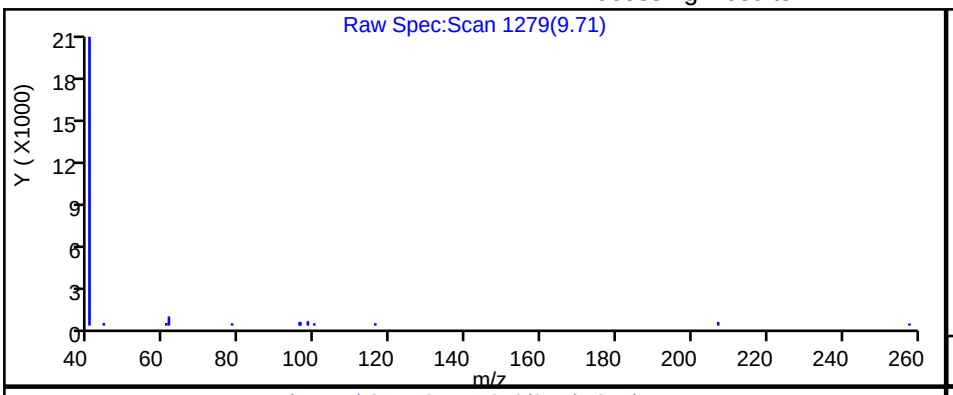
User Disabled Compound Report

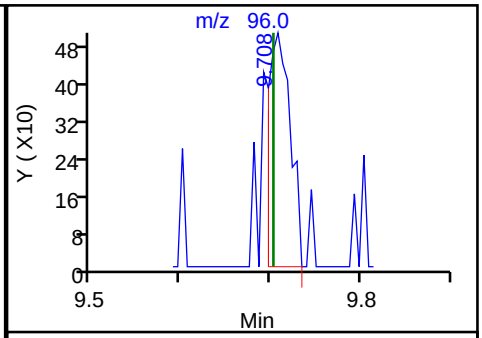
Eurofins TestAmerica, Burlington

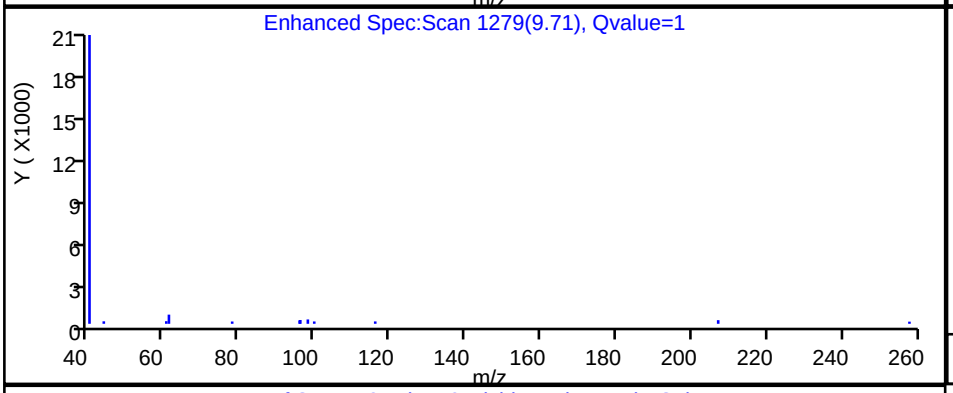
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

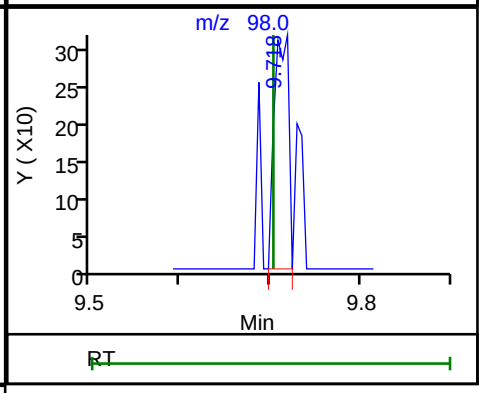
37 cis-1,2-Dichloroethene, CAS: 156-59-2

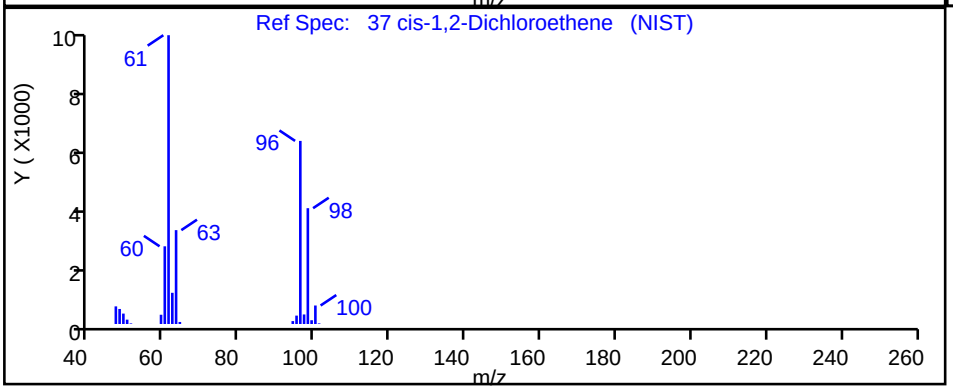
Processing Results











RT	Mass	Response	Amount
9.71	96.00	838	0.034758
9.72	98.00	347	

Reviewer: puangmaleek, 31-May-2019 12:50:16

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

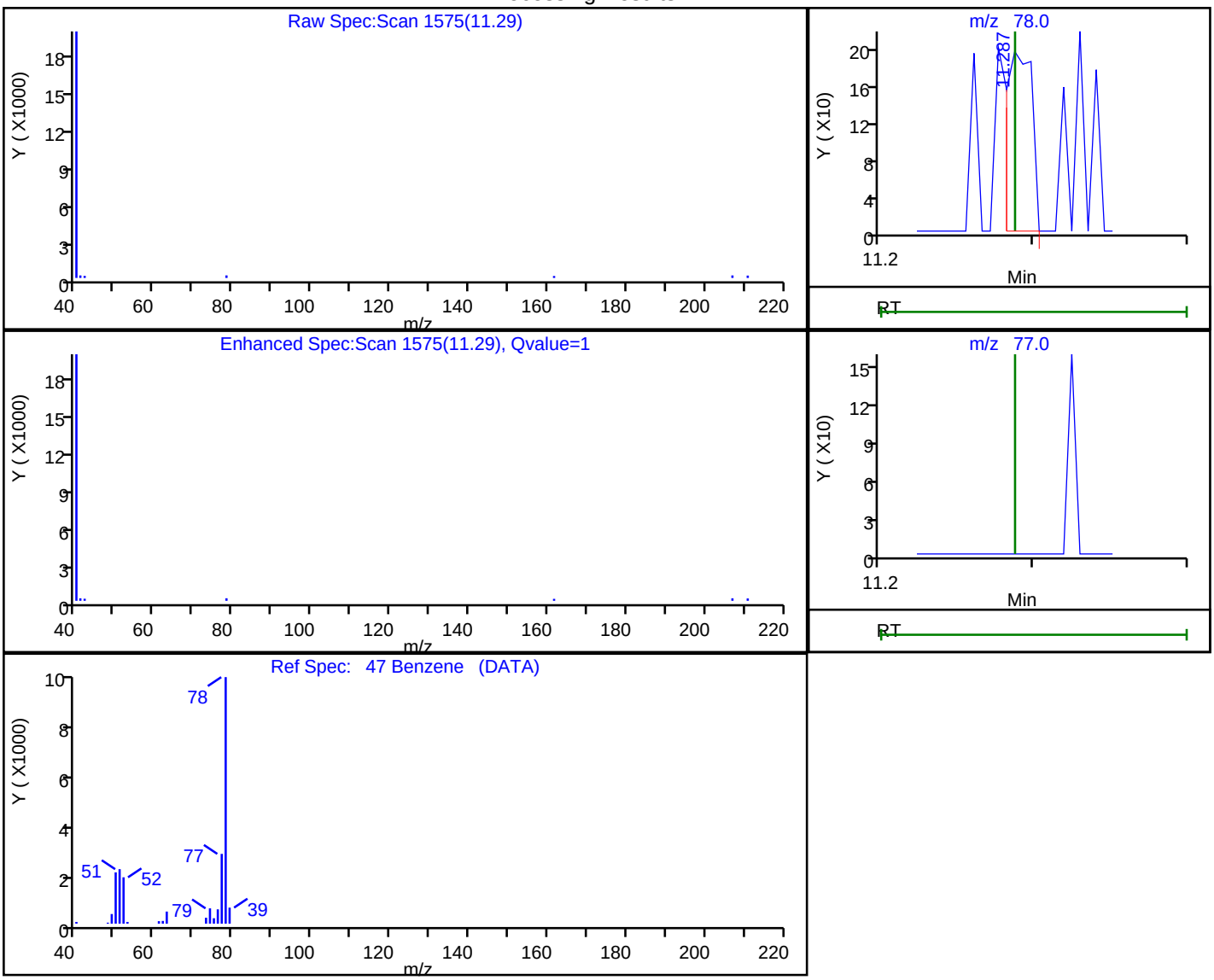
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

47 Benzene, CAS: 71-43-2

Processing Results



RT	Mass	Response	Amount
11.29	78.00	231	0.003052
11.29	77.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:24

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

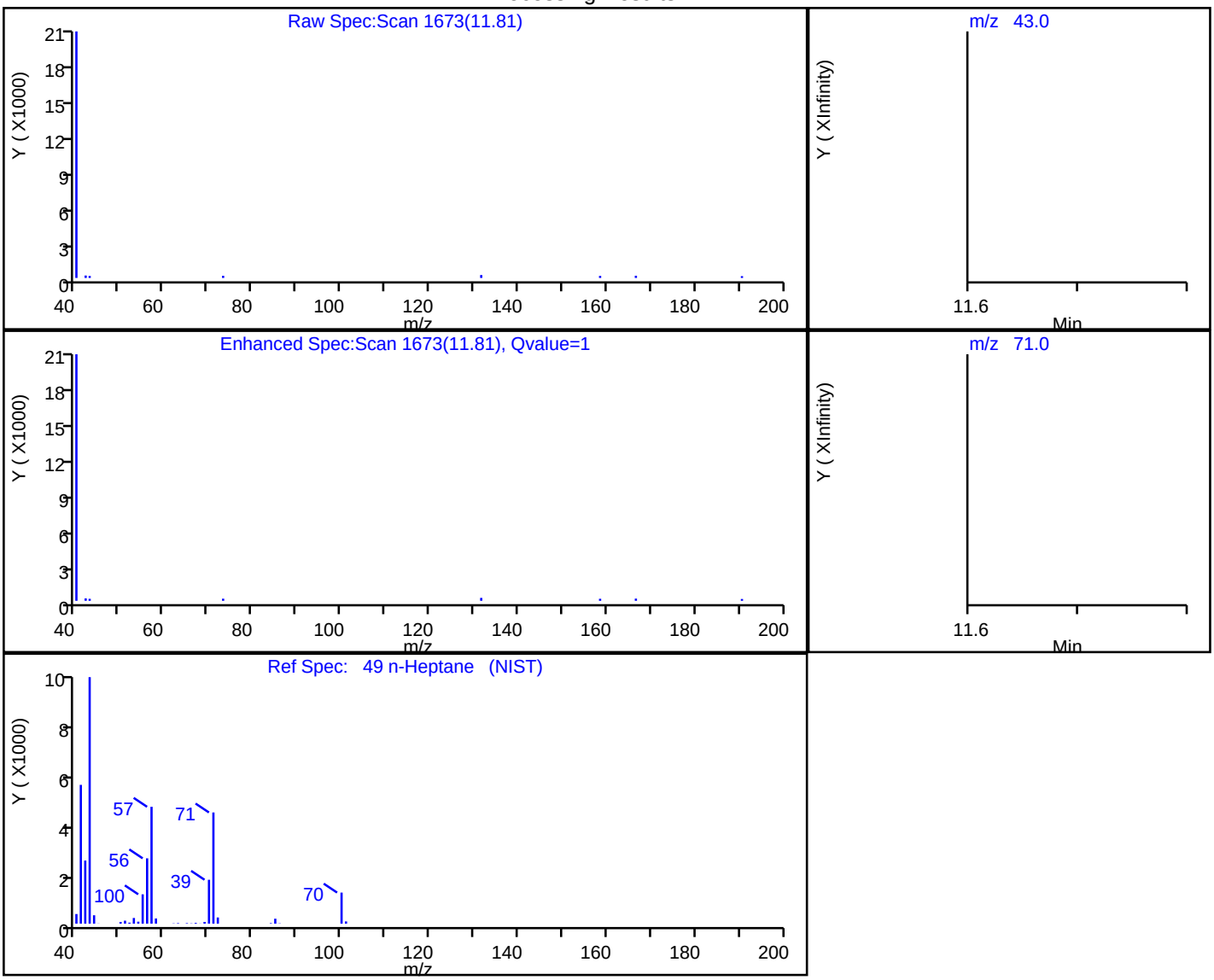
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

49 n-Heptane, CAS: 142-82-5

Processing Results



RT	Mass	Response	Amount
11.81	43.00	52	0.001393
11.70	71.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:26

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

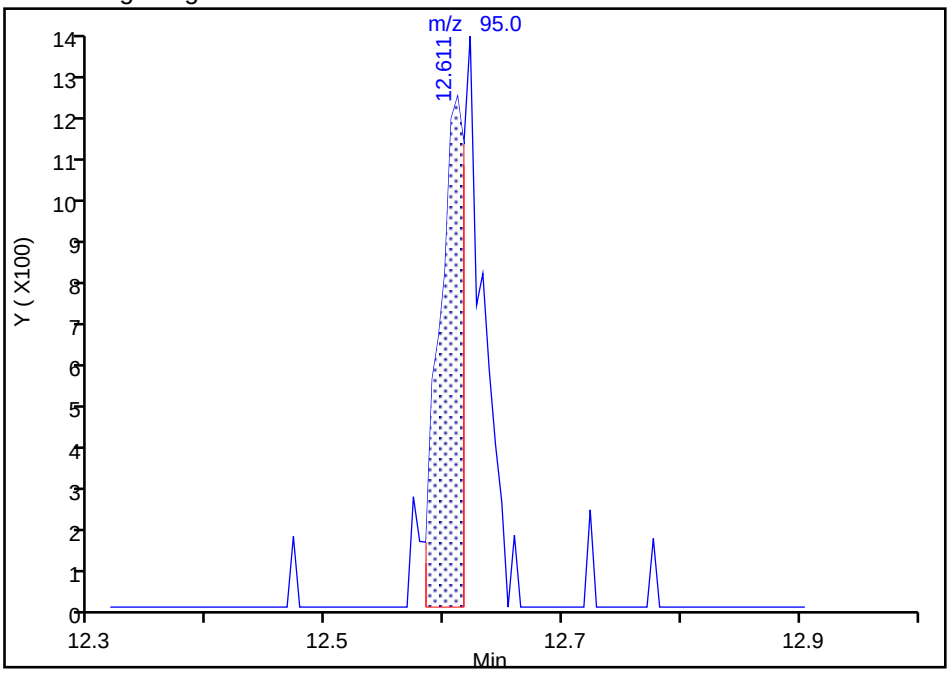
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

53 Trichloroethene, CAS: 79-01-6

Signal: 1

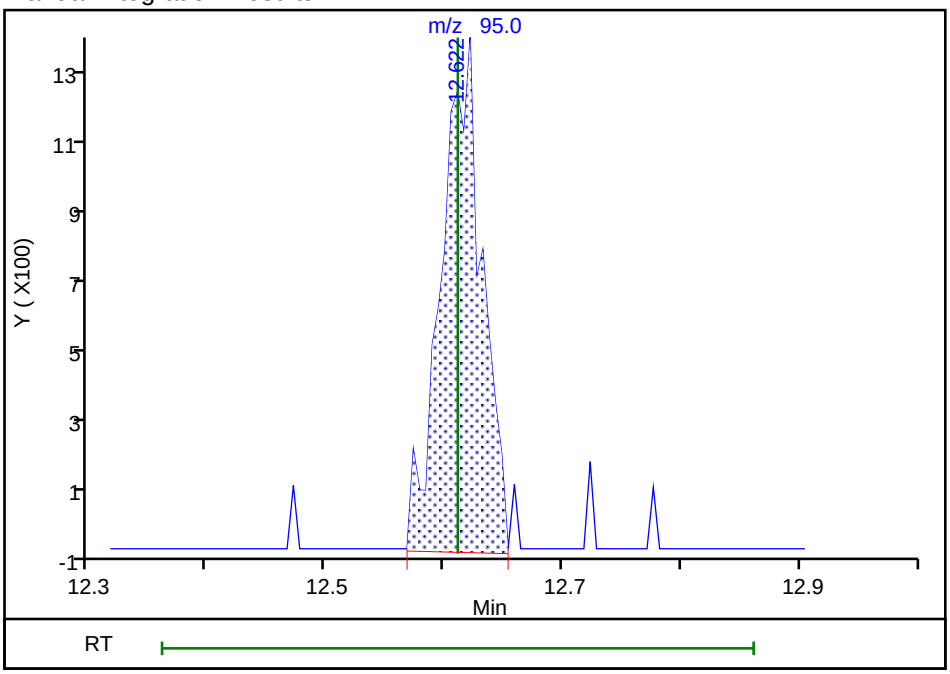
Processing Integration Results

RT: 12.61
Area: 1794
Amount: 0.049573
Amount Units: ppb v/v



Manual Integration Results

RT: 12.62
Area: 3282
Amount: 0.090690
Amount Units: ppb v/v



Reviewer: puangmaleek, 31-May-2019 12:50:34

Audit Action: Manually Integrated Audit Reason: Assign Peak

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

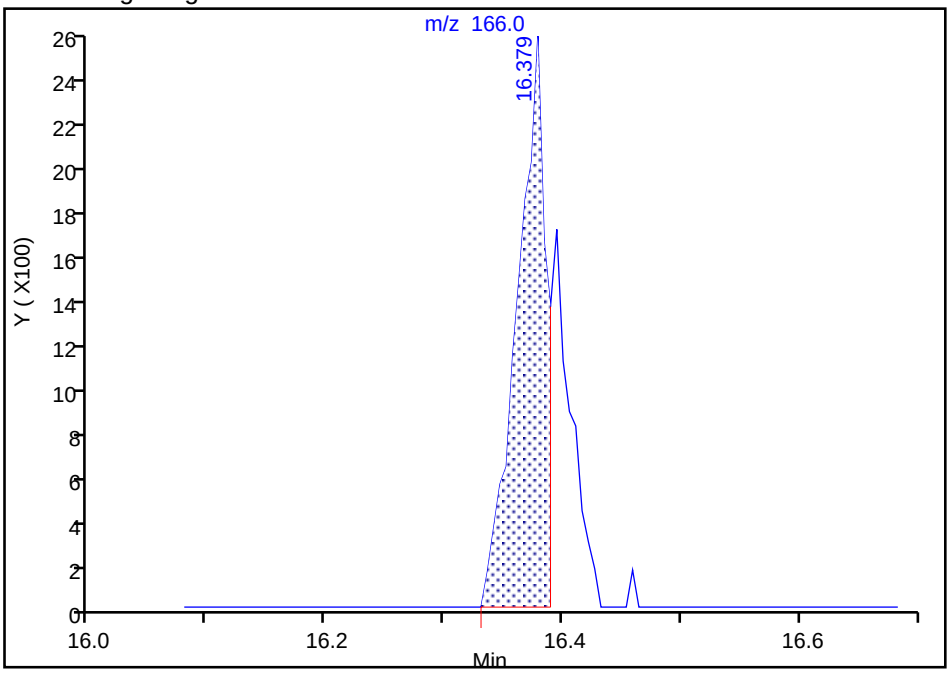
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

68 Tetrachloroethene, CAS: 127-18-4

Signal: 1

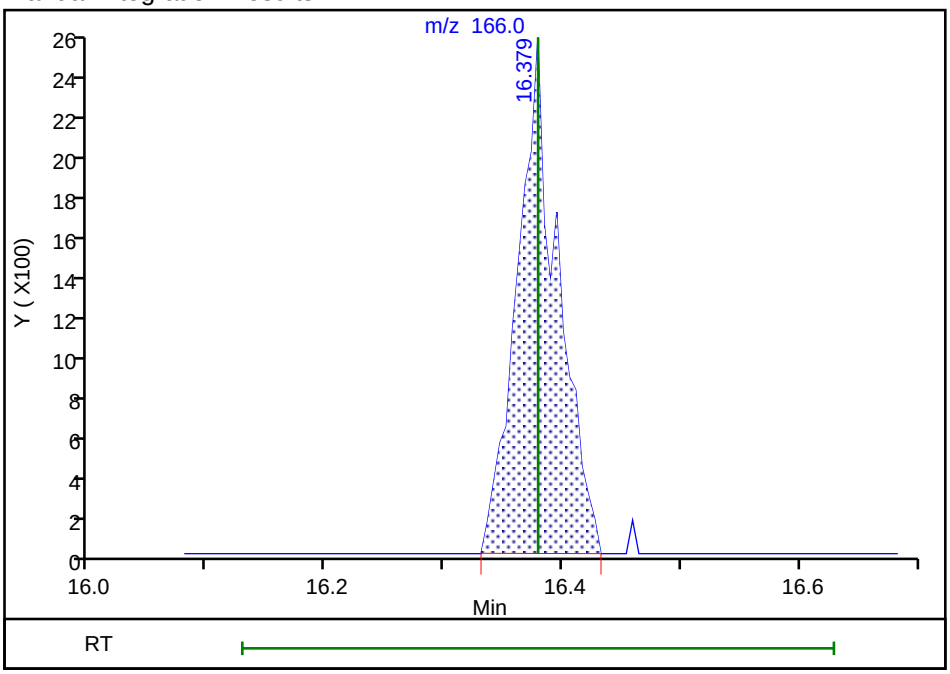
Processing Integration Results

RT: 16.38
Area: 4390
Amount: 0.059564
Amount Units: ppb v/v



Manual Integration Results

RT: 16.38
Area: 6113
Amount: 0.082942
Amount Units: ppb v/v



Reviewer: puangmaleek, 31-May-2019 12:50:51

Audit Action: Manually Integrated Audit Reason: Assign Peak

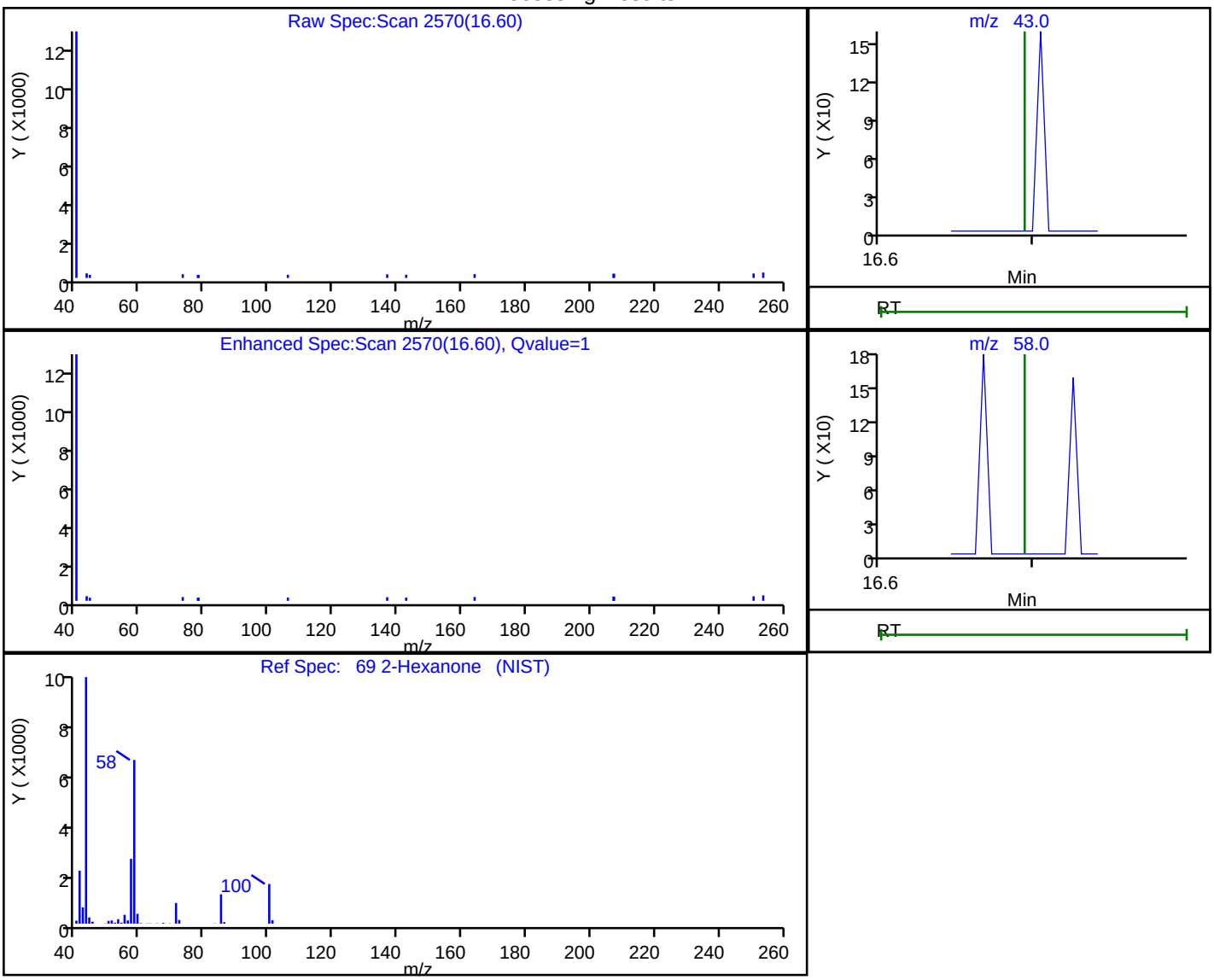
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

69 2-Hexanone, CAS: 591-78-6

Processing Results



RT	Mass	Response	Amount
16.60	43.00	122	0.002063
16.69	58.00	0	

Reviewer: puangmaleek, 31-May-2019 12:50:56

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

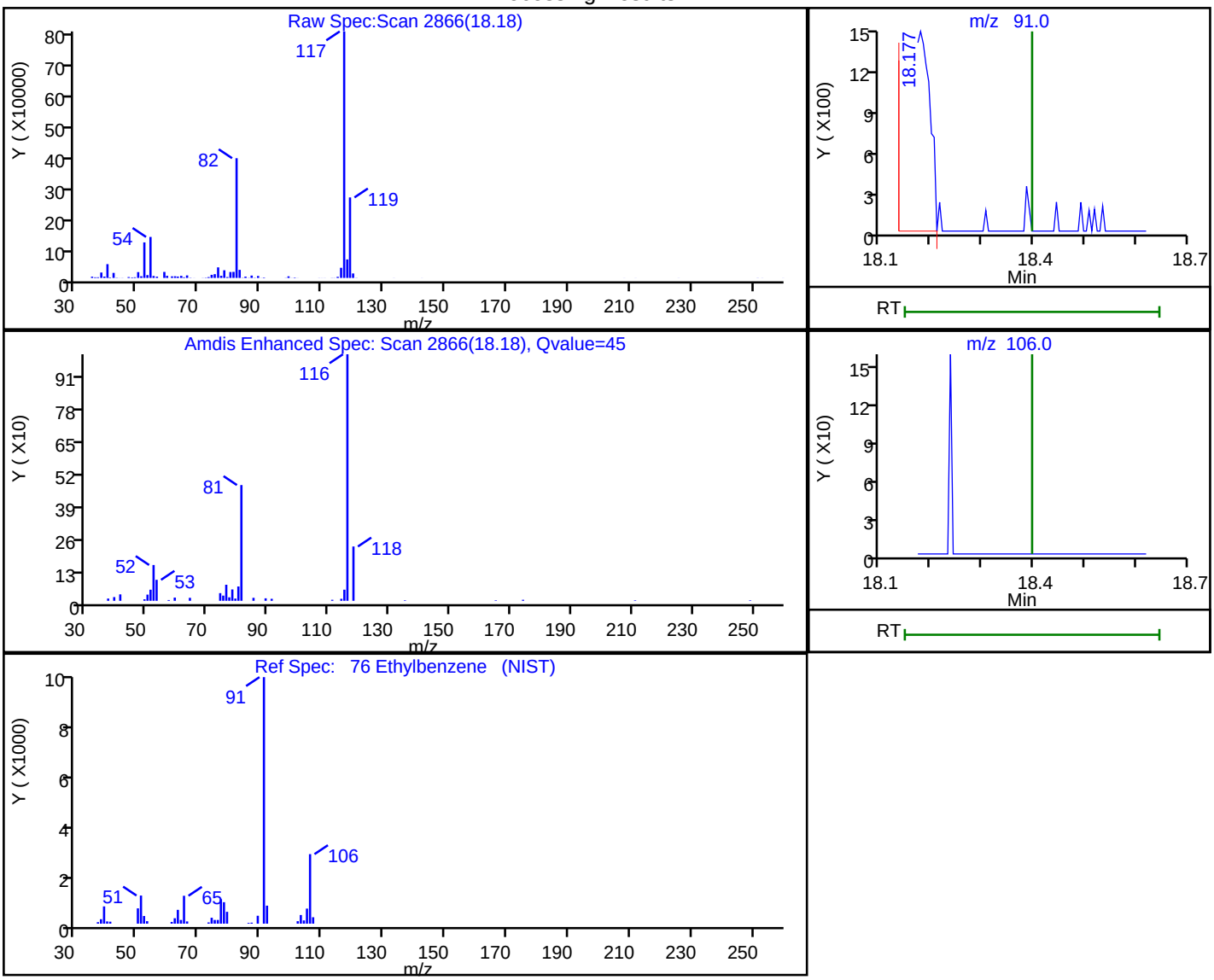
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

76 Ethylbenzene, CAS: 100-41-4

Processing Results



RT	Mass	Response	Amount
18.18	91.00	3885	0.023865
18.40	106.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:00

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

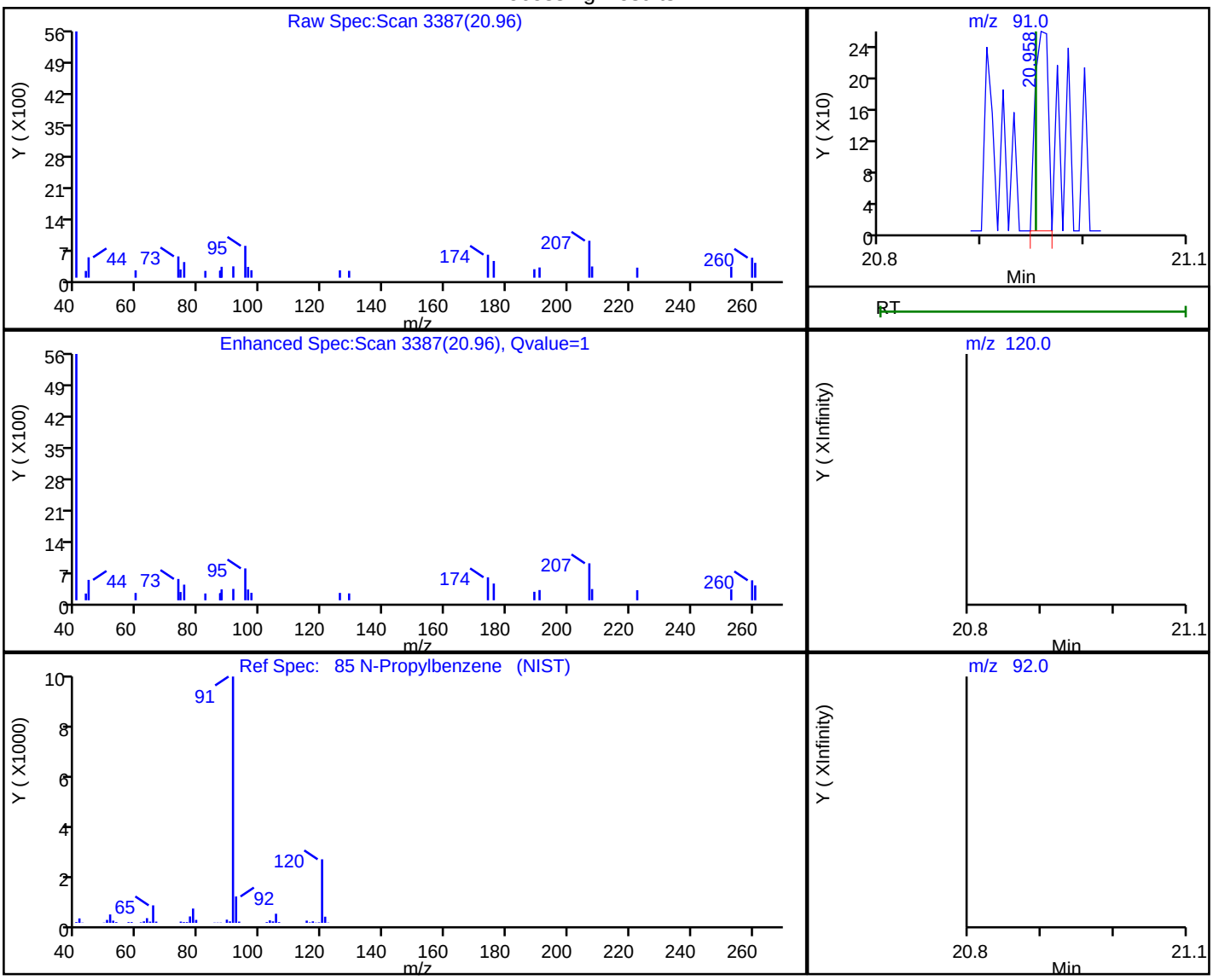
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

85 N-Propylbenzene, CAS: 103-65-1

Processing Results



RT	Mass	Response	Amount
20.96	91.00	226	0.001028
20.95	120.00	0	
20.95	92.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:06

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

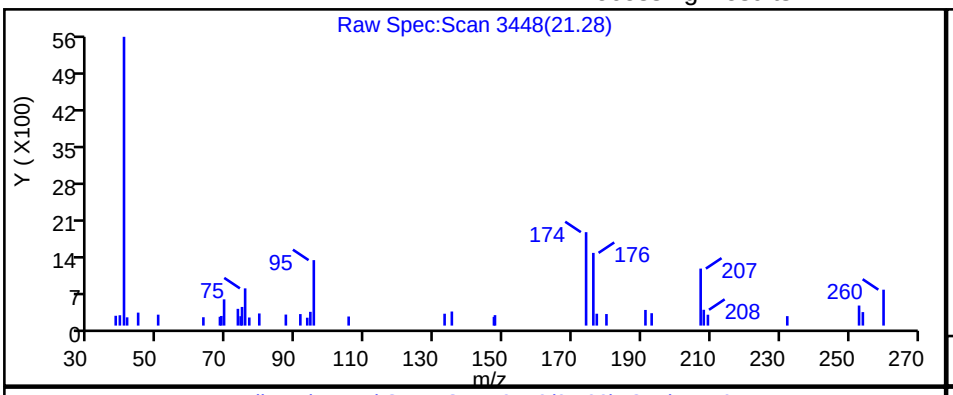
User Disabled Compound Report

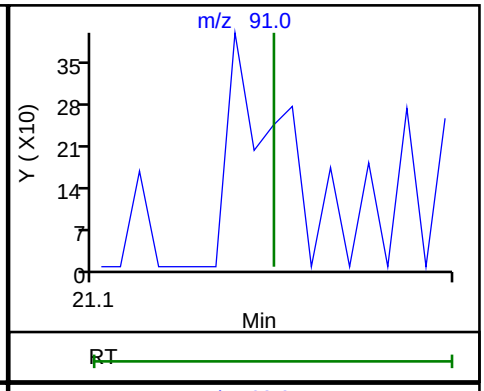
Eurofins TestAmerica, Burlington

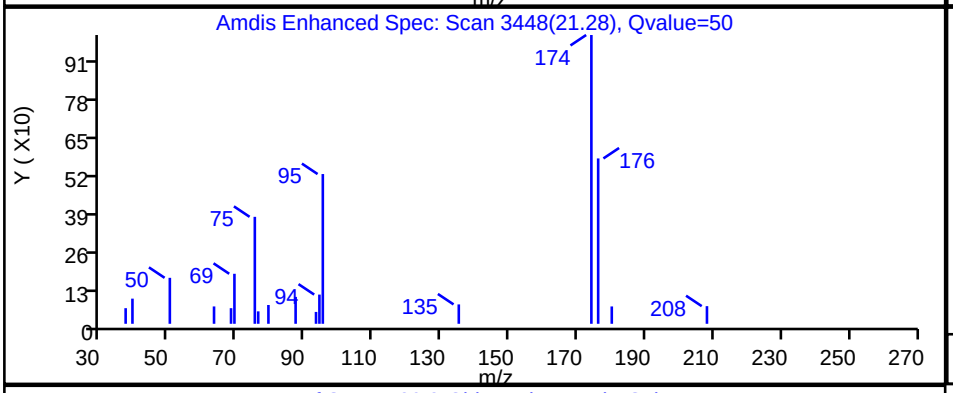
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

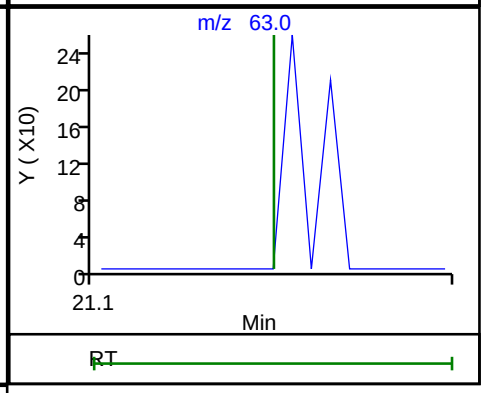
89 2-Chlorotoluene, CAS: 95-49-8

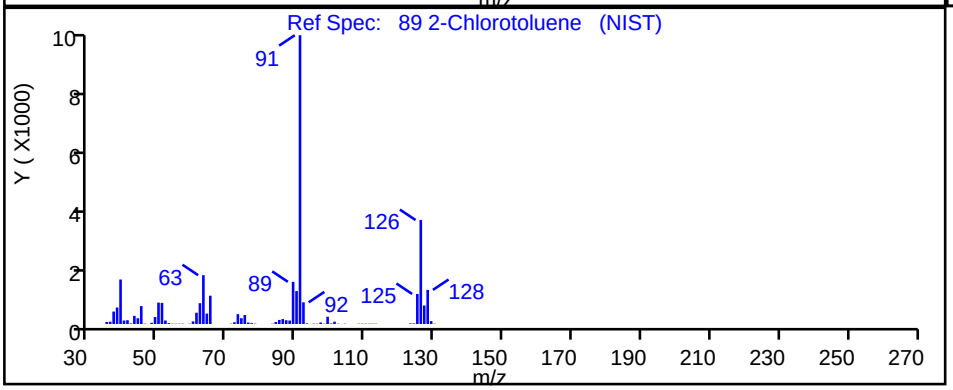
Processing Results











RT	Mass	Response	Amount
21.28	91.00	131	0.000907
21.15	63.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:09

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

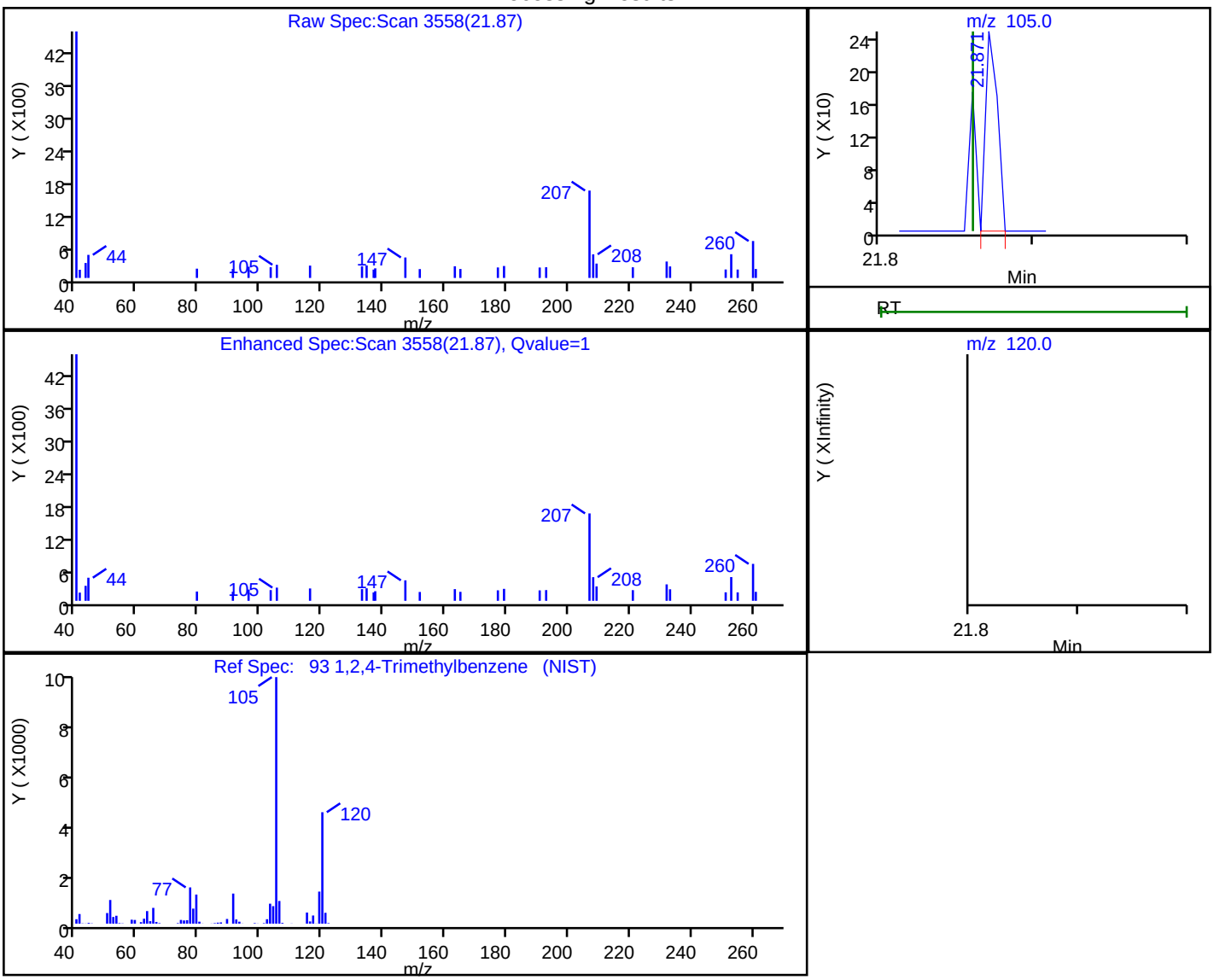
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

93 1,2,4-Trimethylbenzene, CAS: 95-63-6

Processing Results



RT	Mass	Response	Amount
21.87	105.00	129	0.000855
21.86	120.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:12

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

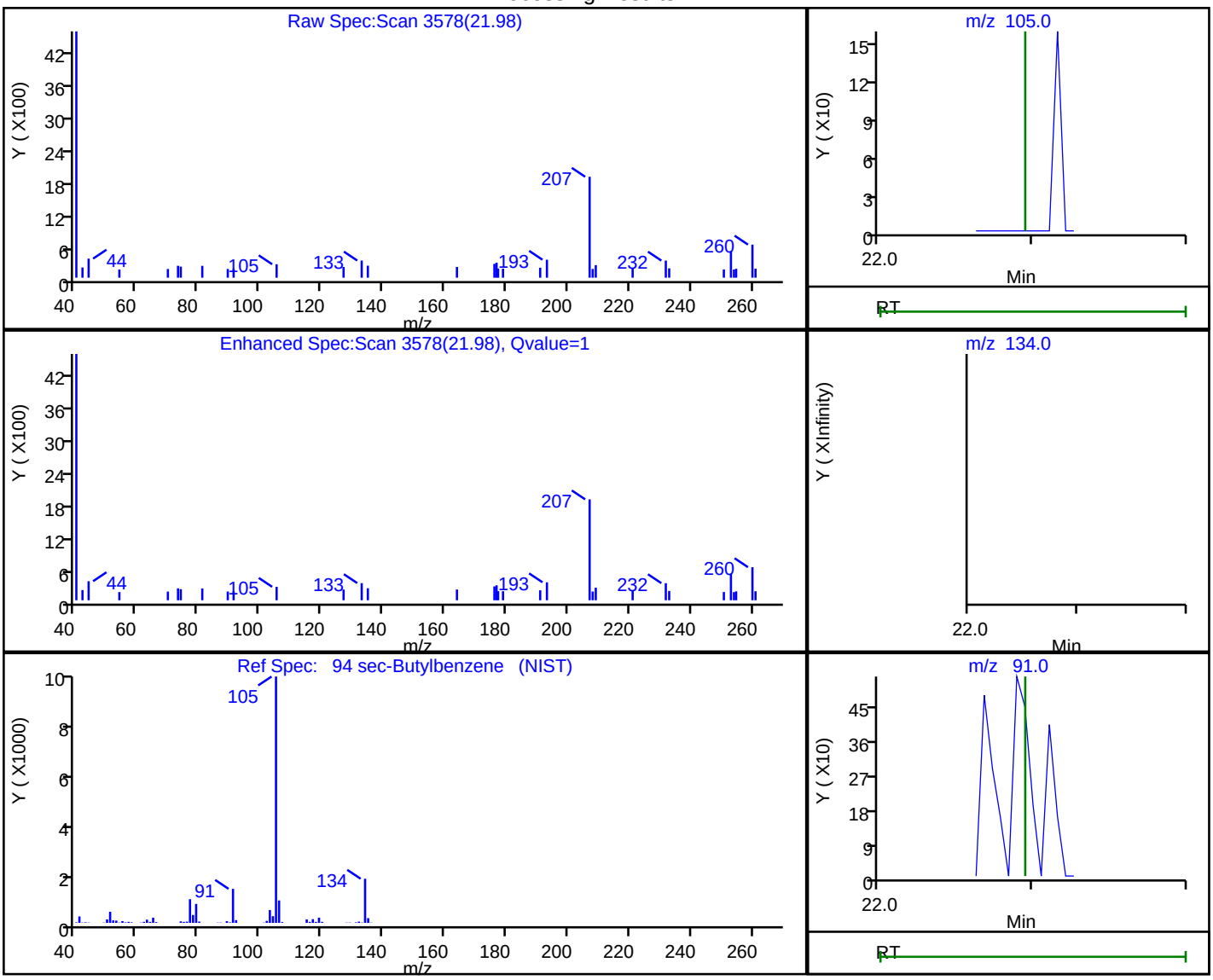
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

94 sec-Butylbenzene, CAS: 135-98-8

Processing Results



RT	Mass	Response	Amount
21.98	105.00	79	0.000346
21.98	91.00	220	
22.09	134.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:14

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

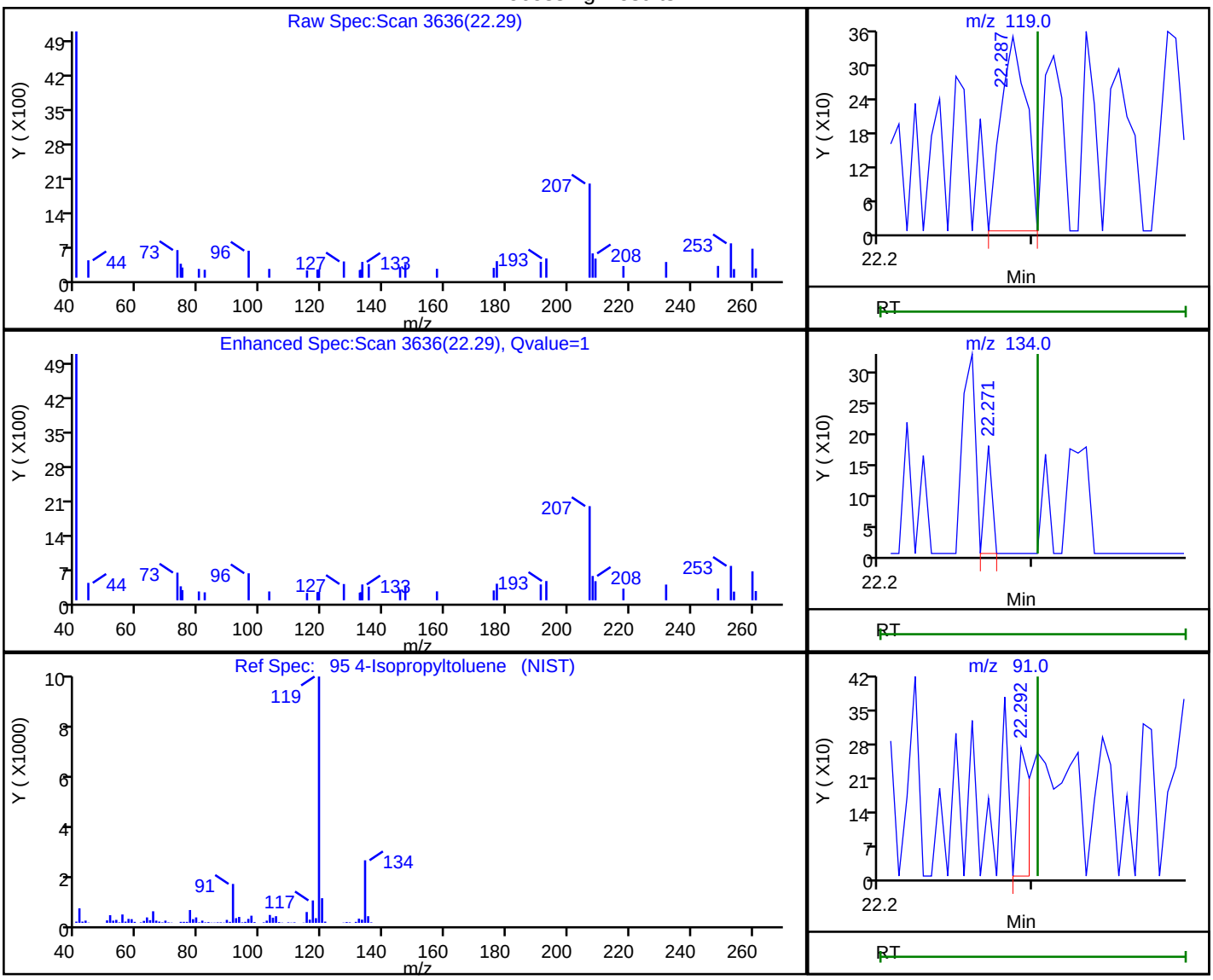
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

95 4-Isopropyltoluene, CAS: 99-87-6

Processing Results



RT	Mass	Response	Amount
22.29	119.00	393	0.001995
22.27	134.00	56	
22.29	91.00	151	

Reviewer: puangmaleek, 31-May-2019 12:51:15

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

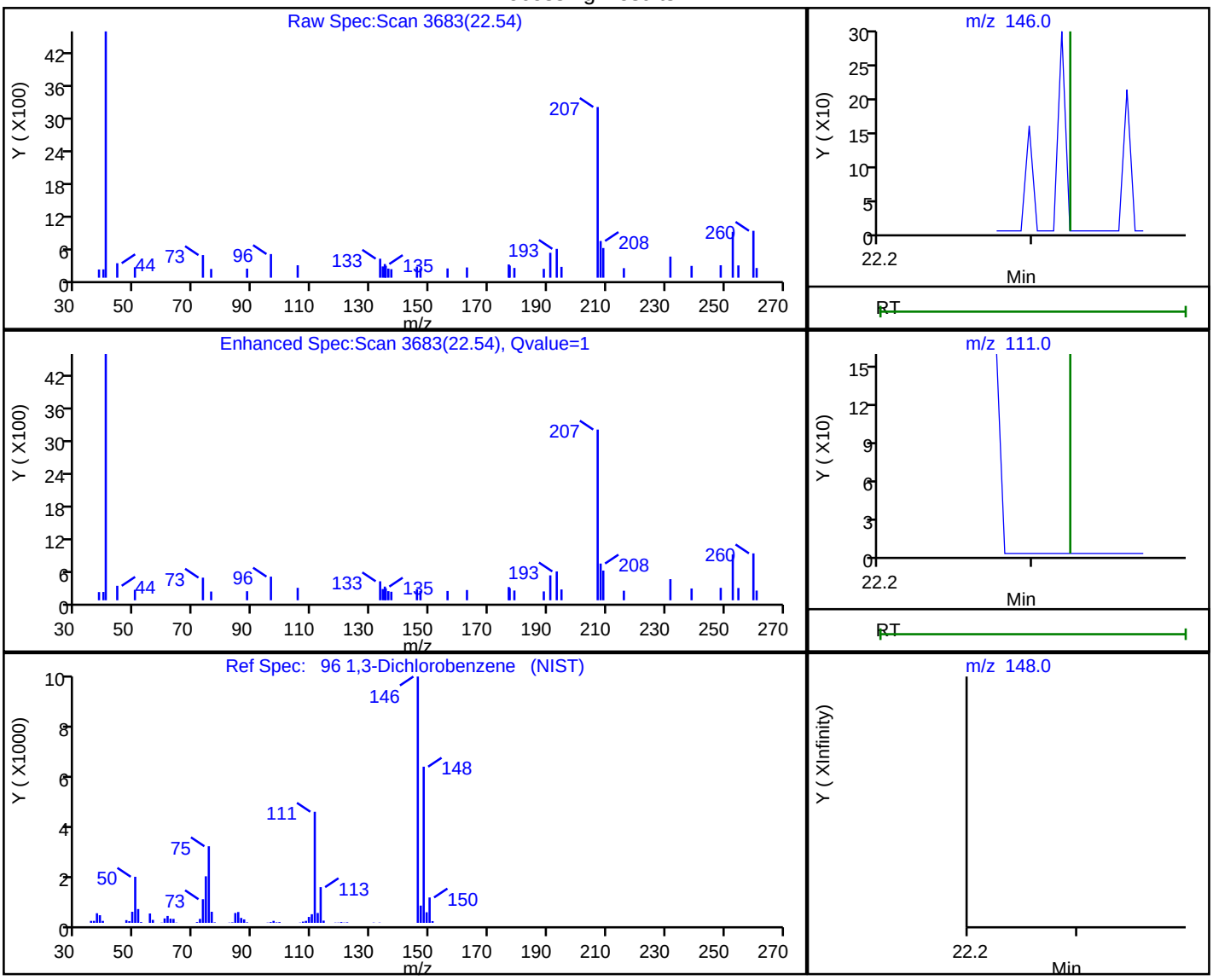
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

96 1,3-Dichlorobenzene, CAS: 541-73-1

Processing Results



RT	Mass	Response	Amount
22.54	146.00	121	0.001005
22.32	111.00	0	
22.32	148.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:16

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

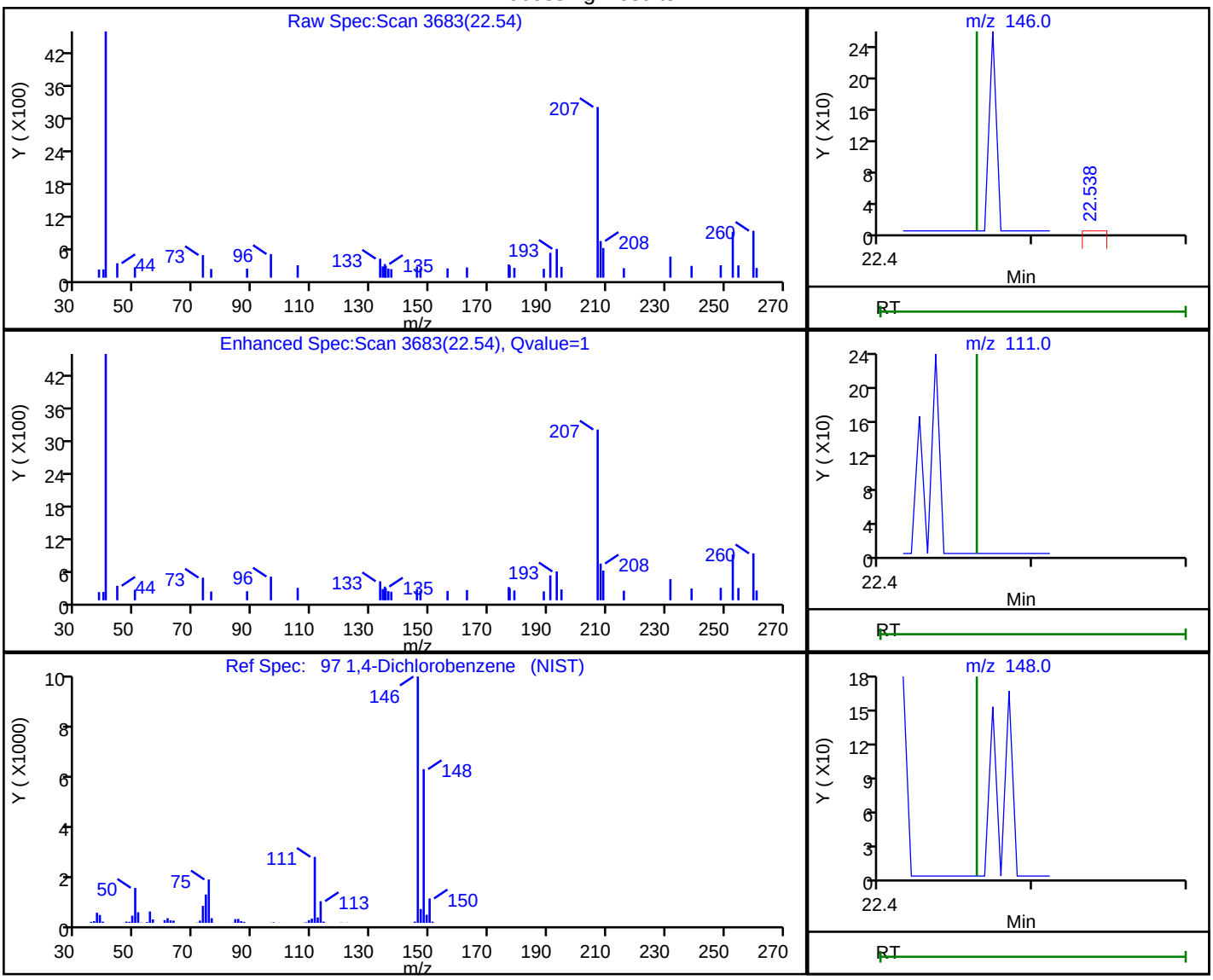
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

97 1,4-Dichlorobenzene, CAS: 106-46-7

Processing Results



RT	Mass	Response	Amount
22.54	146.00	121	0.001006
22.46	111.00	0	
22.46	148.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:17

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

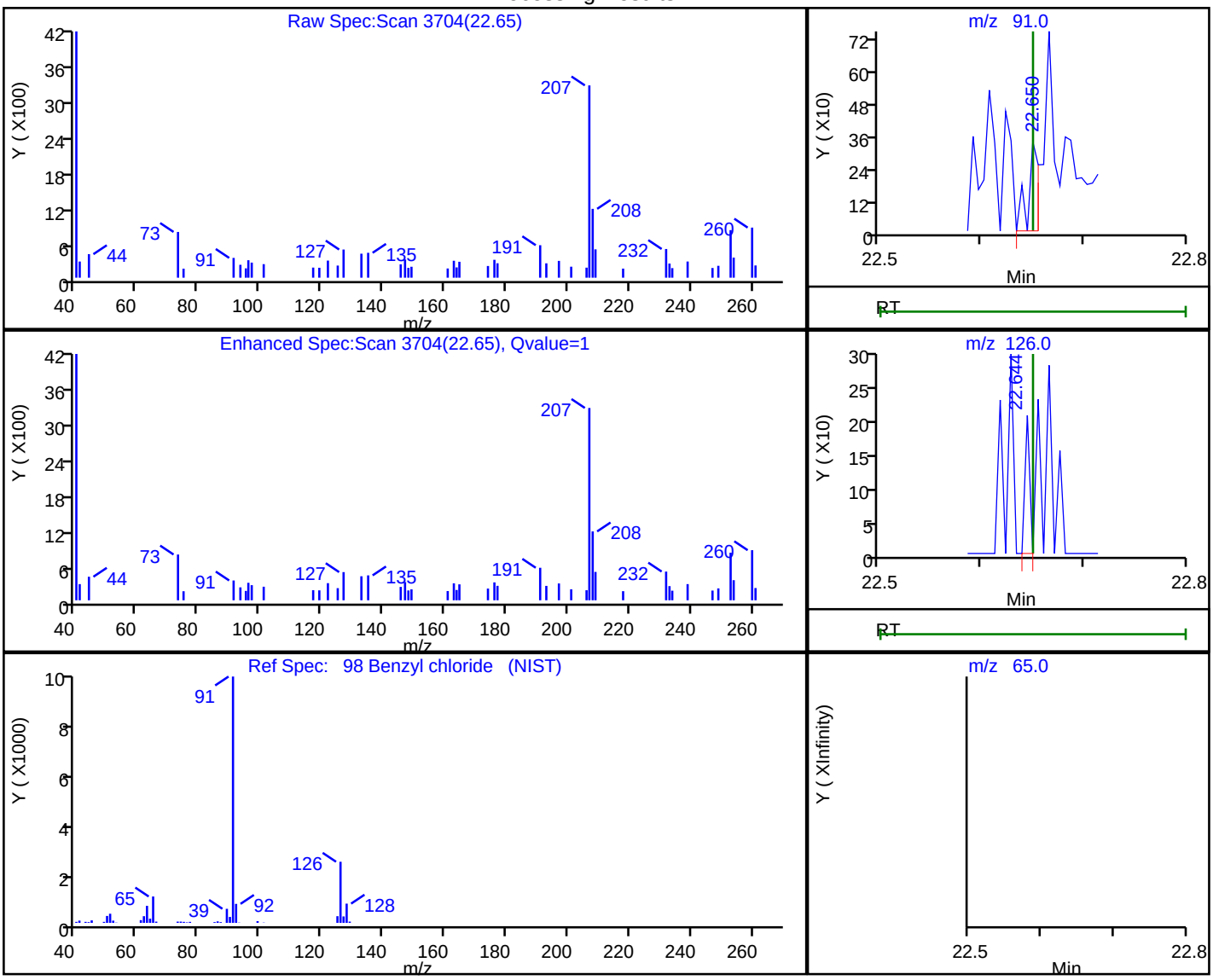
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

98 Benzyl chloride, CAS: 100-44-7

Processing Results



RT	Mass	Response	Amount
22.65	91.00	240	0.001859
22.64	126.00	66	
22.65	65.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:19

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

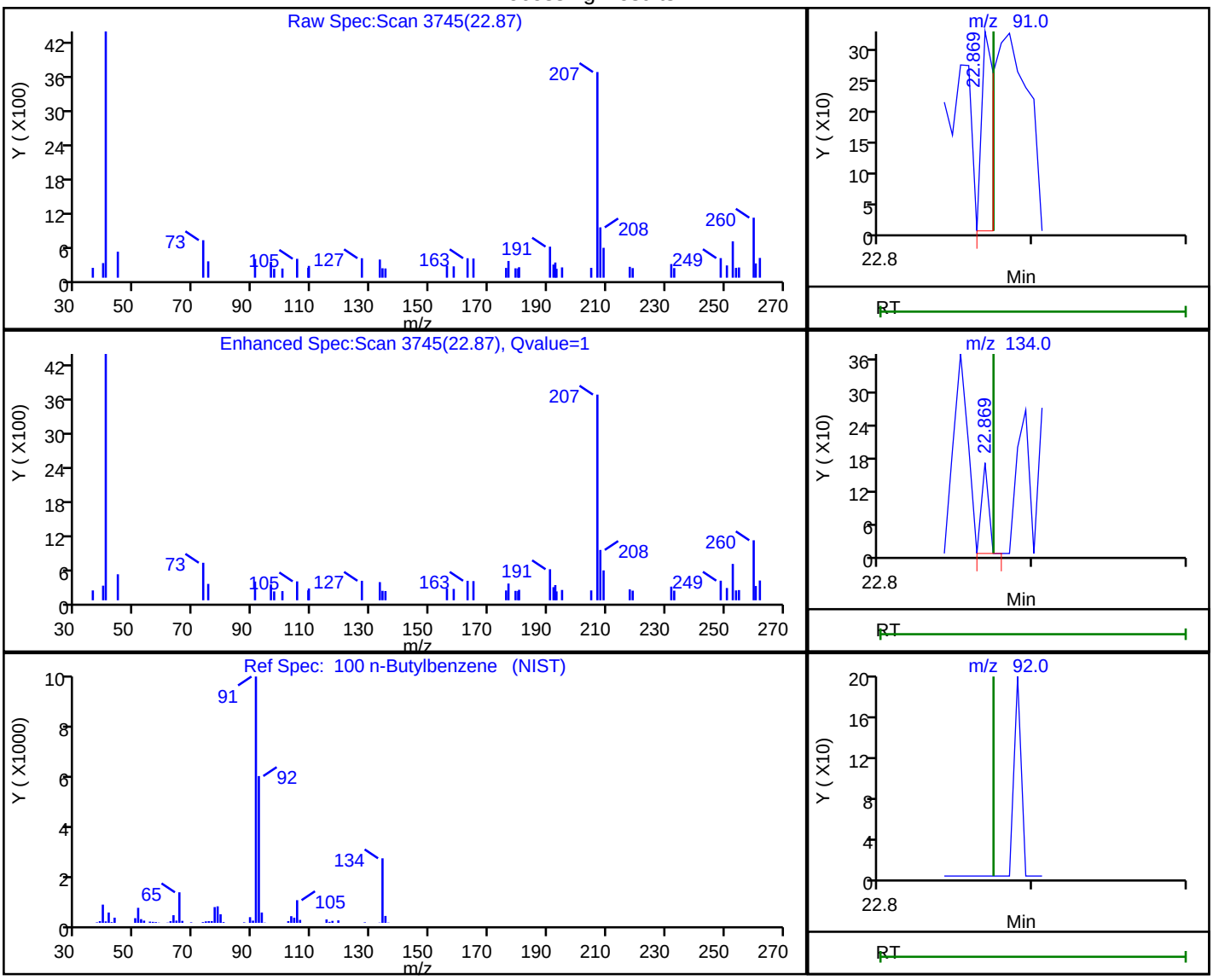
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

100 n-Butylbenzene, CAS: 104-51-8

Processing Results



RT	Mass	Response	Amount
22.87	91.00	188	0.001053
22.87	134.00	53	
22.87	92.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:20

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

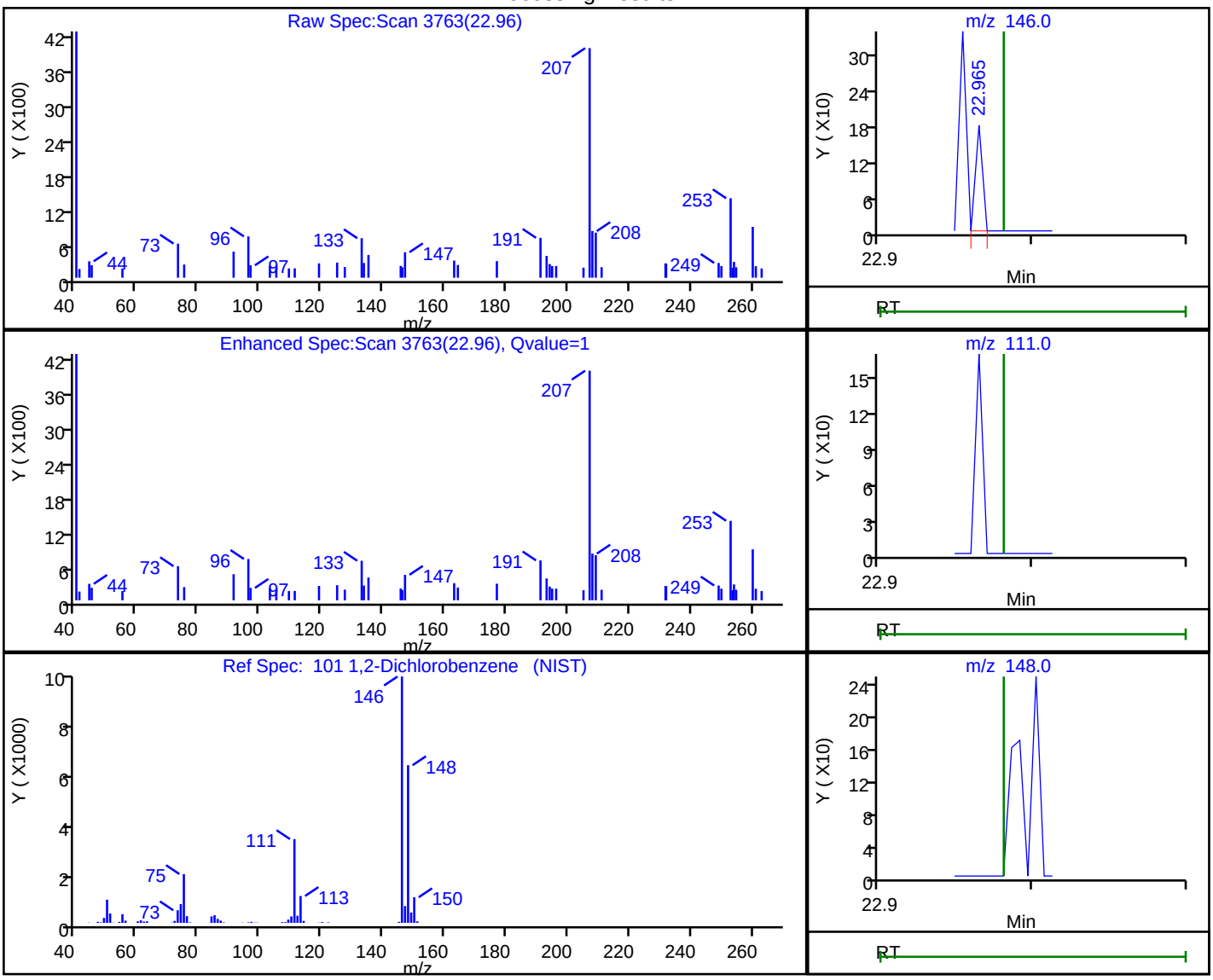
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

101 1,2-Dichlorobenzene, CAS: 95-50-1

Processing Results



RT	Mass	Response	Amount
22.96	146.00	58	0.000499
22.98	111.00	0	
22.98	148.00	0	

Reviewer: puangmaleek, 31-May-2019 12:51:21

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

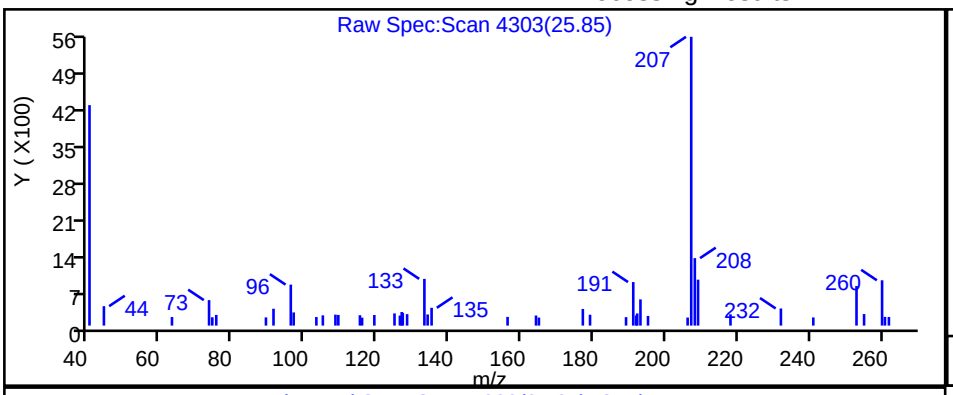
User Disabled Compound Report

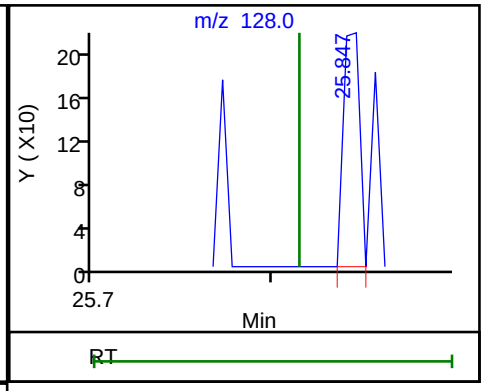
Eurofins TestAmerica, Burlington

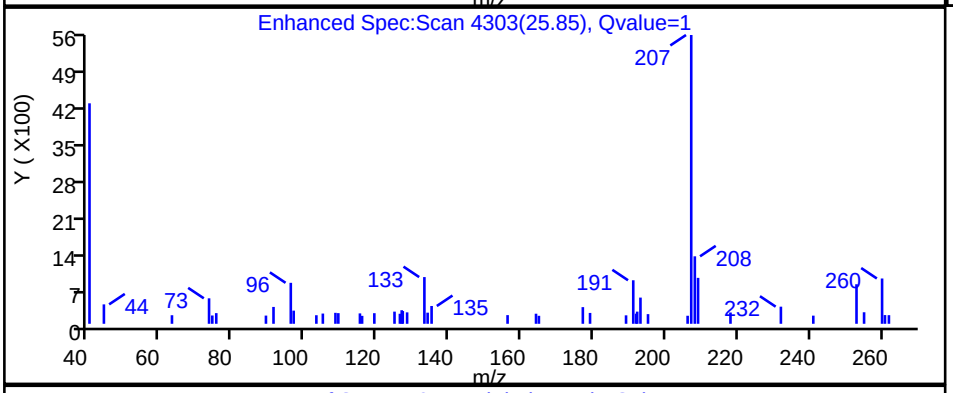
Data File:	\\chromna\Burlington\ChromData\CHC.i\20190530-36131.b\36131-11.D				
Injection Date:	30-May-2019 19:30:30	Instrument ID:	CHC.i		
Lims ID:	200-48938-A-5	Lab Sample ID:	200-48938-5		
Client ID:	3579				
Operator ID:	ert	ALS Bottle#:	12	Worklist Smp#:	11
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)_CHC.i	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

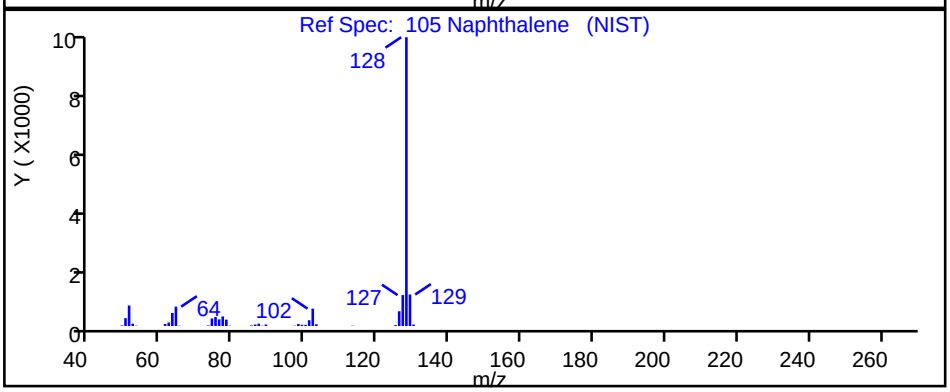
105 Naphthalene, CAS: 91-20-3

Processing Results









RT	Mass	Response	Amount
25.85	128.00	139	0.000807

Reviewer: puangmaleek, 31-May-2019 12:49:46

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-49051-1

SDG No.:

Client Sample ID: 6283 Lab Sample ID: 200-49051-5

Matrix: Air Lab File ID: 36230-018.d

Analysis Method: TO-15 Date Collected: 06/05/2019 16:44

Sample wt/vol: 200(mL) Date Analyzed: 06/07/2019 06:26

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143816 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
115-07-1	Propylene	5.0	U *	5.0	5.0
75-71-8	Dichlorodifluoromethane	0.50	U *	0.50	0.50
75-45-6	Freon 22	0.50	U *	0.50	0.50
76-14-2	1,2-Dichlorotetrafluoroethane	0.20	U *	0.20	0.20
74-87-3	Chloromethane	0.50	U *	0.50	0.50
106-97-8	n-Butane	0.50	U *	0.50	0.50
75-01-4	Vinyl chloride	0.20	U *	0.20	0.20
106-99-0	1,3-Butadiene	0.20	U *	0.20	0.20
74-83-9	Bromomethane	0.20	U *	0.20	0.20
75-00-3	Chloroethane	0.50	U *	0.50	0.50
593-60-2	Bromoethene(Vinyl Bromide)	0.20	U *	0.20	0.20
75-69-4	Trichlorofluoromethane	0.20	U *	0.20	0.20
64-17-5	Ethanol	5.0	U *	5.0	5.0
76-13-1	Freon TF	0.20	U *	0.20	0.20
75-35-4	1,1-Dichloroethene	0.20	U *	0.20	0.20
67-64-1	Acetone	5.0	U *	5.0	5.0
67-63-0	Isopropyl alcohol	5.0	U *	5.0	5.0
75-15-0	Carbon disulfide	0.50	U *	0.50	0.50
107-05-1	3-Chloropropene	0.50	U *	0.50	0.50
75-09-2	Methylene Chloride	0.50	U *	0.50	0.50
75-65-0	tert-Butyl alcohol	5.0	U *	5.0	5.0
1634-04-4	Methyl tert-butyl ether	0.20	U *	0.20	0.20
156-60-5	trans-1,2-Dichloroethene	0.20	U *	0.20	0.20
110-54-3	n-Hexane	0.20	U *	0.20	0.20
75-34-3	1,1-Dichloroethane	0.20	U *	0.20	0.20
108-05-4	Vinyl acetate	5.0	U *	5.0	5.0
141-78-6	Ethyl acetate	5.0	U *	5.0	5.0
78-93-3	Methyl Ethyl Ketone	0.50	U *	0.50	0.50
156-59-2	cis-1,2-Dichloroethene	0.20	U *	0.20	0.20
540-59-0	1,2-Dichloroethene, Total	0.40	U *	0.40	0.40
67-66-3	Chloroform	0.20	U *	0.20	0.20
109-99-9	Tetrahydrofuran	5.0	U *	5.0	5.0
71-55-6	1,1,1-Trichloroethane	0.20	U *	0.20	0.20
110-82-7	Cyclohexane	0.20	U *	0.20	0.20
56-23-5	Carbon tetrachloride	0.20	U *	0.20	0.20
540-84-1	2,2,4-Trimethylpentane	0.20	U *	0.20	0.20

FORM I TO-15

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-49051-1

SDG No.:

Client Sample ID: 6283 Lab Sample ID: 200-49051-5

Matrix: Air Lab File ID: 36230-018.d

Analysis Method: TO-15 Date Collected: 06/05/2019 16:44

Sample wt/vol: 200(mL) Date Analyzed: 06/07/2019 06:26

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143816 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
71-43-2	Benzene	0.20	U *	0.20	0.20
107-06-2	1,2-Dichloroethane	0.20	U *	0.20	0.20
142-82-5	n-Heptane	0.20	U *	0.20	0.20
79-01-6	Trichloroethene	0.20	U *	0.20	0.20
80-62-6	Methyl methacrylate	0.50	U *	0.50	0.50
78-87-5	1,2-Dichloropropane	0.20	U *	0.20	0.20
123-91-1	1,4-Dioxane	5.0	U *	5.0	5.0
75-27-4	Bromodichloromethane	0.20	U *	0.20	0.20
10061-01-5	cis-1,3-Dichloropropene	0.20	U *	0.20	0.20
108-10-1	methyl isobutyl ketone	0.50	U *	0.50	0.50
108-88-3	Toluene	0.20	U *	0.20	0.20
10061-02-6	trans-1,3-Dichloropropene	0.20	U *	0.20	0.20
79-00-5	1,1,2-Trichloroethane	0.20	U *	0.20	0.20
127-18-4	Tetrachloroethene	0.20	U *	0.20	0.20
591-78-6	Methyl Butyl Ketone (2-Hexanone)	0.50	U *	0.50	0.50
124-48-1	Dibromochloromethane	0.20	U *	0.20	0.20
106-93-4	1,2-Dibromoethane	0.20	U *	0.20	0.20
108-90-7	Chlorobenzene	0.20	U *	0.20	0.20
100-41-4	Ethylbenzene	0.20	U *	0.20	0.20
179601-23-1	m,p-Xylene	0.50	U *	0.50	0.50
95-47-6	Xylene, o-	0.20	U *	0.20	0.20
1330-20-7	Xylene (total)	0.70	U *	0.70	0.70
100-42-5	Styrene	0.20	U *	0.20	0.20
75-25-2	Bromoform	0.20	U *	0.20	0.20
98-82-8	Cumene	0.20	U *	0.20	0.20
79-34-5	1,1,2,2-Tetrachloroethane	0.20	U *	0.20	0.20
103-65-1	n-Propylbenzene	0.20	U *	0.20	0.20
622-96-8	4-Ethyltoluene	0.20	U *	0.20	0.20
108-67-8	1,3,5-Trimethylbenzene	0.20	U *	0.20	0.20
95-49-8	2-Chlorotoluene	0.20	U *	0.20	0.20
98-06-6	tert-Butylbenzene	0.20	U *	0.20	0.20
95-63-6	1,2,4-Trimethylbenzene	0.20	U *	0.20	0.20
135-98-8	sec-Butylbenzene	0.20	U *	0.20	0.20
99-87-6	4-Isopropyltoluene	0.20	U *	0.20	0.20
541-73-1	1,3-Dichlorobenzene	0.20	U *	0.20	0.20
106-46-7	1,4-Dichlorobenzene	0.20	U *	0.20	0.20

FORM I
AIR - GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Burlington Job No.: 200-49051-1

SDG No.:

Client Sample ID: 6283 Lab Sample ID: 200-49051-5

Matrix: Air Lab File ID: 36230-018.d

Analysis Method: TO-15 Date Collected: 06/05/2019 16:44

Sample wt/vol: 200(mL) Date Analyzed: 06/07/2019 06:26

Soil Aliquot Vol: Dilution Factor: 1

Soil Extract Vol.: GC Column: RTX-624 ID: 0.32(mm)

% Moisture: Level: (low/med) Low

Analysis Batch No.: 143816 Units: ppb v/v

CAS NO.	COMPOUND NAME	RESULT	Q	RL	RL
100-44-7	Benzyl chloride	0.20	U *	0.20	0.20
104-51-8	n-Butylbenzene	0.20	U *	0.20	0.20
95-50-1	1,2-Dichlorobenzene	0.20	U *	0.20	0.20
120-82-1	1,2,4-Trichlorobenzene	0.50	U *	0.50	0.50
87-68-3	Hexachlorobutadiene	0.20	U *	0.20	0.20
91-20-3	Naphthalene	0.50	U *	0.50	0.50

Eurofins TestAmerica, Burlington
Target Compound Quantitation Report

Data File: \\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d
Lims ID: 200-49051-A-5
Client ID: 6283
Sample Type: Client
Inject. Date: 07-Jun-2019 06:26:30 ALS Bottle#: 17 Worklist Smp#: 18
Purge Vol: 200.000 mL Dil. Factor: 1.0000
Sample Info: 200-0036230-018
Misc. Info.: 49051-5
Operator ID: ert Instrument ID: CHW.i

Method: \\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\TO15_MasterMethod_(v1).m
Limit Group: AI_TO15_ICAL
Last Update: 07-Jun-2019 18:13:33 Calib Date: 30-Apr-2019 01:52:30
Integrator: RTE ID Type: Deconvolution ID
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Burlington\ChromData\CHW.i\20190429-35688.b\35688-012.d

Column 1 : RTX-624 (0.32 mm) Det: MS SCAN
Process Host: CTX0309

First Level Reviewer: bunmaa Date: 07-Jun-2019 18:13:33

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
1 Propene	41		2.933				ND	U
2 Dichlorodifluoromethane	85		3.008				ND	U
3 Chlorodifluoromethane	51		3.040				ND	
4 1,2-Dichloro-1,1,2,2-tetra	85		3.276				ND	
5 Chloromethane	50		3.356				ND	U
6 Vinyl chloride	62		3.591				ND	
7 Butane	43		3.597				ND	U
21 Butadiene	54		3.682				ND	U
8 Bromomethane	94		4.271				ND	
9 Chloroethane	64		4.517				ND	
11 Vinyl bromide	106		4.923				ND	
12 Trichlorofluoromethane	101		5.084				ND	
14 Ethanol	45		5.555				ND	U
17 1,1-Dichloroethene	96		6.250				ND	
19 1,1,2-Trichloro-1,2,2-trif	101		6.309				ND	
20 Acetone	43	6.405	6.375	0.027	44	6823	0.4968	
22 Carbon disulfide	76		6.683				ND	
23 Isopropyl alcohol	45	6.780	6.755	0.022	87	3544	0.2839	
25 3-Chloro-1-propene	41		7.079				ND	
26 Methylene Chloride	49	7.368	7.368	0.011	83	1035	0.0976	M
27 2-Methyl-2-propanol	59		7.662				ND	
29 trans-1,2-Dichloroethene	61		7.946				ND	
30 Methyl tert-butyl ether	73		7.957				ND	
32 Hexane	57		8.550				ND	
33 1,1-Dichloroethane	63		8.861				ND	
34 Vinyl acetate	43		8.909				ND	
35 2-Butanone (MEK)	72		10.043				ND	
36 cis-1,2-Dichloroethene	96		10.048				ND	
37 Ethyl acetate	88		10.161				ND	
S 38 1,2-Dichloroethene, Total	61		10.200				ND	
* 39 Chlorobromomethane	128	10.540	10.546	-0.006	72	164567	10.0	s

Compound	Sig	RT (min.)	Adj RT (min.)	Dlt RT (min.)	Q	Response	OnCol Amt ppb v/v	Flags
40 Tetrahydrofuran	42		10.573				ND	
41 Chloroform	83		10.781				ND	
42 1,1,1-Trichloroethane	97		11.107				ND	
43 Cyclohexane	84		11.252				ND	
44 Carbon tetrachloride	117		11.434				ND	
45 Benzene	78		11.873				ND	
46 1,2-Dichloroethane	62		11.996				ND	
47 Isooctane	57		12.140				ND	
48 n-Heptane	43		12.536				ND	
* 49 1,4-Difluorobenzene	114	12.798	12.793	0.005	95	781604	10.0	s
51 Trichloroethene	95		13.269				ND	
53 1,2-Dichloropropane	63		13.804				ND	
54 Methyl methacrylate	69		13.937				ND	
55 1,4-Dioxane	88		13.948				ND	
56 Dibromomethane	174		13.975				ND	
57 Dichlorobromomethane	83		14.344				ND	
60 cis-1,3-Dichloropropene	75		15.237				ND	
61 4-Methyl-2-pentanone (MIBK	43		15.537				ND	
62 Toluene	92		15.917				ND	
64 trans-1,3-Dichloropropene	75		16.393				ND	
65 1,1,2-Trichloroethane	83		16.794				ND	
66 Tetrachloroethene	166		16.965				ND	
67 2-Hexanone	43		17.233				ND	
68 Chlorodibromomethane	129		17.559				ND	
69 Ethylene Dibromide	107		17.805				ND	
* 70 Chlorobenzene-d5	117	18.758	18.758	0.000	88	668784	10.0	s
71 Chlorobenzene	112		18.816				ND	
72 Ethylbenzene	91		19.020				ND	
74 m-Xylene & p-Xylene	106		19.298				ND	
77 o-Xylene	106		20.090				ND	
S 76 Xylenes, Total	106		20.100				ND	
78 Styrene	104		20.132				ND	
79 Bromoform	173		20.486				ND	
80 Isopropylbenzene	105		20.807				ND	
81 1,1,2,2-Tetrachloroethane	83		21.341				ND	U
83 N-Propylbenzene	91		21.529				ND	
84 2-Chlorotoluene	91		21.679				ND	
85 4-Ethyltoluene	105		21.732				ND	
86 1,3,5-Trimethylbenzene	105		21.828				ND	
89 tert-Butylbenzene	119		22.315				ND	
90 1,2,4-Trimethylbenzene	105		22.401				ND	
91 sec-Butylbenzene	105		22.641				ND	
92 1,3-Dichlorobenzene	146		22.813				ND	
93 4-Isopropyltoluene	119		22.855				ND	
94 1,4-Dichlorobenzene	146		22.952				ND	
95 Benzyl chloride	91		23.107				ND	
96 n-Butylbenzene	91		23.417				ND	
97 1,2-Dichlorobenzene	146		23.449				ND	
100 1,2,4-Trichlorobenzene	180		25.932				ND	
101 Hexachlorobutadiene	225		26.183				ND	
102 Naphthalene	128		26.434				ND	

QC Flag Legend

Processing Flags

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

U - Marked Undetected

Reagents:

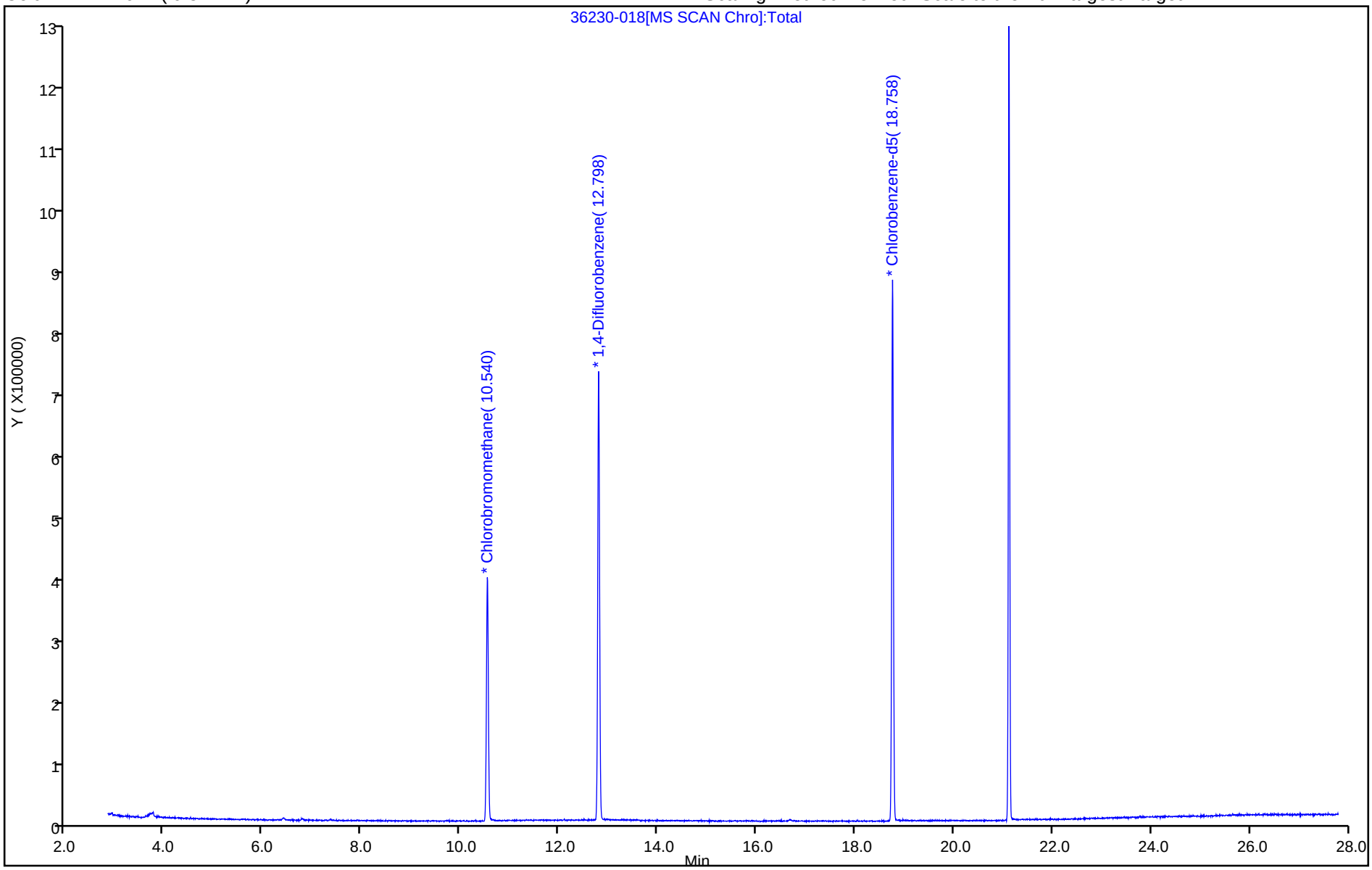
ATTO15WISs_00004	Amount Added: 20.00	Units: mL	Run Reagent

Report Date: 07-Jun-2019 18:13:34 Chrom Revision: 2.3 03-May-2019 15:52:00

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i	Operator ID:	ert
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5	Worklist Smp#:	18
Client ID:	6283				
Purge Vol:	200.000 mL	Dil. Factor:	1.0000	ALS Bottle#:	17
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		

Column: RTX-624 (0.32 mm) Y Scaling: Method Defined: Scale to the Nth Largest Target: 1



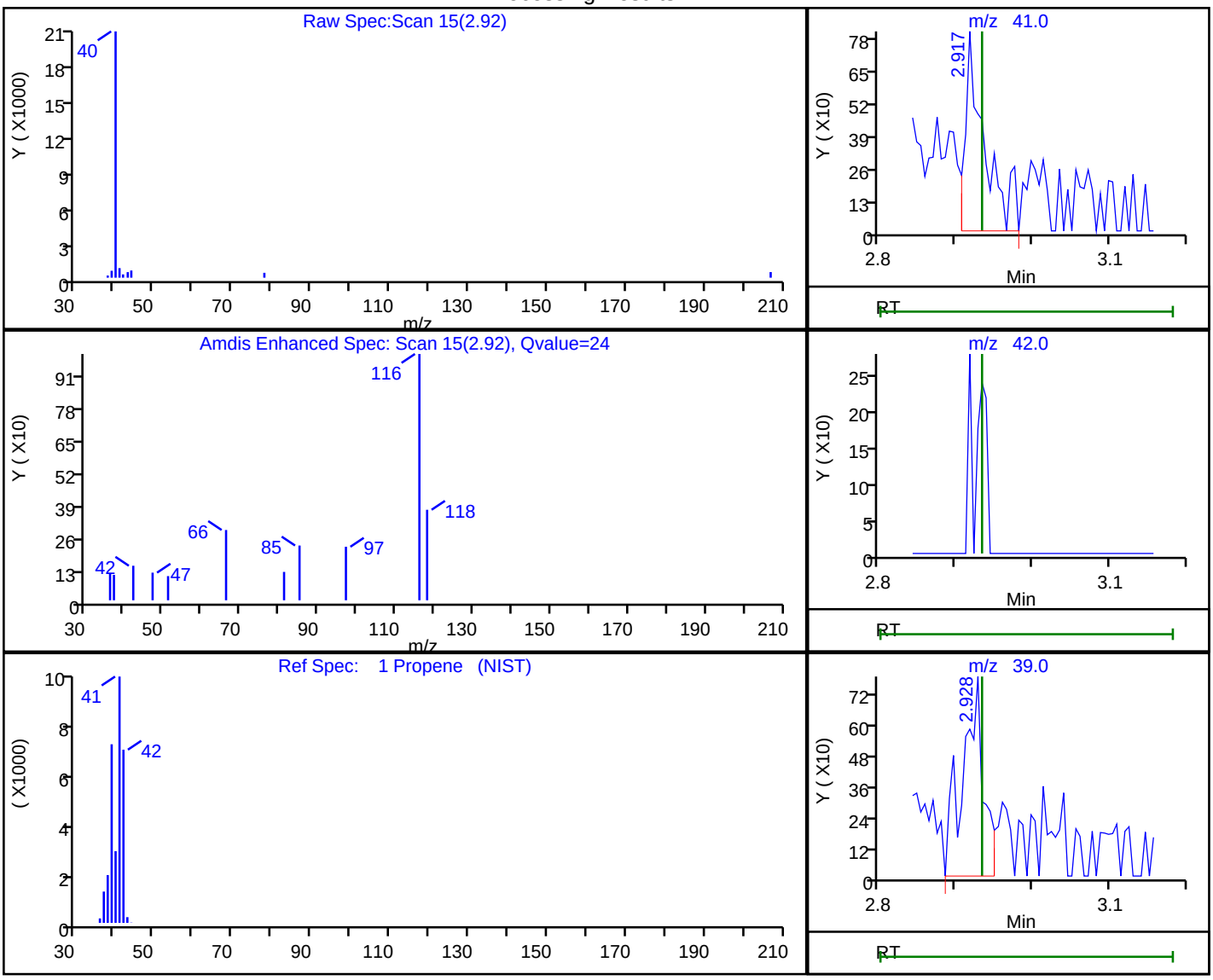
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

1 Propene, CAS: 115-07-1

Processing Results



RT	Mass	Response	Amount
2.92	41.00	1410	0.259937
2.93	42.00	0	
2.93	39.00	1506	

Reviewer: bunmaa, 07-Jun-2019 18:11:59

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

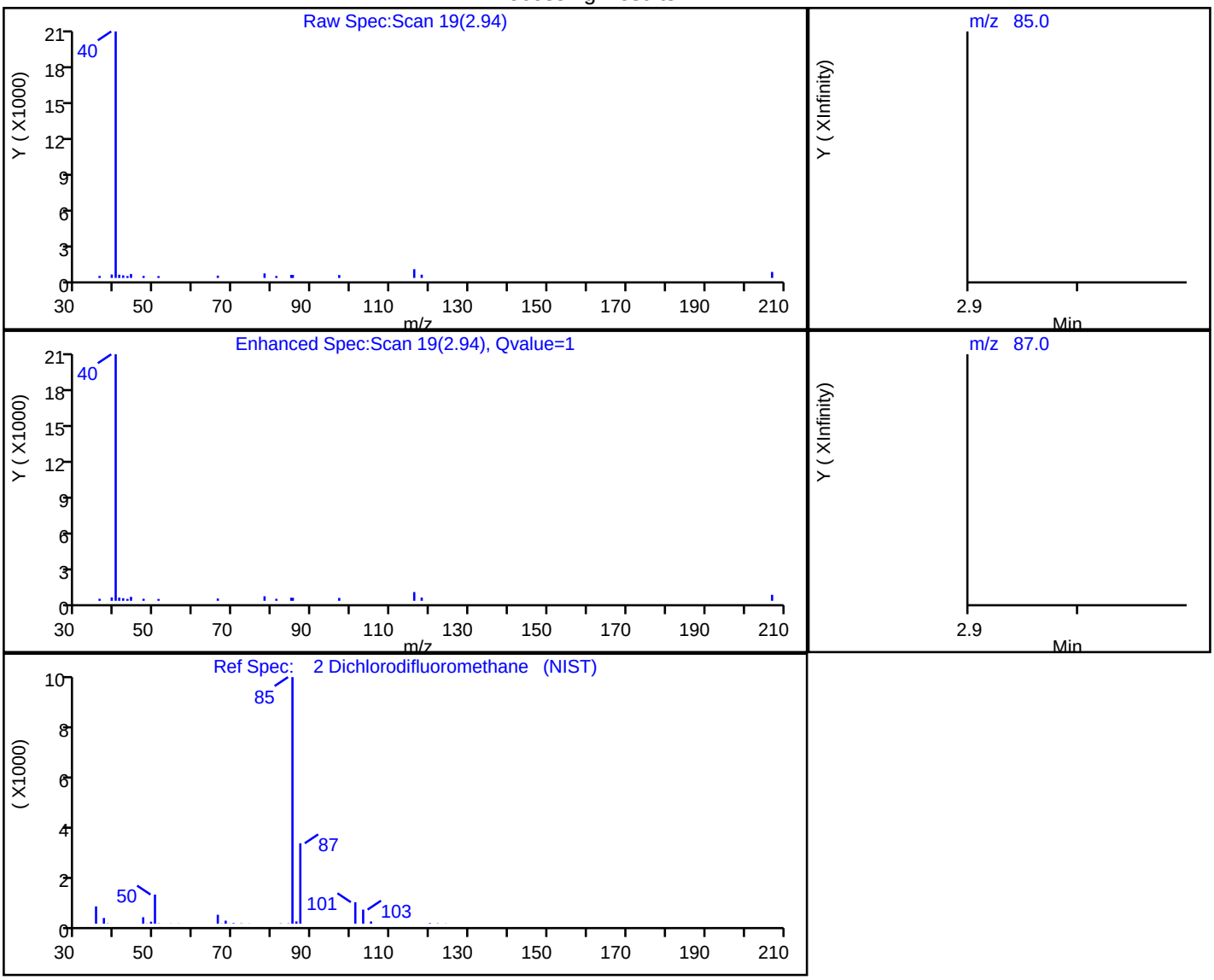
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

2 Dichlorodifluoromethane, CAS: 75-71-8

Processing Results



RT	Mass	Response	Amount
2.94	85.00	217	0.004333
3.01	87.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:02

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

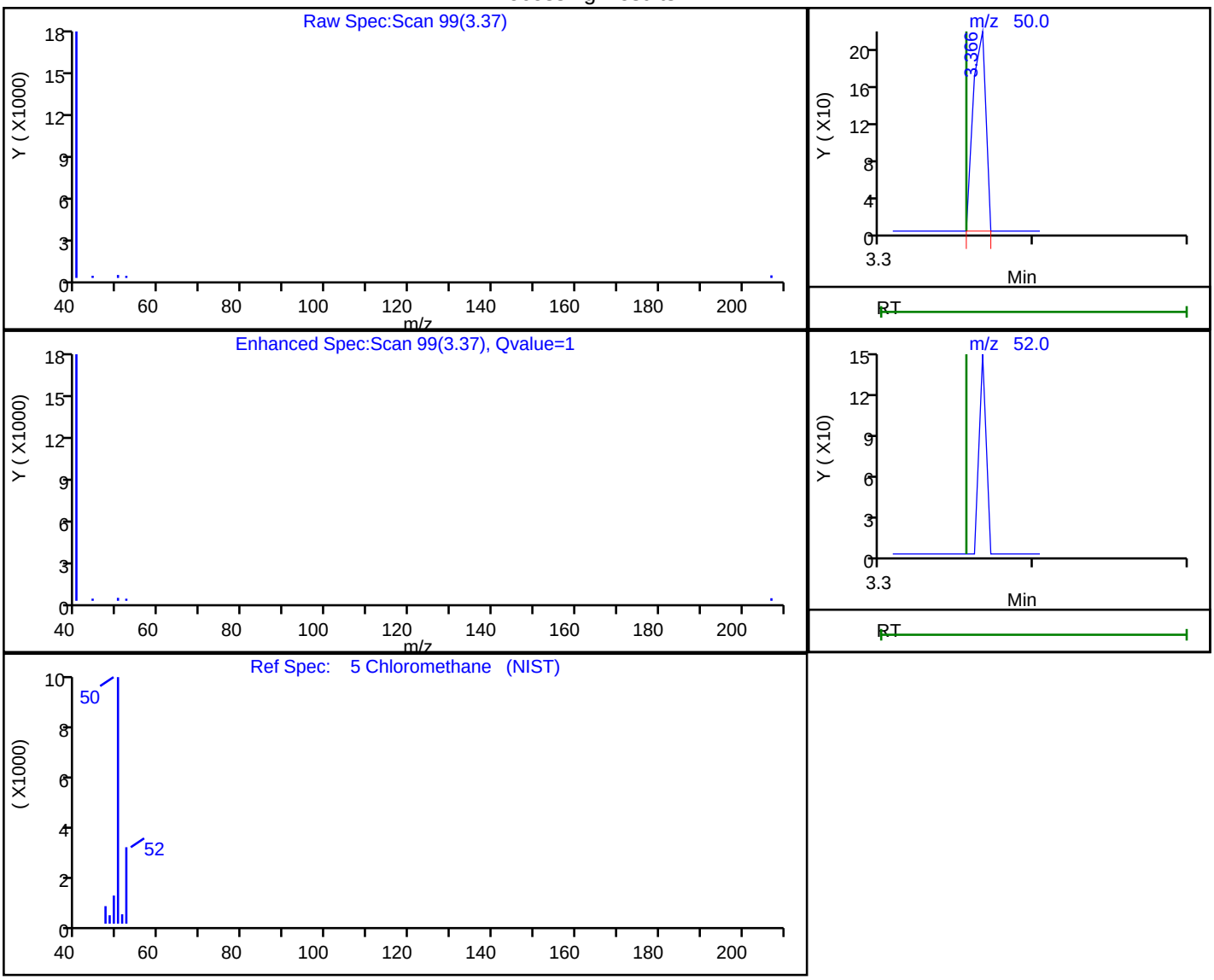
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

5 Chloromethane, CAS: 74-87-3

Processing Results



RT	Mass	Response	Amount
3.37	50.00	120	0.015065
3.36	52.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:07

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

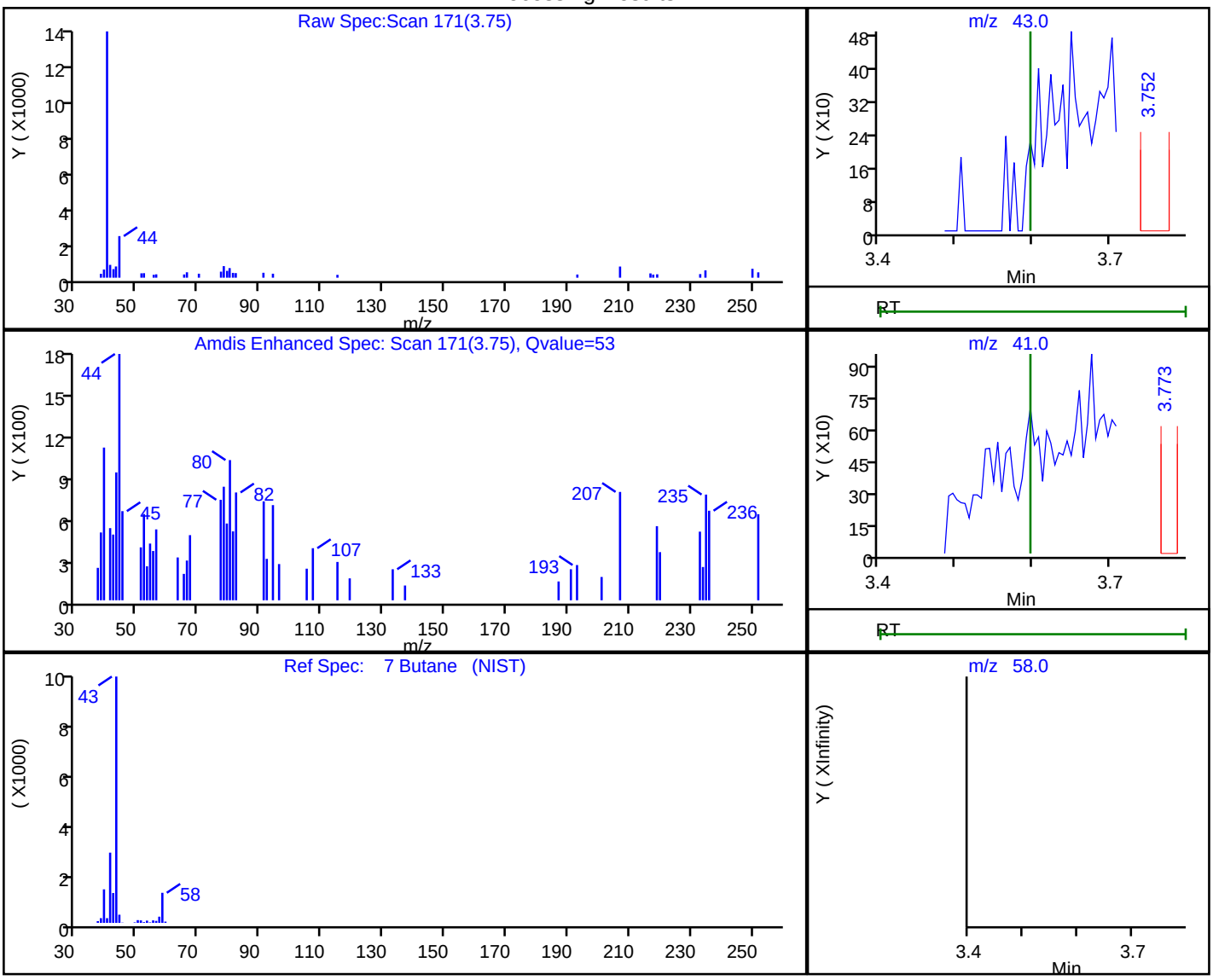
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

7 Butane, CAS: 106-97-8

Processing Results



RT	Mass	Response	Amount
3.75	43.00	1089	0.094989
3.77	41.00	717	
3.60	58.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:12

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

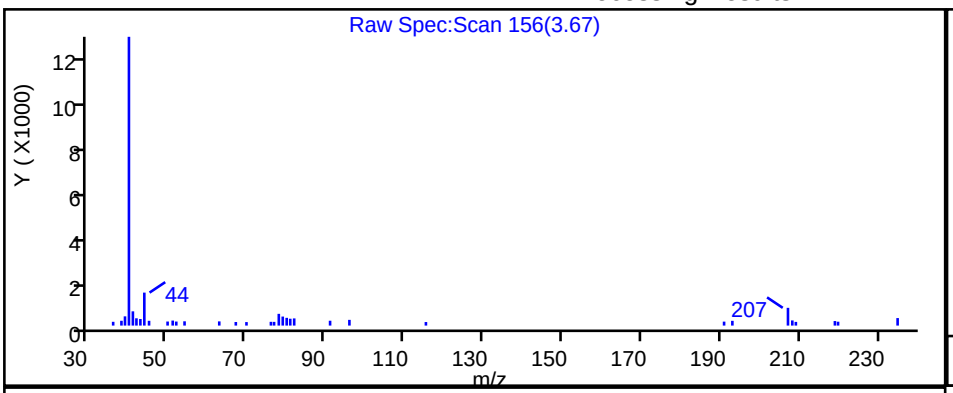
User Disabled Compound Report

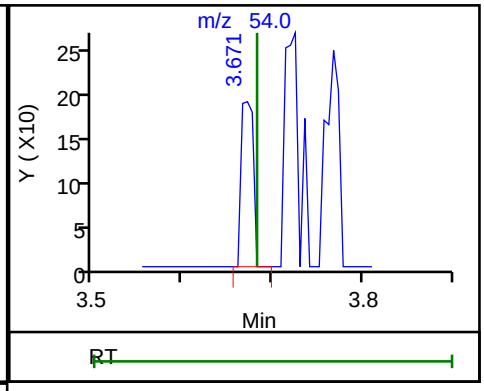
Eurofins TestAmerica, Burlington

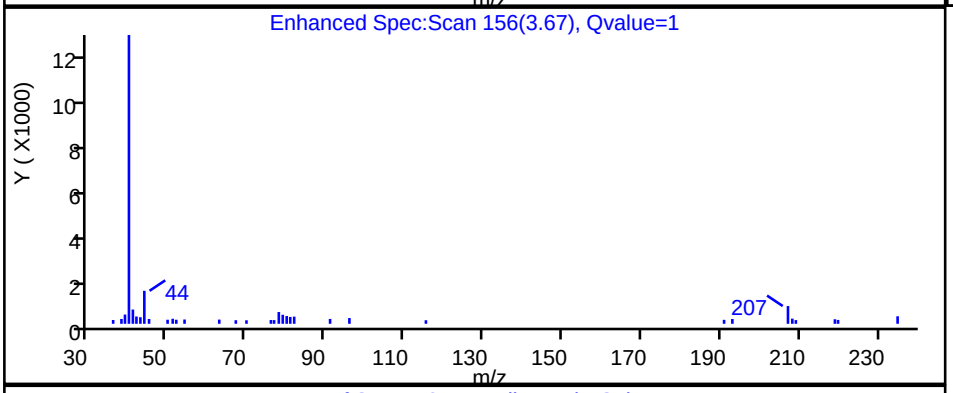
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

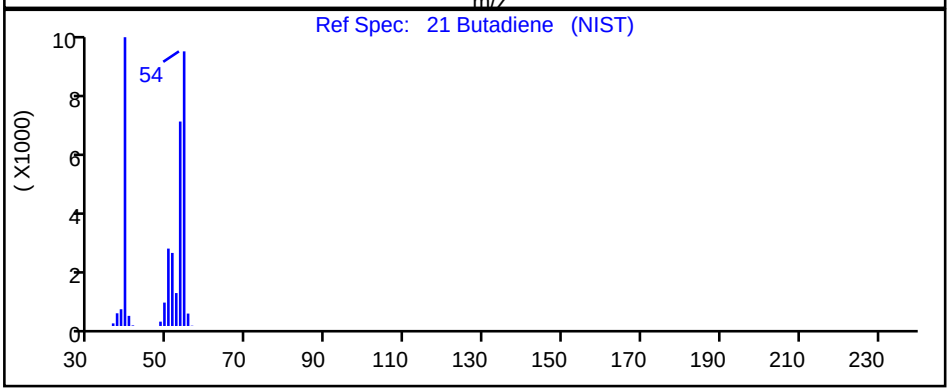
21 Butadiene, CAS: 106-99-0

Processing Results









RT	Mass	Response	Amount
3.67	54.00	176	0.022584

Reviewer: bunmaa, 07-Jun-2019 18:12:16

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

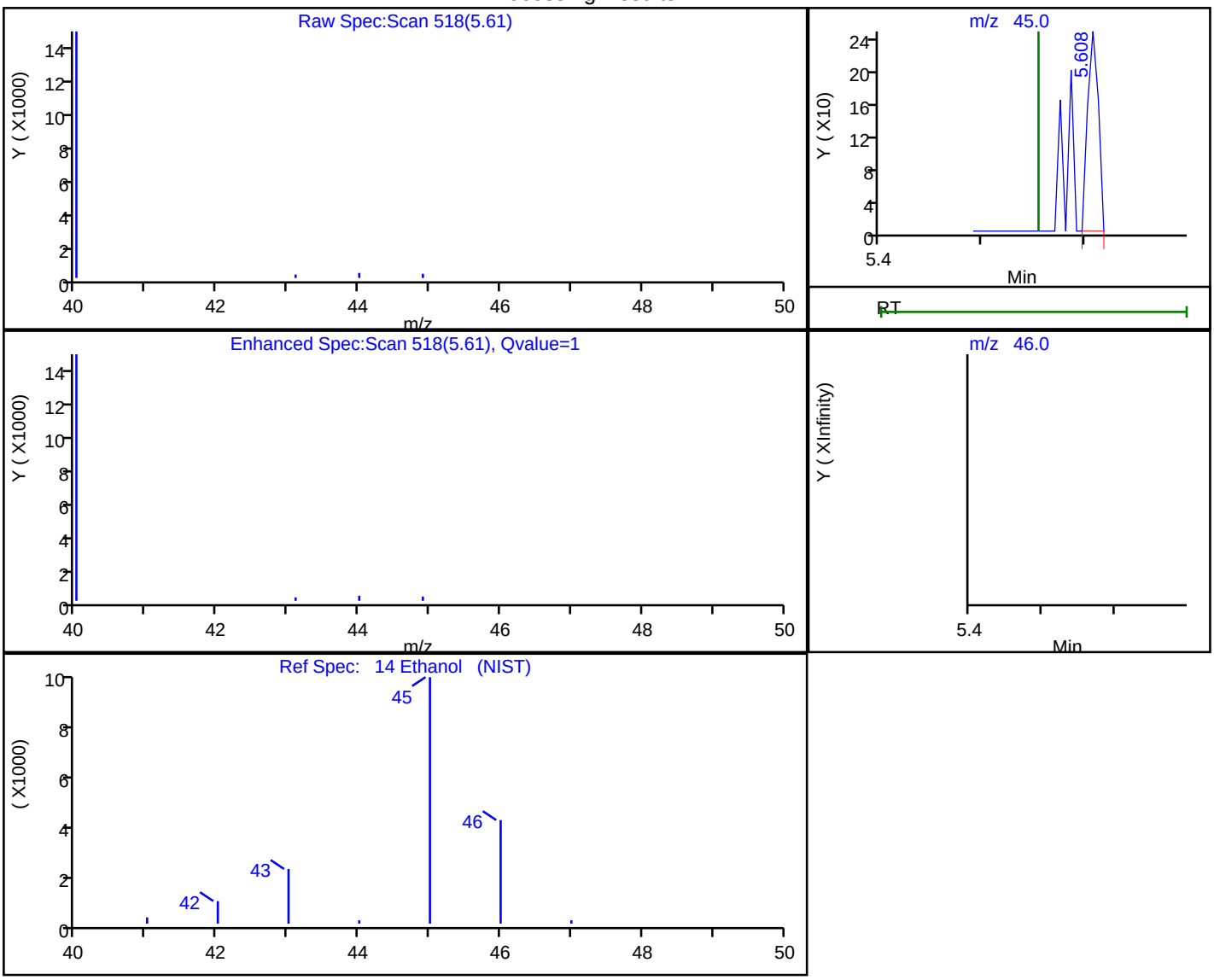
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

14 Ethanol, CAS: 64-17-5

Processing Results



RT	Mass	Response	Amount
5.61	45.00	182	0.067001
5.55	46.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:12:22

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

Manual Integration/User Assign Peak Report

Eurofins TestAmerica, Burlington

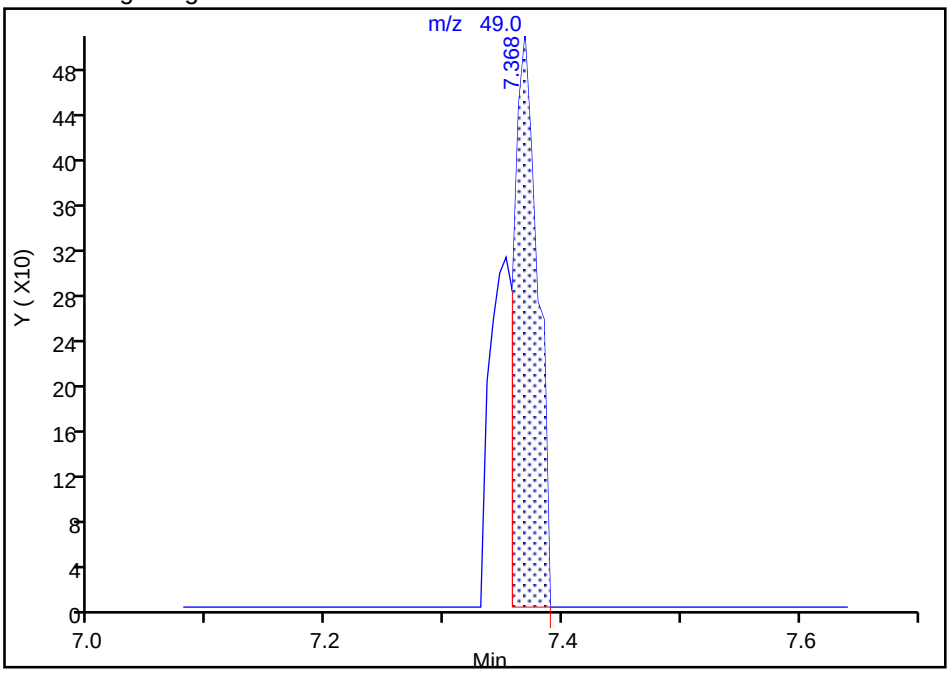
Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

26 Methylene Chloride, CAS: 75-09-2

Signal: 1

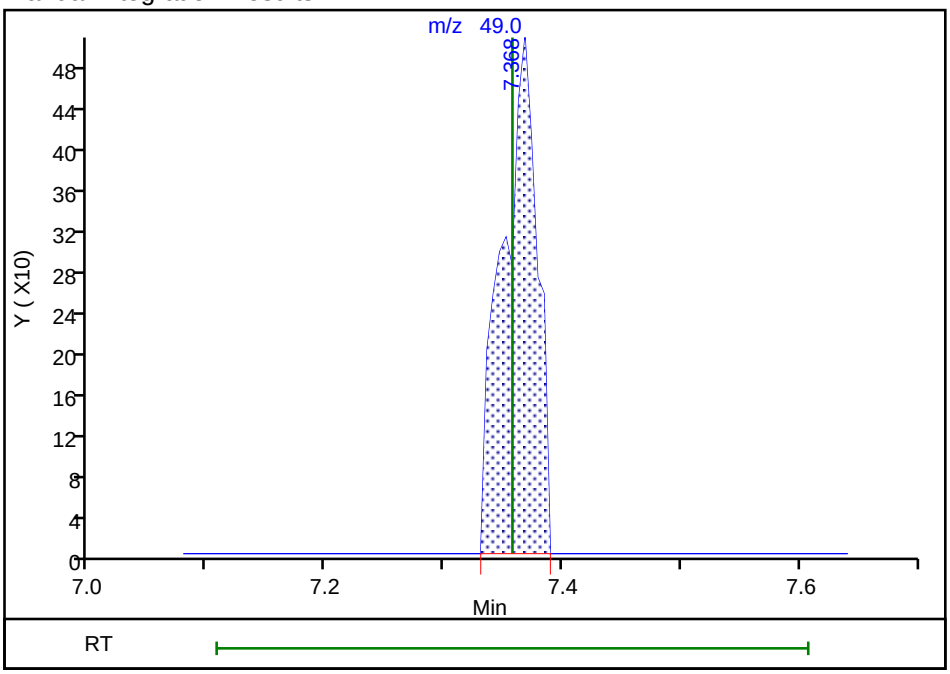
Processing Integration Results

RT: 7.37
Area: 695
Amount: 0.065515
Amount Units: ppb v/v



Manual Integration Results

RT: 7.37
Area: 1035
Amount: 0.097565
Amount Units: ppb v/v



Reviewer: bunmaa, 07-Jun-2019 18:12:41

Audit Action: Manually Integrated Audit Reason: Assign Peak

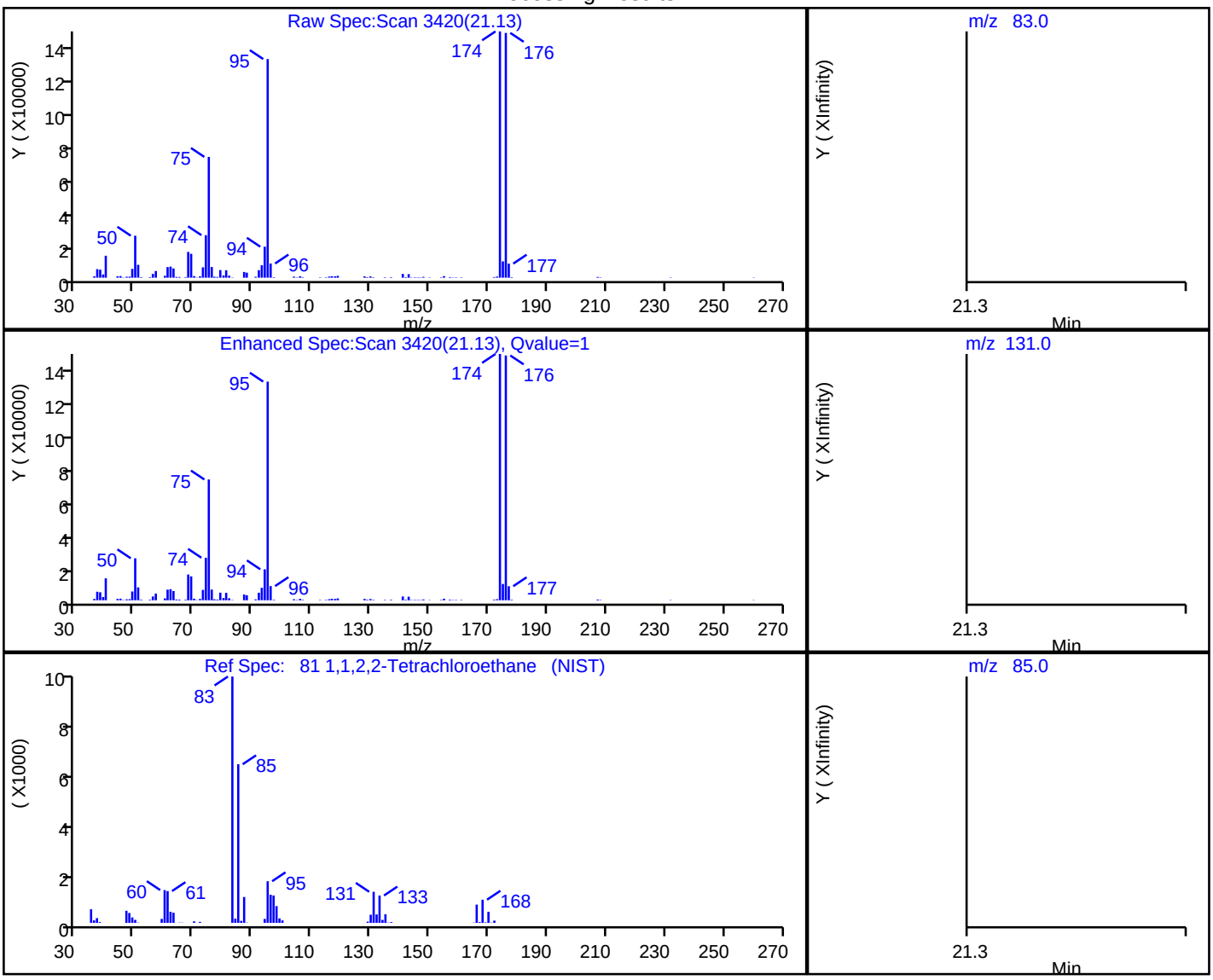
User Disabled Compound Report

Eurofins TestAmerica, Burlington

Data File:	\\chromna\Burlington\ChromData\CHW.i\20190606-36230.b\36230-018.d				
Injection Date:	07-Jun-2019 06:26:30	Instrument ID:	CHW.i		
Lims ID:	200-49051-A-5	Lab Sample ID:	200-49051-5		
Client ID:	6283				
Operator ID:	ert	ALS Bottle#:	17	Worklist Smp#:	18
Purge Vol:	200.000 mL	Dil. Factor:	1.0000		
Method:	TO15_MasterMethod_(v1)	Limit Group:	AI_TO15_ICAL		
Column:	RTX-624 (0.32 mm)	Detector	MS SCAN		

81 1,1,2,2-Tetrachloroethane, CAS: 79-34-5

Processing Results



RT	Mass	Response	Amount
21.13	83.00	57	0.001182
21.34	131.00	0	
21.34	85.00	0	

Reviewer: bunmaa, 07-Jun-2019 18:13:18

Audit Action: Marked Compound Undetected Audit Reason: Invalid Compound ID

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-114472-1
Laboratory Sample Delivery Group: 2606-0016
Client Project/Site: Water Gremlin Co. Remedial Investigation

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
6/27/2019 2:15:20 PM

Zach Bindert, Project Manager I
(319)277-2401
zach.bindert@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Method Summary 5
Sample Summary 6
Detection Summary 7
Client Sample Results 8
Surrogate Summary 17
QC Sample Results 18
QC Association Summary 21
Lab Chronicle 23
Certification Summary 25
Chain of Custody 26

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-114472-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-114472-1

Comments
No additional comments.

Receipt
The samples were received on 6/15/2019 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9º C.

GC/MS VOA
Method(s) 8260B: The pH of the sample(s) was greater than 2. The sample was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably, Benzene, Toluene, and Ethylbenzene are susceptible to biological degradation if sample is not preserved to a pH of 2.
GP-1 (7-11') (240-114472-5)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
6010D	Metals (ICP)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
3050B	Preparation, Metals	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CAN
5035	Closed System Purge and Trap	SW846	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114472-1	GP-1 (8-10')	Solid	06/14/19 10:45	06/15/19 09:50	
240-114472-2	GP-1 (0-1')	Solid	06/14/19 10:50	06/15/19 09:50	
240-114472-3	GP-1 (2-4')	Solid	06/14/19 10:55	06/15/19 09:50	
240-114472-4	GP-1 (30-32')	Solid	06/14/19 11:10	06/15/19 09:50	
240-114472-5	GP-1 (7-11')	Water	06/14/19 11:20	06/15/19 09:50	
240-114472-6	GP-1 (16-18')	Water	06/14/19 11:40	06/15/19 09:50	
240-114472-7	GP-1 (23-25')	Water	06/14/19 12:00	06/15/19 09:50	
240-114472-8	MEOH TRIP BLANK	Solid	06/14/19 00:00	06/15/19 09:50	
240-114472-9	HCL TRIP BLANK	Water	06/14/19 00:00	06/15/19 09:50	

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (8-10') — Lab Sample ID: 240-114472-1

No Detections.

Client Sample ID: GP-1 (0-1') — Lab Sample ID: 240-114472-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	45.1		1.04		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-1 (2-4') — Lab Sample ID: 240-114472-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	56.4		0.977		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-1 (30-32') — Lab Sample ID: 240-114472-4

No Detections.

Client Sample ID: GP-1 (7-11') — Lab Sample ID: 240-114472-5

No Detections.

Client Sample ID: GP-1 (16-18') — Lab Sample ID: 240-114472-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	3.08		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-1 (23-25') — Lab Sample ID: 240-114472-7

No Detections.

Client Sample ID: MEOH TRIP BLANK — Lab Sample ID: 240-114472-8

No Detections.

Client Sample ID: HCL TRIP BLANK — Lab Sample ID: 240-114472-9

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (8-10')

Date Collected: 06/14/19 10:45
Date Received: 06/15/19 09:50

Lab Sample ID: 240-114472-1

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
cis-1,2-Dichloroethene	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
1,1-Dichloroethane	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
1,2-Dichloroethane	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
1,1-Dichloroethene	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
Tetrachloroethene	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
trans-1,2-Dichloroethene	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
1,1,1-Trichloroethane	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
Trichloroethene	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1
Vinyl chloride	<0.302		0.302		mg/Kg	☼	06/18/19 13:31	06/19/19 16:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*48 - 151*	*06/18/19 13:31*	*06/19/19 16:12*	*1*
Dibromofluoromethane (Surr)	*102*		*49 - 138*	*06/18/19 13:31*	*06/19/19 16:12*	*1*
Toluene-d8 (Surr)	*101*		*49 - 147*	*06/18/19 13:31*	*06/19/19 16:12*	*1*
1,2-Dichloroethane-d4 (Surr)	*120*		*53 - 155*	*06/18/19 13:31*	*06/19/19 16:12*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**77.2**		0.1		%			06/20/19 16:55	1
Percent Moisture	**22.8**		0.1		%			06/20/19 16:55	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (0-1')

Date Collected: 06/14/19 10:50
Date Received: 06/15/19 09:50

Lab Sample ID: 240-114472-2

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	45.1		1.04		mg/Kg	☼	06/18/19 14:00	06/19/19 21:57	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	91.3		0.1		%			06/20/19 16:55	1
Percent Moisture	8.7		0.1		%			06/20/19 16:55	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (2-4')

Date Collected: 06/14/19 10:55
Date Received: 06/15/19 09:50

Lab Sample ID: 240-114472-3

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	56.4		0.977		mg/Kg	☼	06/18/19 14:00	06/19/19 22:02	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	93.1		0.1		%			06/20/19 16:55	1
Percent Moisture	6.9		0.1		%			06/20/19 16:55	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (30-32')

Lab Sample ID: 240-114472-4

Date Collected: 06/14/19 11:10
Date Received: 06/15/19 09:50

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
cis-1,2-Dichloroethene	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
1,1-Dichloroethane	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
1,2-Dichloroethane	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
1,1-Dichloroethene	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
Tetrachloroethene	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
trans-1,2-Dichloroethene	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
1,1,1-Trichloroethane	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
Trichloroethene	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1
Vinyl chloride	<0.296		0.296		mg/Kg	☼	06/18/19 13:31	06/20/19 07:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*48 - 151*	*06/18/19 13:31*	*06/20/19 07:50*	*1*
Dibromofluoromethane (Surr)	*91*		*49 - 138*	*06/18/19 13:31*	*06/20/19 07:50*	*1*
Toluene-d8 (Surr)	*89*		*49 - 147*	*06/18/19 13:31*	*06/20/19 07:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*53 - 155*	*06/18/19 13:31*	*06/20/19 07:50*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**77.5**		0.1		%			06/20/19 16:55	1
Percent Moisture	**22.5**		0.1		%			06/20/19 16:55	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (7-11')

Lab Sample ID: 240-114472-5

Date Collected: 06/14/19 11:20
Date Received: 06/15/19 09:50

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.00		1.00		ug/L			06/26/19 12:53	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 12:53	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/26/19 12:53	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/26/19 12:53	1
1,1-Dichloroethene	<1.00		1.00		ug/L			06/26/19 12:53	1
Tetrachloroethene	<1.00		1.00		ug/L			06/26/19 12:53	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 12:53	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/26/19 12:53	1
Trichloroethene	<1.00		1.00		ug/L			06/26/19 12:53	1
Vinyl chloride	<1.00		1.00		ug/L			06/26/19 12:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*59 - 120*		*06/26/19 12:53*	*1*
Dibromofluoromethane (Surr)	*104*		*75 - 128*		*06/26/19 12:53*	*1*
Toluene-d8 (Surr)	*95*		*70 - 123*		*06/26/19 12:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 121*		*06/26/19 12:53*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (16-18')

Lab Sample ID: 240-114472-6

Date Collected: 06/14/19 11:40
Date Received: 06/15/19 09:50

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.00		1.00		ug/L			06/26/19 13:15	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:15	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/26/19 13:15	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/26/19 13:15	1
1,1-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:15	1
Tetrachloroethene	<1.00		1.00		ug/L			06/26/19 13:15	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:15	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/26/19 13:15	1
Trichloroethene	**3.08**		1.00		ug/L			06/26/19 13:15	1
Vinyl chloride	<1.00		1.00		ug/L			06/26/19 13:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*59 - 120*		*06/26/19 13:15*	*1*
Dibromofluoromethane (Surr)	*108*		*75 - 128*		*06/26/19 13:15*	*1*
Toluene-d8 (Surr)	*94*		*70 - 123*		*06/26/19 13:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*70 - 121*		*06/26/19 13:15*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (23-25')

Lab Sample ID: 240-114472-7

Date Collected: 06/14/19 12:00

Matrix: Water

Date Received: 06/15/19 09:50

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.00		1.00		ug/L			06/26/19 13:37	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:37	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/26/19 13:37	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/26/19 13:37	1
1,1-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:37	1
Tetrachloroethene	<1.00		1.00		ug/L			06/26/19 13:37	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:37	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/26/19 13:37	1
Trichloroethene	<1.00		1.00		ug/L			06/26/19 13:37	1
Vinyl chloride	<1.00		1.00		ug/L			06/26/19 13:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*59 - 120*		*06/26/19 13:37*	*1*
Dibromofluoromethane (Surr)	*101*		*75 - 128*		*06/26/19 13:37*	*1*
Toluene-d8 (Surr)	*95*		*70 - 123*		*06/26/19 13:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 121*		*06/26/19 13:37*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: MEOH TRIP BLANK

Lab Sample ID: 240-114472-8

Date Collected: 06/14/19 00:00
Date Received: 06/15/19 09:50

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
Trichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 14:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*48 - 151*	*06/18/19 13:31*	*06/19/19 14:47*	*1*
Dibromofluoromethane (Surr)	*85*		*49 - 138*	*06/18/19 13:31*	*06/19/19 14:47*	*1*
Toluene-d8 (Surr)	*97*		*49 - 147*	*06/18/19 13:31*	*06/19/19 14:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*84*		*53 - 155*	*06/18/19 13:31*	*06/19/19 14:47*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: HCL TRIP BLANK

Lab Sample ID: 240-114472-9

Date Collected: 06/14/19 00:00
Matrix: Water
Date Received: 06/15/19 09:50

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.00		1.00		ug/L			06/26/19 13:59	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/26/19 13:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/26/19 13:59	1
1,1-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:59	1
Tetrachloroethene	<1.00		1.00		ug/L			06/26/19 13:59	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 13:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/26/19 13:59	1
Trichloroethene	<1.00		1.00		ug/L			06/26/19 13:59	1
Vinyl chloride	<1.00		1.00		ug/L			06/26/19 13:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*59 - 120*		*06/26/19 13:59*	*1*
Dibromofluoromethane (Surr)	*105*		*75 - 128*		*06/26/19 13:59*	*1*
Toluene-d8 (Surr)	*95*		*70 - 123*		*06/26/19 13:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 121*		*06/26/19 13:59*	*1*

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(48-151)	(49-138)	(49-147)	(53-155)
240-114472-1	GP-1 (8-10')	107	102	101	120
240-114472-4	GP-1 (30-32')	93	91	89	106
240-114472-8	MEOH TRIP BLANK	95	85	97	84
LCS 240-386845/2-A	Lab Control Sample	97	97	94	108
MB 240-386845/1-A	Method Blank	86	83	80	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(59-120)	(75-128)	(70-123)	(70-121)
240-114472-5	GP-1 (7-11')	84	104	95	102
240-114472-6	GP-1 (16-18')	88	108	94	106
240-114472-7	GP-1 (23-25')	81	101	95	104
240-114472-9	HCL TRIP BLANK	86	105	95	104
LCS 240-388304/6	Lab Control Sample	94	110	101	111
MB 240-388304/9	Method Blank	93	113	101	114

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 240-386845/1-A
Matrix: Solid
Analysis Batch: 386927

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386845

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
Trichloroethene	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/18/19 13:31	06/19/19 11:29	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*86*		*48 - 151*	*06/18/19 13:31*	*06/19/19 11:29*	*1*
Dibromofluoromethane (Surr)	*83*		*49 - 138*	*06/18/19 13:31*	*06/19/19 11:29*	*1*
Toluene-d8 (Surr)	*80*		*49 - 147*	*06/18/19 13:31*	*06/19/19 11:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*97*		*53 - 155*	*06/18/19 13:31*	*06/19/19 11:29*	*1*

Lab Sample ID: LCS 240-386845/2-A
Matrix: Solid
Analysis Batch: 386927

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386845

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	1.00	1.076		mg/Kg		108	15 - 155
cis-1,2-Dichloroethene	1.00	1.029		mg/Kg		103	74 - 123
1,1-Dichloroethane	1.00	1.016		mg/Kg		102	72 - 122
1,2-Dichloroethane	1.00	1.033		mg/Kg		103	64 - 126
1,1-Dichloroethene	1.00	1.120		mg/Kg		112	57 - 139
Tetrachloroethene	1.00	1.115		mg/Kg		111	76 - 120
trans-1,2-Dichloroethene	1.00	1.072		mg/Kg		107	71 - 133
1,1,1-Trichloroethane	1.00	1.064		mg/Kg		106	64 - 135
Trichloroethene	1.00	1.047		mg/Kg		105	73 - 126
Vinyl chloride	1.00	1.037		mg/Kg		104	52 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*48 - 151*
Dibromofluoromethane (Surr)	*97*		*49 - 138*
Toluene-d8 (Surr)	*94*		*49 - 147*
1,2-Dichloroethane-d4 (Surr)	*108*		*53 - 155*

Lab Sample ID: MB 240-388304/9
Matrix: Water
Analysis Batch: 388304

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.00		1.00		ug/L			06/26/19 12:07	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 12:07	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/26/19 12:07	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/26/19 12:07	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-388304/9
Matrix: Water
Analysis Batch: 388304

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,1-Dichloroethene	<1.00		1.00		ug/L			06/26/19 12:07	1
Tetrachloroethene	<1.00		1.00		ug/L			06/26/19 12:07	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 12:07	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/26/19 12:07	1
Trichloroethene	<1.00		1.00		ug/L			06/26/19 12:07	1
Vinyl chloride	<1.00		1.00		ug/L			06/26/19 12:07	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*59 - 120*		*06/26/19 12:07*	*1*
Dibromofluoromethane (Surr)	*113*		*75 - 128*		*06/26/19 12:07*	*1*
Toluene-d8 (Surr)	*101*		*70 - 123*		*06/26/19 12:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*70 - 121*		*06/26/19 12:07*	*1*

Lab Sample ID: LCS 240-388304/6
Matrix: Water
Analysis Batch: 388304

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	23.47		ug/L		117	33 - 173
cis-1,2-Dichloroethene	20.0	20.42		ug/L		102	76 - 128
1,1-Dichloroethane	20.0	23.21		ug/L		116	75 - 133
1,2-Dichloroethane	20.0	21.12		ug/L		106	71 - 135
1,1-Dichloroethene	20.0	23.08		ug/L		115	65 - 139
Tetrachloroethene	20.0	17.42		ug/L		87	74 - 130
trans-1,2-Dichloroethene	20.0	22.56		ug/L		113	78 - 133
1,1,1-Trichloroethane	20.0	21.38		ug/L		107	69 - 134
Trichloroethene	20.0	19.08		ug/L		95	76 - 125
Vinyl chloride	20.0	24.34		ug/L		122	58 - 143

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*59 - 120*
Dibromofluoromethane (Surr)	*110*		*75 - 128*
Toluene-d8 (Surr)	*101*		*70 - 123*
1,2-Dichloroethane-d4 (Surr)	*111*		*70 - 121*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 240-386803/1-A
Matrix: Solid
Analysis Batch: 387229

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 386803

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		mg/Kg		06/18/19 14:00	06/19/19 20:06	1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 240-386803/2-A
Matrix: Solid
Analysis Batch: 387229

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 386803

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			100	92.22		mg/Kg		92	80 - 120		

Method: Moisture - Percent Moisture

Lab Sample ID: 240-114472-1 DU
Matrix: Solid
Analysis Batch: 387400

Client Sample ID: GP-1 (8-10')
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	77.2			79.7		%				3	20
Percent Moisture	22.8			20.3		%				12	20

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

GC/MS VOA

Prep Batch: 386845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-1	GP-1 (8-10')	Total/NA	Solid	5035	
240-114472-4	GP-1 (30-32')	Total/NA	Solid	5035	
240-114472-8	MEOH TRIP BLANK	Total/NA	Solid	5035	
MB 240-386845/1-A	Method Blank	Total/NA	Solid	5035	
LCS 240-386845/2-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 386927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-1	GP-1 (8-10')	Total/NA	Solid	8260B	386845
MB 240-386845/1-A	Method Blank	Total/NA	Solid	8260B	386845
LCS 240-386845/2-A	Lab Control Sample	Total/NA	Solid	8260B	386845

Analysis Batch: 387033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-8	MEOH TRIP BLANK	Total/NA	Solid	8260B	386845

Analysis Batch: 387202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-4	GP-1 (30-32')	Total/NA	Solid	8260B	386845

Analysis Batch: 388304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-5	GP-1 (7-11')	Total/NA	Water	8260B	
240-114472-6	GP-1 (16-18')	Total/NA	Water	8260B	
240-114472-7	GP-1 (23-25')	Total/NA	Water	8260B	
240-114472-9	HCL TRIP BLANK	Total/NA	Water	8260B	
MB 240-388304/9	Method Blank	Total/NA	Water	8260B	
LCS 240-388304/6	Lab Control Sample	Total/NA	Water	8260B	

Metals

Prep Batch: 386803

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-2	GP-1 (0-1')	Total/NA	Solid	3050B	
240-114472-3	GP-1 (2-4')	Total/NA	Solid	3050B	
MB 240-386803/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 240-386803/2-A	Lab Control Sample	Total/NA	Solid	3050B	

Analysis Batch: 387229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-2	GP-1 (0-1')	Total/NA	Solid	6010D	386803
240-114472-3	GP-1 (2-4')	Total/NA	Solid	6010D	386803
MB 240-386803/1-A	Method Blank	Total/NA	Solid	6010D	386803
LCS 240-386803/2-A	Lab Control Sample	Total/NA	Solid	6010D	386803

General Chemistry

Analysis Batch: 387400

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-1	GP-1 (8-10')	Total/NA	Solid	Moisture	
240-114472-2	GP-1 (0-1')	Total/NA	Solid	Moisture	
240-114472-3	GP-1 (2-4')	Total/NA	Solid	Moisture	

General Chemistry (Continued)

Analysis Batch: 387400 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114472-4	GP-1 (30-32')	Total/NA	Solid	Moisture	
240-114472-1 DU	GP-1 (8-10')	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (8-10')
Lab Sample ID: 240-114472-1
Date Collected: 06/14/19 10:45
Matrix: Solid
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			386845	06/18/19 13:31	LAM	TAL CAN
Total/NA	Analysis	8260B		1	386927	06/19/19 16:12	TJL2	TAL CAN
Total/NA	Analysis	Moisture		1	387400	06/20/19 16:55	EHC	TAL CAN

Client Sample ID: GP-1 (0-1')
Lab Sample ID: 240-114472-2
Date Collected: 06/14/19 10:50
Matrix: Solid
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			386803	06/18/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	387229	06/19/19 21:57	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	387400	06/20/19 16:55	EHC	TAL CAN

Client Sample ID: GP-1 (2-4')
Lab Sample ID: 240-114472-3
Date Collected: 06/14/19 10:55
Matrix: Solid
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			386803	06/18/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	387229	06/19/19 22:02	KLC	TAL CAN
Total/NA	Analysis	Moisture		1	387400	06/20/19 16:55	EHC	TAL CAN

Client Sample ID: GP-1 (30-32')
Lab Sample ID: 240-114472-4
Date Collected: 06/14/19 11:10
Matrix: Solid
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			386845	06/18/19 13:31	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387202	06/20/19 07:50	TJL2	TAL CAN
Total/NA	Analysis	Moisture		1	387400	06/20/19 16:55	EHC	TAL CAN

Client Sample ID: GP-1 (7-11')
Lab Sample ID: 240-114472-5
Date Collected: 06/14/19 11:20
Matrix: Water
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	388304	06/26/19 12:53	HMB	TAL CAN

Client Sample ID: GP-1 (16-18')
Lab Sample ID: 240-114472-6
Date Collected: 06/14/19 11:40
Matrix: Water
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	388304	06/26/19 13:15	HMB	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Client Sample ID: GP-1 (23-25')

Lab Sample ID: 240-114472-7
Date Collected: 06/14/19 12:00
Matrix: Water
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	388304	06/26/19 13:37	HMB	TAL CAN

Client Sample ID: MEOH TRIP BLANK

Lab Sample ID: 240-114472-8
Date Collected: 06/14/19 00:00
Matrix: Solid
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			386845	06/18/19 13:31	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387033	06/19/19 14:47	SAM	TAL CAN

Client Sample ID: HCL TRIP BLANK

Lab Sample ID: 240-114472-9
Date Collected: 06/14/19 00:00
Matrix: Water
Date Received: 06/15/19 09:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	388304	06/26/19 13:59	HMB	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114472-1
SDG: 2606-0016

Laboratory: Eurofins TestAmerica, Canton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State		2927	02-23-20
California	State Program	9	2927	02-23-20
Connecticut	State Program	1	PH-0590	12-31-19
Florida	NELAP	4	E87225	06-30-19 *
Florida	NELAP		E87225	06-30-19
Illinois	NELAP	5	200004	07-31-19 *
Illinois	NELAP		004498	07-31-19
Iowa	State Program	7	421	06-01-21
Kansas	NELAP	7	E-10336	04-30-20
Kentucky (UST)	State Program	4	58	02-23-20
Kentucky (WW)	State Program	4	98016	12-31-19
Minnesota	NELAP	5	039-999-348	12-31-19 *
Minnesota (Petrofund)	State Program	1	3506	07-31-19 *
Nevada	State Program	9	OH00048	07-31-19
New Jersey	NELAP	2	OH001	06-30-20
New Jersey	NELAP		OH001	06-30-19
New York	NELAP	2	10975	03-31-20
New York	NELAP		10975	03-31-20
Ohio VAP	State Program	5	CL0024	06-05-21
Oregon	NELAP	10	4062	02-23-20
Oregon	NELAP		4062	02-23-20
Pennsylvania	NELAP	3	68-00340	08-31-19 *
Pennsylvania	NELAP		68-00340	08-31-19
Texas	NELAP	6	T104704517-18-10	08-31-19 *
Texas	NELAP		T104704517-18-10	08-31-19
USDA	Federal		P330-16-00404	12-28-19
Virginia	NELAP	3	460175	09-14-19 *
Virginia	NELAP		010101	09-14-19
Washington	State		C971	01-12-20
Washington	State Program	10	C971	01-12-20 *
West Virginia DEP	State Program	3	210	12-31-19

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

1.8/Cl.9

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring Yes

Client Name: Wenck Associates, Inc. Client #:
Address: 1802 Wooddale Drive
City/State/Zip Code: Woodbury, MN 55125
Project Manager: Chris Bratsch ; Shane Waterman
Email Address: cbratsch@wenck.com ; swaterman@wenck.com
Telephone Number: 651-294-4588 Fax:
Sampler Name: (Print Name) Benjamin Kramka ; Kelly Jaworski
Sampler Signature: Benjamin Kramka ;

Project Name: Water Gremlin
Project #: 2606-0016
Site/Location ID: White Bear Lake, State: MN
Report To: Chris Bratsch, Shane Waterman; Ben Kramka; Kelly Jaworski
Invoice To: accounting@wenck.com
Quote #: 40676 PO#: —

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-day
Fax Results: Y (N)
Email Results: (Y) N

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
X Level 4
Other: ___

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix (SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify Other)	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: VOCs (Modified 8260B)	Lead (EPA 6020)	Moisture	REMARKS
2001004917	6/14/19	1045	G	-	S					1	1		X		X	GP-1 (8-10')
2001004917	6/14/19	1050	G	-	S						1			X	X	GP-1 (0-1')
2001004917	6/14/19	1055	G	-	S						1			X	X	GP-1 (2-4')
2001004917	6/14/19	1110	G	-	S					1	1		X		X	GP-1 (30-32')
2001004837	6/14/19	1120	G	N	GW		3						X			GP-1 (7-11')
2001004837	6/14/19	1140	G	N	GW		3						X			GP-1 (16-18')
2001004837	6/14/19	1200	G	N	GW		3						X			GP-1 (23'-25')
MeOH TRIP BLANK													X			
HCl TRIP BLANK													X			

Special Instructions: *Modified VOC 8260B analyte list: Chloroethane; 1,1-DCA; 1,2-DCA; 1,1-DCE; cis-1,2-DCE; trans-1,2-DCE; PCE; 1,1,1-TCA; TCE; VC

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

240-114472 Chain of Custody

Relinquished By	Date	Time	Received By	Date	Time
Kelly Jaworski	6/14/19	1600	Jon Jocka	6-14-19	1600
Jon Jocka	6-14-19	1700	[illegible]	6/15/19	950
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0033 (0708)

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 114472

Client Wenck Site Name

Cooler unpacked by:

Cooler Received on 6/6/19 Opened on 6/12/19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # 22 Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. 1.8 °C Corrected Cooler Temp. 1.9 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   - Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Yes No
16. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: E Roach

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.
Sample(s) ____ were received in a broken container.
Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.
Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-114745-1
Laboratory Sample Delivery Group: 2606-0016
Client Project/Site: Water Gremlin Co. Remedial Investigation

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
7/2/2019 4:46:26 PM

Zach Bindert, Project Manager I
(319)277-2401
zach.bindert@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Method Summary 5
Sample Summary 6
Detection Summary 7
Client Sample Results 11
Surrogate Summary 60
QC Sample Results 62
QC Association Summary 71
Lab Chronicle 75
Certification Summary 84
Chain of Custody 85
Receipt Checklists 97

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

General Chemistry

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-114745-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-114745-1

Comments
No additional comments.

Receipt
The samples were received on 6/20/2019 11:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.1º C and 2.3º C.

GC/MS VOA
Method(s) 8260B: A MS/MSD was prepared for batch 240-387575, but was analyzed in a different analytical batch.

TRIP BLANK (240-114745-49)

Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-2 (22-24) (240-114745-6).

Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-3 (23-25) (240-114745-12).

Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-7 (14-16) (240-114745-32), GP-8 (5-7) (240-114745-36), GP-8 (12-14) (240-114745-38), GP-8 (19-21) (240-114745-39), GP-9 (6-8) (240-114745-43) and GP-9 (13-15) (240-114745-45).

Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-6 (7-10) (240-114745-24).

Method(s) 8260B: The continuing calibration verification (CCV) associated with batch 310-244047 recovered above the upper control limit for Chloroethane (20.8%D) and Vinyl chloride (27.1%D). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CF
6010D	Metals (ICP)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
3050B	Preparation, Metals	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CF
5035	Closed System Purge and Trap	SW846	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114745-1	GP-2 (0-1)	Solid	06/17/19 09:30	06/20/19 11:15	
240-114745-2	GP-2 (5-7)	Solid	06/17/19 10:00	06/20/19 11:15	
240-114745-3	GP-2 (22-24)	Solid	06/17/19 10:05	06/20/19 11:15	
240-114745-4	GP-2 (7-10)	Water	06/17/19 10:10	06/20/19 11:15	
240-114745-5	GP-2 (15-17)	Water	06/17/19 10:20	06/20/19 11:15	
240-114745-6	GP-2 (22-24)	Water	06/17/19 10:40	06/20/19 11:15	
240-114745-7	GP-3 (0-1)	Solid	06/17/19 11:20	06/20/19 11:15	
240-114745-8	GP-3 (0-2)	Solid	06/17/19 11:50	06/20/19 11:15	
240-114745-9	GP-3 (26-28)	Solid	06/17/19 12:00	06/20/19 11:15	
240-114745-10	GP-3 (8-11)	Water	06/17/19 11:50	06/20/19 11:15	
240-114745-11	GP-3 (16-18)	Water	06/17/19 12:10	06/20/19 11:15	
240-114745-12	GP-3 (23-25)	Water	06/17/19 12:30	06/20/19 11:15	
240-114745-13	GP-4 (0-1)	Solid	06/17/19 13:40	06/20/19 11:15	
240-114745-14	GP-4 (4-6)	Solid	06/17/19 14:20	06/20/19 11:15	
240-114745-15	GP-4 (5-7)	Water	06/17/19 14:40	06/20/19 11:15	
240-114745-16	GP-4 (12-14)	Water	06/17/19 15:00	06/20/19 11:15	
240-114745-17	GP-4 (19-21)	Water	06/17/19 15:05	06/20/19 11:15	
240-114745-18	GP-4 (26-28)	Water	06/17/19 15:15	06/20/19 11:15	
240-114745-19	GP-5 (0-1)	Solid	06/17/19 15:45	06/20/19 11:15	
240-114745-20	GP-5 (2-4)	Solid	06/17/19 16:40	06/20/19 11:15	
240-114745-21	GP-6 (0-1)	Solid	06/18/19 09:10	06/20/19 11:15	
240-114745-22	GP-6 (2-4)	Solid	06/18/19 09:40	06/20/19 11:15	
240-114745-23	GP-6 (4-6)	Solid	06/18/19 09:50	06/20/19 11:15	
240-114745-24	GP-6 (7-10)	Water	06/18/19 10:00	06/20/19 11:15	
240-114745-25	GP-6 (15-17)	Water	06/18/19 10:40	06/20/19 11:15	
240-114745-26	GP-6 (22-24)	Water	06/18/19 10:50	06/20/19 11:15	
240-114745-27	GP-7 (0-1)	Solid	06/18/19 11:40	06/20/19 11:15	
240-114745-28	061819-A	Water	06/18/19 00:00	06/20/19 11:15	
240-114745-29	GP-7 (6-9)	Water	06/18/19 11:50	06/20/19 11:15	
240-114745-30	GP-7 (2-4)	Solid	06/18/19 12:20	06/20/19 11:15	
240-114745-31	GP-7 (10-12)	Solid	06/18/19 12:25	06/20/19 11:15	
240-114745-32	GP-7 (14-16)	Water	06/18/19 12:30	06/20/19 11:15	
240-114745-33	GP-7 (21-23)	Water	06/18/19 12:45	06/20/19 11:15	
240-114745-34	GP-8 (0-1)	Solid	06/18/19 13:30	06/20/19 11:15	
240-114745-35	GP-8 (6-8)	Solid	06/18/19 14:05	06/20/19 11:15	
240-114745-36	GP-8 (5-7)	Water	06/18/19 14:15	06/20/19 11:15	
240-114745-37	RINSATE #1	Water	06/18/19 13:15	06/20/19 11:15	
240-114745-38	GP-8 (12-14)	Water	06/18/19 14:30	06/20/19 11:15	
240-114745-39	GP-8 (19-21)	Water	06/18/19 14:45	06/20/19 11:15	
240-114745-40	GP-9 (0-1)	Solid	06/18/19 15:15	06/20/19 11:15	
240-114745-41	GP-9 (5-7)	Solid	06/18/19 15:30	06/20/19 11:15	
240-114745-42	GP-9 (6-8)	Solid	06/18/19 15:45	06/20/19 11:15	
240-114745-43	GP-9 (6-8)	Water	06/18/19 15:35	06/20/19 11:15	
240-114745-44	RINSATE #2	Water	06/18/19 15:00	06/20/19 11:15	
240-114745-45	GP-9 (13-15)	Water	06/18/19 15:55	06/20/19 11:15	
240-114745-46	GP-9 (20-22)	Water	06/18/19 16:05	06/20/19 11:15	
240-114745-47	061819-B	Water	06/18/19 00:01	06/20/19 11:15	
240-114745-48	TRIP BLANK Water	Water	06/18/19 00:00	06/20/19 11:15	
240-114745-49	TRIP BLANK Soil	Solid	06/18/19 00:01	06/20/19 11:15	

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (0-1) — Lab Sample ID: 240-114745-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	23.8		0.865		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-2 (5-7) — Lab Sample ID: 240-114745-2

No Detections.

Client Sample ID: GP-2 (22-24) — Lab Sample ID: 240-114745-3

No Detections.

Client Sample ID: GP-2 (7-10) — Lab Sample ID: 240-114745-4

No Detections.

Client Sample ID: GP-2 (15-17) — Lab Sample ID: 240-114745-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	4.47		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-2 (22-24) — Lab Sample ID: 240-114745-6

No Detections.

Client Sample ID: GP-3 (0-1) — Lab Sample ID: 240-114745-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	47.9		0.871		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-3 (0-2) — Lab Sample ID: 240-114745-8

No Detections.

Client Sample ID: GP-3 (26-28) — Lab Sample ID: 240-114745-9

No Detections.

Client Sample ID: GP-3 (8-11) — Lab Sample ID: 240-114745-10

No Detections.

Client Sample ID: GP-3 (16-18) — Lab Sample ID: 240-114745-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.09		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-3 (23-25) — Lab Sample ID: 240-114745-12

No Detections.

Client Sample ID: GP-4 (0-1) — Lab Sample ID: 240-114745-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	11.5		0.901		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-4 (4-6) — Lab Sample ID: 240-114745-14

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (5-7) — Lab Sample ID: 240-114745-15

No Detections.

Client Sample ID: GP-4 (12-14) — Lab Sample ID: 240-114745-16

No Detections.

Client Sample ID: GP-4 (19-21) — Lab Sample ID: 240-114745-17

No Detections.

Client Sample ID: GP-4 (26-28) — Lab Sample ID: 240-114745-18

No Detections.

Client Sample ID: GP-5 (0-1) — Lab Sample ID: 240-114745-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	57.4		0.912		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-5 (2-4) — Lab Sample ID: 240-114745-20

No Detections.

Client Sample ID: GP-6 (0-1) — Lab Sample ID: 240-114745-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	247		0.864		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-6 (2-4) — Lab Sample ID: 240-114745-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	263		0.856		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-6 (4-6) — Lab Sample ID: 240-114745-23

No Detections.

Client Sample ID: GP-6 (7-10) — Lab Sample ID: 240-114745-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	5.53	F1	1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-6 (15-17) — Lab Sample ID: 240-114745-25

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	3.60		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-6 (22-24) — Lab Sample ID: 240-114745-26

No Detections.

Client Sample ID: GP-7 (0-1) — Lab Sample ID: 240-114745-27

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	69.6		0.948		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: 061819-A — Lab Sample ID: 240-114745-28

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (6-9) — Lab Sample ID: 240-114745-29

No Detections.

Client Sample ID: GP-7 (2-4) — Lab Sample ID: 240-114745-30

No Detections.

Client Sample ID: GP-7 (10-12) — Lab Sample ID: 240-114745-31

No Detections.

Client Sample ID: GP-7 (14-16) — Lab Sample ID: 240-114745-32

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.45		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	1.30		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-7 (21-23) — Lab Sample ID: 240-114745-33

No Detections.

Client Sample ID: GP-8 (0-1) — Lab Sample ID: 240-114745-34

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	25.8		0.770		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-8 (6-8) — Lab Sample ID: 240-114745-35

No Detections.

Client Sample ID: GP-8 (5-7) — Lab Sample ID: 240-114745-36

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.08		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: RINSATE #1 — Lab Sample ID: 240-114745-37

No Detections.

Client Sample ID: GP-8 (12-14) — Lab Sample ID: 240-114745-38

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.42		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-8 (19-21) — Lab Sample ID: 240-114745-39

No Detections.

Client Sample ID: GP-9 (0-1) — Lab Sample ID: 240-114745-40

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	7.22		0.813		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-9 (5-7) — Lab Sample ID: 240-114745-41

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	28.0		0.896		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-9 (6-8) — Lab Sample ID: 240-114745-42

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (6-8) — Lab Sample ID: 240-114745-43

No Detections.

Client Sample ID: RINSATE #2 — Lab Sample ID: 240-114745-44

No Detections.

Client Sample ID: GP-9 (13-15) — Lab Sample ID: 240-114745-45

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	4.89		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-9 (20-22) — Lab Sample ID: 240-114745-46

No Detections.

Client Sample ID: 061819-B — Lab Sample ID: 240-114745-47

No Detections.

Client Sample ID: TRIP BLANK Water — Lab Sample ID: 240-114745-48

No Detections.

Client Sample ID: TRIP BLANK Soil — Lab Sample ID: 240-114745-49

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (0-1)

Date Collected: 06/17/19 09:30
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-1

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	23.8		0.865		mg/Kg	☼	06/24/19 08:00	06/25/19 13:43	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	91.0		0.1		%			06/25/19 10:47	1
Percent Moisture	9.0		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (5-7)

Date Collected: 06/17/19 10:00
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-2

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
cis-1,2-Dichloroethene	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
1,1-Dichloroethane	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
1,2-Dichloroethane	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
1,1-Dichloroethene	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
Tetrachloroethene	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
trans-1,2-Dichloroethene	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
1,1,1-Trichloroethane	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
Trichloroethene	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1
Vinyl chloride	<0.171		0.171		mg/Kg	☼	06/21/19 13:16	06/21/19 21:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*48 - 151*	*06/21/19 13:16*	*06/21/19 21:29*	*1*
Dibromofluoromethane (Surr)	*106*		*49 - 138*	*06/21/19 13:16*	*06/21/19 21:29*	*1*
Toluene-d8 (Surr)	*114*		*49 - 147*	*06/21/19 13:16*	*06/21/19 21:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*123*		*53 - 155*	*06/21/19 13:16*	*06/21/19 21:29*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**84.6**		0.1		%			06/25/19 10:47	1
Percent Moisture	**15.4**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (22-24)

Date Collected: 06/17/19 10:05
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-3

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
cis-1,2-Dichloroethene	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
1,1-Dichloroethane	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
1,2-Dichloroethane	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
1,1-Dichloroethene	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
Tetrachloroethene	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
trans-1,2-Dichloroethene	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
1,1,1-Trichloroethane	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
Trichloroethene	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1
Vinyl chloride	<0.207		0.207		mg/Kg	☼	06/21/19 13:16	06/21/19 21:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*48 - 151*	*06/21/19 13:16*	*06/21/19 21:55*	*1*
Dibromofluoromethane (Surr)	*90*		*49 - 138*	*06/21/19 13:16*	*06/21/19 21:55*	*1*
Toluene-d8 (Surr)	*98*		*49 - 147*	*06/21/19 13:16*	*06/21/19 21:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*106*		*53 - 155*	*06/21/19 13:16*	*06/21/19 21:55*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**83.9**		0.1		%			06/25/19 10:47	1
Percent Moisture	**16.1**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (7-10)

Lab Sample ID: 240-114745-4

Date Collected: 06/17/19 10:10

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 03:10	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 03:10	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 03:10	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 03:10	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 03:10	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 03:10	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 03:10	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 03:10	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 03:10	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 03:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*06/27/19 03:10*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*06/27/19 03:10*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/27/19 03:10*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (15-17)

Lab Sample ID: 240-114745-5

Date Collected: 06/17/19 10:20

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 03:32	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 03:32	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 03:32	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 03:32	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 03:32	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 03:32	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 03:32	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 03:32	1
Trichloroethene	**4.47**		1.00		ug/L			06/27/19 03:32	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 03:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*		*06/27/19 03:32*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*06/27/19 03:32*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*06/27/19 03:32*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (22-24)

Lab Sample ID: 240-114745-6

Date Collected: 06/17/19 10:40

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 03:54	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 03:54	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 03:54	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 03:54	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 03:54	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 03:54	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 03:54	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 03:54	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 03:54	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 03:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/27/19 03:54*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/27/19 03:54*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/27/19 03:54*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-3 (0-1)

Lab Sample ID: 240-114745-7

Date Collected: 06/17/19 11:20
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	47.9		0.871		mg/Kg	☼	06/24/19 08:00	06/25/19 13:48	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	91.9		0.1		%			06/25/19 10:47	1
Percent Moisture	8.1		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-3 (0-2)

Date Collected: 06/17/19 11:50
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-8

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
cis-1,2-Dichloroethene	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
1,1-Dichloroethane	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
1,2-Dichloroethane	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
1,1-Dichloroethene	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
Tetrachloroethene	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
trans-1,2-Dichloroethene	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
1,1,1-Trichloroethane	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
Trichloroethene	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1
Vinyl chloride	<0.275		0.275		mg/Kg	☼	06/21/19 13:16	06/21/19 22:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*83*		*48 - 151*	*06/21/19 13:16*	*06/21/19 22:21*	*1*
Dibromofluoromethane (Surr)	*76*		*49 - 138*	*06/21/19 13:16*	*06/21/19 22:21*	*1*
Toluene-d8 (Surr)	*85*		*49 - 147*	*06/21/19 13:16*	*06/21/19 22:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*53 - 155*	*06/21/19 13:16*	*06/21/19 22:21*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**96.4**		0.1		%			06/25/19 10:47	1
Percent Moisture	**3.6**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-3 (26-28)

Lab Sample ID: 240-114745-9

Date Collected: 06/17/19 12:00
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
cis-1,2-Dichloroethene	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
1,1-Dichloroethane	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
1,2-Dichloroethane	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
1,1-Dichloroethene	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
Tetrachloroethene	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
trans-1,2-Dichloroethene	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
1,1,1-Trichloroethane	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
Trichloroethene	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1
Vinyl chloride	<0.273		0.273		mg/Kg	☼	06/21/19 13:16	06/21/19 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*48 - 151*	*06/21/19 13:16*	*06/21/19 22:47*	*1*
Dibromofluoromethane (Surr)	*100*		*49 - 138*	*06/21/19 13:16*	*06/21/19 22:47*	*1*
Toluene-d8 (Surr)	*106*		*49 - 147*	*06/21/19 13:16*	*06/21/19 22:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*53 - 155*	*06/21/19 13:16*	*06/21/19 22:47*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**81.2**		0.1		%			06/25/19 10:47	1
Percent Moisture	**18.8**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-3 (8-11)

Lab Sample ID: 240-114745-10

Date Collected: 06/17/19 11:50
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 04:16	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 04:16	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 04:16	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 04:16	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 04:16	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 04:16	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 04:16	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 04:16	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 04:16	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 04:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*06/27/19 04:16*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*		*06/27/19 04:16*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*06/27/19 04:16*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-3 (16-18)

Lab Sample ID: 240-114745-11

Date Collected: 06/17/19 12:10
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 04:39	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 04:39	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 04:39	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 04:39	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 04:39	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 04:39	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 04:39	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 04:39	1
Trichloroethene	**1.09**		1.00		ug/L			06/27/19 04:39	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 04:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/27/19 04:39*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*06/27/19 04:39*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*		*06/27/19 04:39*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-3 (23-25)

Lab Sample ID: 240-114745-12

Date Collected: 06/17/19 12:30

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 08:46	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 08:46	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 08:46	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 08:46	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 08:46	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 08:46	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 08:46	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 08:46	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 08:46	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 08:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/27/19 08:46*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*06/27/19 08:46*	*1*
Toluene-d8 (Surr)	*109*		*80 - 120*		*06/27/19 08:46*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (0-1)

Date Collected: 06/17/19 13:40
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-13

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	11.5		0.901		mg/Kg	☼	06/24/19 08:00	06/25/19 13:52	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	93.3		0.1		%			06/25/19 10:47	1
Percent Moisture	6.7		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (4-6)

Date Collected: 06/17/19 14:20
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-14

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
cis-1,2-Dichloroethene	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
1,1-Dichloroethane	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
1,2-Dichloroethane	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
1,1-Dichloroethene	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
Tetrachloroethene	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
trans-1,2-Dichloroethene	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
1,1,1-Trichloroethane	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
Trichloroethene	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1
Vinyl chloride	<0.231		0.231		mg/Kg	☼	06/21/19 13:16	06/21/19 23:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*87*		*48 - 151*	*06/21/19 13:16*	*06/21/19 23:13*	*1*
Dibromofluoromethane (Surr)	*83*		*49 - 138*	*06/21/19 13:16*	*06/21/19 23:13*	*1*
Toluene-d8 (Surr)	*89*		*49 - 147*	*06/21/19 13:16*	*06/21/19 23:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*53 - 155*	*06/21/19 13:16*	*06/21/19 23:13*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**86.6**		0.1		%			06/25/19 10:47	1
Percent Moisture	**13.4**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (5-7)

Lab Sample ID: 240-114745-15

Date Collected: 06/17/19 14:40

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 09:08	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 09:08	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 09:08	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 09:08	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 09:08	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 09:08	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 09:08	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 09:08	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 09:08	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 09:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/27/19 09:08*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*06/27/19 09:08*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/27/19 09:08*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (12-14)

Lab Sample ID: 240-114745-16

Date Collected: 06/17/19 15:00
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 09:30	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 09:30	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 09:30	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 09:30	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 09:30	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 09:30	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 09:30	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 09:30	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 09:30	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 09:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*		*06/27/19 09:30*	*1*
Dibromofluoromethane (Surr)	*94*		*80 - 120*		*06/27/19 09:30*	*1*
Toluene-d8 (Surr)	*93*		*80 - 120*		*06/27/19 09:30*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (19-21)

Lab Sample ID: 240-114745-17

Date Collected: 06/17/19 15:05

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 09:52	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 09:52	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 09:52	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 09:52	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 09:52	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 09:52	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 09:52	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 09:52	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 09:52	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 09:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/27/19 09:52*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/27/19 09:52*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/27/19 09:52*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (26-28)

Lab Sample ID: 240-114745-18

Date Collected: 06/17/19 15:15
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 10:14	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 10:14	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 10:14	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 10:14	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 10:14	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 10:14	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 10:14	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 10:14	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 10:14	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 10:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/27/19 10:14*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*06/27/19 10:14*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/27/19 10:14*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-5 (0-1)

Date Collected: 06/17/19 15:45
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-19

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	57.4		0.912		mg/Kg	☼	06/24/19 08:00	06/25/19 13:57	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	84.4		0.1		%			06/25/19 10:47	1
Percent Moisture	15.6		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-5 (2-4)

Date Collected: 06/17/19 16:40
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-20

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
cis-1,2-Dichloroethene	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
1,1-Dichloroethane	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
1,2-Dichloroethane	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
1,1-Dichloroethene	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
Tetrachloroethene	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
trans-1,2-Dichloroethene	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
1,1,1-Trichloroethane	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
Trichloroethene	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1
Vinyl chloride	<0.178		0.178		mg/Kg	☼	06/21/19 13:16	06/22/19 00:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*48 - 151*	*06/21/19 13:16*	*06/22/19 00:30*	*1*
Dibromofluoromethane (Surr)	*95*		*49 - 138*	*06/21/19 13:16*	*06/22/19 00:30*	*1*
Toluene-d8 (Surr)	*99*		*49 - 147*	*06/21/19 13:16*	*06/22/19 00:30*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*53 - 155*	*06/21/19 13:16*	*06/22/19 00:30*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**90.0**		0.1		%			06/25/19 10:47	1
Percent Moisture	**10**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-6 (0-1)

Lab Sample ID: 240-114745-21

Date Collected: 06/18/19 09:10
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	247		0.864		mg/Kg	☼	06/24/19 08:00	06/25/19 14:02	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	85.1		0.1		%			06/25/19 10:47	1
Percent Moisture	14.9		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-6 (2-4)

Date Collected: 06/18/19 09:40
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-22

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	263		0.856		mg/Kg	☼	06/24/19 08:00	06/25/19 14:06	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	83.5		0.1		%			06/25/19 10:47	1
Percent Moisture	16.5		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-6 (4-6)

Lab Sample ID: 240-114745-23

Date Collected: 06/18/19 09:50
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
cis-1,2-Dichloroethene	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
1,1-Dichloroethane	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
1,2-Dichloroethane	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
1,1-Dichloroethene	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
Tetrachloroethene	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
trans-1,2-Dichloroethene	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
1,1,1-Trichloroethane	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
Trichloroethene	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1
Vinyl chloride	<0.251		0.251		mg/Kg	☼	06/21/19 13:16	06/22/19 00:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*127*		*48 - 151*	*06/21/19 13:16*	*06/22/19 00:56*	*1*
Dibromofluoromethane (Surr)	*126*		*49 - 138*	*06/21/19 13:16*	*06/22/19 00:56*	*1*
Toluene-d8 (Surr)	*127*		*49 - 147*	*06/21/19 13:16*	*06/22/19 00:56*	*1*
1,2-Dichloroethane-d4 (Surr)	*142*		*53 - 155*	*06/21/19 13:16*	*06/22/19 00:56*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**87.6**		0.1		%			06/25/19 10:47	1
Percent Moisture	**12.4**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-6 (7-10)

Lab Sample ID: 240-114745-24

Date Collected: 06/18/19 10:00
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 01:22	1
cis-1,2-Dichloroethene	<1.00	F1	1.00		ug/L			06/29/19 01:22	1
1,1-Dichloroethane	<1.00	F1	1.00		ug/L			06/29/19 01:22	1
1,2-Dichloroethane	<1.00	F1	1.00		ug/L			06/29/19 01:22	1
1,1-Dichloroethene	<2.00	F1	2.00		ug/L			06/29/19 01:22	1
Tetrachloroethene	<1.00	F1	1.00		ug/L			06/29/19 01:22	1
trans-1,2-Dichloroethene	<1.00	F1	1.00		ug/L			06/29/19 01:22	1
1,1,1-Trichloroethane	<1.00	F1	1.00		ug/L			06/29/19 01:22	1
Trichloroethene	**5.53**	**F1**	1.00		ug/L			06/29/19 01:22	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*06/29/19 01:22*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/29/19 01:22*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/29/19 01:22*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-6 (15-17)

Lab Sample ID: 240-114745-25

Date Collected: 06/18/19 10:40
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 21:19	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 21:19	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 21:19	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 21:19	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 21:19	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 21:19	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 21:19	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 21:19	1
Trichloroethene	**3.60**		1.00		ug/L			06/27/19 21:19	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 21:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*06/27/19 21:19*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*06/27/19 21:19*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/27/19 21:19*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-6 (22-24)

Lab Sample ID: 240-114745-26

Date Collected: 06/18/19 10:50
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 21:41	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 21:41	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 21:41	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 21:41	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 21:41	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 21:41	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 21:41	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 21:41	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 21:41	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 21:41	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*06/27/19 21:41*	*1*
Dibromofluoromethane (Surr)	*92*		*80 - 120*		*06/27/19 21:41*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/27/19 21:41*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (0-1)

Lab Sample ID: 240-114745-27

Date Collected: 06/18/19 11:40
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	69.6		0.948		mg/Kg	☼	06/24/19 08:00	06/25/19 14:11	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	95.0		0.1		%			06/25/19 10:47	1
Percent Moisture	5.0		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: 061819-A

Lab Sample ID: 240-114745-28

Date Collected: 06/18/19 00:00
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 22:03	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 22:03	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 22:03	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 22:03	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 22:03	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 22:03	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 22:03	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 22:03	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 22:03	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 22:03	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/27/19 22:03*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*06/27/19 22:03*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/27/19 22:03*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (6-9)

Lab Sample ID: 240-114745-29

Date Collected: 06/18/19 11:50
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 22:25	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 22:25	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 22:25	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 22:25	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 22:25	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 22:25	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 22:25	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 22:25	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 22:25	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 22:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/27/19 22:25*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*06/27/19 22:25*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/27/19 22:25*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (2-4)

Date Collected: 06/18/19 12:20
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-30

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
cis-1,2-Dichloroethene	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
1,1-Dichloroethane	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
1,2-Dichloroethane	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
1,1-Dichloroethene	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
Tetrachloroethene	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
trans-1,2-Dichloroethene	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
1,1,1-Trichloroethane	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
Trichloroethene	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1
Vinyl chloride	<0.219		0.219		mg/Kg	☼	06/21/19 13:16	06/22/19 01:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 151*	*06/21/19 13:16*	*06/22/19 01:21*	*1*
Dibromofluoromethane (Surr)	*96*		*49 - 138*	*06/21/19 13:16*	*06/22/19 01:21*	*1*
Toluene-d8 (Surr)	*101*		*49 - 147*	*06/21/19 13:16*	*06/22/19 01:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*53 - 155*	*06/21/19 13:16*	*06/22/19 01:21*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**94.5**		0.1		%			06/25/19 10:47	1
Percent Moisture	**5.5**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (10-12)

Lab Sample ID: 240-114745-31

Date Collected: 06/18/19 12:25
Date Received: 06/20/19 11:15

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
cis-1,2-Dichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
1,1-Dichloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
1,2-Dichloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
1,1-Dichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
Tetrachloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
trans-1,2-Dichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
1,1,1-Trichloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
Trichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1
Vinyl chloride	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 01:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*48 - 151*	*06/21/19 13:16*	*06/22/19 01:48*	*1*
Dibromofluoromethane (Surr)	*91*		*49 - 138*	*06/21/19 13:16*	*06/22/19 01:48*	*1*
Toluene-d8 (Surr)	*96*		*49 - 147*	*06/21/19 13:16*	*06/22/19 01:48*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*53 - 155*	*06/21/19 13:16*	*06/22/19 01:48*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**81.5**		0.1		%			06/25/19 10:47	1
Percent Moisture	**18.5**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (14-16)

Lab Sample ID: 240-114745-32

Date Collected: 06/18/19 12:30
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 22:47	1
cis-1,2-Dichloroethene	**2.45**		1.00		ug/L			06/27/19 22:47	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 22:47	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 22:47	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 22:47	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 22:47	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 22:47	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 22:47	1
Trichloroethene	**1.30**		1.00		ug/L			06/27/19 22:47	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 22:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/27/19 22:47*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*06/27/19 22:47*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/27/19 22:47*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (21-23)

Lab Sample ID: 240-114745-33

Date Collected: 06/18/19 12:45

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 23:10	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 23:10	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 23:10	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 23:10	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 23:10	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 23:10	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 23:10	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 23:10	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 23:10	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 23:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/27/19 23:10*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*06/27/19 23:10*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/27/19 23:10*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-8 (0-1)

Lab Sample ID: 240-114745-34

Date Collected: 06/18/19 13:30
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	25.8		0.770		mg/Kg	☼	06/24/19 08:00	06/25/19 13:12	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	97.6		0.1		%			06/25/19 10:47	1
Percent Moisture	2.4		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-8 (6-8)

Date Collected: 06/18/19 14:05
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-35

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
cis-1,2-Dichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
1,1-Dichloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
1,2-Dichloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
1,1-Dichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
Tetrachloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
trans-1,2-Dichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
1,1,1-Trichloroethane	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
Trichloroethene	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1
Vinyl chloride	<0.256		0.256		mg/Kg	☼	06/21/19 13:16	06/22/19 02:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*48 - 151*	*06/21/19 13:16*	*06/22/19 02:13*	*1*
Dibromofluoromethane (Surr)	*91*		*49 - 138*	*06/21/19 13:16*	*06/22/19 02:13*	*1*
Toluene-d8 (Surr)	*96*		*49 - 147*	*06/21/19 13:16*	*06/22/19 02:13*	*1*
1,2-Dichloroethane-d4 (Surr)	*110*		*53 - 155*	*06/21/19 13:16*	*06/22/19 02:13*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**83.9**		0.1		%			06/25/19 10:47	1
Percent Moisture	**16.1**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-8 (5-7)

Lab Sample ID: 240-114745-36

Date Collected: 06/18/19 14:15

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 23:32	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 23:32	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 23:32	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 23:32	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 23:32	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 23:32	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 23:32	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 23:32	1
Trichloroethene	**1.08**		1.00		ug/L			06/27/19 23:32	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 23:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/27/19 23:32*	*1*
Dibromofluoromethane (Surr)	*108*		*80 - 120*		*06/27/19 23:32*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/27/19 23:32*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: RINSATE #1

Lab Sample ID: 240-114745-37

Date Collected: 06/18/19 13:15
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 23:54	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 23:54	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 23:54	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 23:54	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 23:54	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 23:54	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 23:54	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 23:54	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 23:54	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 23:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*06/27/19 23:54*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*06/27/19 23:54*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*06/27/19 23:54*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-8 (12-14)

Lab Sample ID: 240-114745-38

Date Collected: 06/18/19 14:30

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/28/19 00:16	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 00:16	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/28/19 00:16	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/28/19 00:16	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/28/19 00:16	1
Tetrachloroethene	<1.00		1.00		ug/L			06/28/19 00:16	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 00:16	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/28/19 00:16	1
Trichloroethene	**1.42**		1.00		ug/L			06/28/19 00:16	1
Vinyl chloride	<1.00		1.00		ug/L			06/28/19 00:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/28/19 00:16*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*		*06/28/19 00:16*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/28/19 00:16*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-8 (19-21)

Lab Sample ID: 240-114745-39

Date Collected: 06/18/19 14:45

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/28/19 00:38	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 00:38	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/28/19 00:38	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/28/19 00:38	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/28/19 00:38	1
Tetrachloroethene	<1.00		1.00		ug/L			06/28/19 00:38	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 00:38	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/28/19 00:38	1
Trichloroethene	<1.00		1.00		ug/L			06/28/19 00:38	1
Vinyl chloride	<1.00		1.00		ug/L			06/28/19 00:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/28/19 00:38*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*06/28/19 00:38*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/28/19 00:38*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (0-1)

Date Collected: 06/18/19 15:15
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-40

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	7.22		0.813		mg/Kg	☼	06/24/19 08:00	06/25/19 14:24	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96.1		0.1		%			06/25/19 10:47	1
Percent Moisture	3.9		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (5-7)

Lab Sample ID: 240-114745-41

Date Collected: 06/18/19 15:30
Date Received: 06/20/19 11:15

Matrix: Solid

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	28.0		0.896		mg/Kg	☼	06/24/19 08:00	06/25/19 14:29	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	90.0		0.1		%			06/25/19 10:47	1
Percent Moisture	10		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (6-8)

Date Collected: 06/18/19 15:45
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114745-42

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
cis-1,2-Dichloroethene	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
1,1-Dichloroethane	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
1,2-Dichloroethane	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
1,1-Dichloroethene	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
Tetrachloroethene	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
trans-1,2-Dichloroethene	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
1,1,1-Trichloroethane	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
Trichloroethene	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1
Vinyl chloride	<0.189		0.189		mg/Kg	☼	06/21/19 13:16	06/22/19 02:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*48 - 151*	*06/21/19 13:16*	*06/22/19 02:39*	*1*
Dibromofluoromethane (Surr)	*96*		*49 - 138*	*06/21/19 13:16*	*06/22/19 02:39*	*1*
Toluene-d8 (Surr)	*101*		*49 - 147*	*06/21/19 13:16*	*06/22/19 02:39*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*53 - 155*	*06/21/19 13:16*	*06/22/19 02:39*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**86.0**		0.1		%			06/25/19 10:47	1
Percent Moisture	**14.0**		0.1		%			06/25/19 10:47	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (6-8)

Lab Sample ID: 240-114745-43

Date Collected: 06/18/19 15:35
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/28/19 01:00	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 01:00	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/28/19 01:00	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/28/19 01:00	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/28/19 01:00	1
Tetrachloroethene	<1.00		1.00		ug/L			06/28/19 01:00	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 01:00	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/28/19 01:00	1
Trichloroethene	<1.00		1.00		ug/L			06/28/19 01:00	1
Vinyl chloride	<1.00		1.00		ug/L			06/28/19 01:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/28/19 01:00*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*06/28/19 01:00*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*06/28/19 01:00*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: RINSATE #2

Lab Sample ID: 240-114745-44

Date Collected: 06/18/19 15:00

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/28/19 01:22	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 01:22	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/28/19 01:22	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/28/19 01:22	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/28/19 01:22	1
Tetrachloroethene	<1.00		1.00		ug/L			06/28/19 01:22	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 01:22	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/28/19 01:22	1
Trichloroethene	<1.00		1.00		ug/L			06/28/19 01:22	1
Vinyl chloride	<1.00		1.00		ug/L			06/28/19 01:22	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*06/28/19 01:22*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*06/28/19 01:22*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*06/28/19 01:22*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (13-15)

Lab Sample ID: 240-114745-45

Date Collected: 06/18/19 15:55

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/28/19 01:44	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 01:44	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/28/19 01:44	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/28/19 01:44	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/28/19 01:44	1
Tetrachloroethene	<1.00		1.00		ug/L			06/28/19 01:44	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 01:44	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/28/19 01:44	1
Trichloroethene	**4.89**		1.00		ug/L			06/28/19 01:44	1
Vinyl chloride	<1.00		1.00		ug/L			06/28/19 01:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/28/19 01:44*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*06/28/19 01:44*	*1*
Toluene-d8 (Surr)	*94*		*80 - 120*		*06/28/19 01:44*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (20-22)

Lab Sample ID: 240-114745-46

Date Collected: 06/18/19 16:05

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/28/19 02:07	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 02:07	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/28/19 02:07	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/28/19 02:07	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/28/19 02:07	1
Tetrachloroethene	<1.00		1.00		ug/L			06/28/19 02:07	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 02:07	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/28/19 02:07	1
Trichloroethene	<1.00		1.00		ug/L			06/28/19 02:07	1
Vinyl chloride	<1.00		1.00		ug/L			06/28/19 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*06/28/19 02:07*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/28/19 02:07*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/28/19 02:07*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: 061819-B

Lab Sample ID: 240-114745-47

Date Collected: 06/18/19 00:01
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/28/19 02:29	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 02:29	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/28/19 02:29	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/28/19 02:29	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/28/19 02:29	1
Tetrachloroethene	<1.00		1.00		ug/L			06/28/19 02:29	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/28/19 02:29	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/28/19 02:29	1
Trichloroethene	<1.00		1.00		ug/L			06/28/19 02:29	1
Vinyl chloride	<1.00		1.00		ug/L			06/28/19 02:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/28/19 02:29*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*06/28/19 02:29*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/28/19 02:29*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK Water

Lab Sample ID: 240-114745-48

Date Collected: 06/18/19 00:00
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 01:48	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 01:48	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 01:48	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 01:48	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 01:48	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 01:48	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 01:48	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 01:48	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 01:48	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 01:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/29/19 01:48*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 01:48*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/29/19 01:48*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK Soil

Lab Sample ID: 240-114745-49

Date Collected: 06/18/19 00:01
Date Received: 06/20/19 11:15

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
Trichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/21/19 13:16	06/23/19 09:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*84*		*48 - 151*	*06/21/19 13:16*	*06/23/19 09:07*	*1*
Dibromofluoromethane (Surr)	*91*		*49 - 138*	*06/21/19 13:16*	*06/23/19 09:07*	*1*
Toluene-d8 (Surr)	*89*		*49 - 147*	*06/21/19 13:16*	*06/23/19 09:07*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*53 - 155*	*06/21/19 13:16*	*06/23/19 09:07*	*1*

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(48-151)	(49-138)	(49-147)	(53-155)
240-114745-2	GP-2 (5-7)	108	106	114	123
240-114745-3	GP-2 (22-24)	96	90	98	106
240-114745-8	GP-3 (0-2)	83	76	85	88
240-114745-9	GP-3 (26-28)	104	100	106	117
240-114745-14	GP-4 (4-6)	87	83	89	100
240-114745-14 MS	GP-4 (4-6)	93	99	96	105
240-114745-14 MSD	GP-4 (4-6)	92	98	95	107
240-114745-20	GP-5 (2-4)	96	95	99	110
240-114745-23	GP-6 (4-6)	127	126	127	142
240-114745-30	GP-7 (2-4)	98	96	101	111
240-114745-31	GP-7 (10-12)	91	91	96	108
240-114745-35	GP-8 (6-8)	95	91	96	110
240-114745-42	GP-9 (6-8)	97	96	101	114
240-114745-49	TRIP BLANK Soil	84	91	89	108
LCS 240-387575/2-A	Lab Control Sample	77	78	78	82
MB 240-387575/1-A	Method Blank	79	73	80	84

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
240-114745-4	GP-2 (7-10)	104	96	101
240-114745-5	GP-2 (15-17)	106	108	104
240-114745-6	GP-2 (22-24)	102	105	100
240-114745-10	GP-3 (8-11)	95	95	103
240-114745-11	GP-3 (16-18)	103	101	105
240-114745-12	GP-3 (23-25)	98	106	109
240-114745-15	GP-4 (5-7)	100	100	100
240-114745-15 MS	GP-4 (5-7)	99	96	105
240-114745-15 MSD	GP-4 (5-7)	96	98	104
240-114745-16	GP-4 (12-14)	94	94	93
240-114745-17	GP-4 (19-21)	102	105	100
240-114745-18	GP-4 (26-28)	98	101	97
240-114745-24	GP-6 (7-10)	101	105	97
240-114745-24 MS	GP-6 (7-10)	97	106	101
240-114745-24 MSD	GP-6 (7-10)	99	103	99
240-114745-25	GP-6 (15-17)	92	106	100
240-114745-26	GP-6 (22-24)	93	92	98
240-114745-28	061819-A	96	97	96
240-114745-29	GP-7 (6-9)	96	98	97
240-114745-32	GP-7 (14-16)	96	96	100
240-114745-33	GP-7 (21-23)	96	96	99

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	**Client Sample ID**	**BFB (80-120)**	**DBFM (80-120)**	**TOL (80-120)**
240-114745-36	GP-8 (5-7)	100	108	99
240-114745-37	RINSATE #1	97	101	104
240-114745-38	GP-8 (12-14)	103	95	96
240-114745-39	GP-8 (19-21)	99	97	100
240-114745-43	GP-9 (6-8)	100	97	103
240-114745-44	RINSATE #2	95	101	95
240-114745-45	GP-9 (13-15)	100	101	94
240-114745-46	GP-9 (20-22)	96	102	97
240-114745-47	061819-B	99	101	98
240-114745-48	TRIP BLANK Water	102	104	101
LCS 310-244038/6	Lab Control Sample	101	89	109
LCS 310-244038/7	Lab Control Sample	98	96	96
LCS 310-244043/6	Lab Control Sample	104	91	107
LCS 310-244043/7	Lab Control Sample	94	97	96
LCS 310-244047/5	Lab Control Sample	100	91	102
LCS 310-244047/6	Lab Control Sample	98	101	96
LCS 310-244251/6	Lab Control Sample	98	101	98
LCS 310-244251/7	Lab Control Sample	101	101	100
MB 310-244038/8	Method Blank	104	97	103
MB 310-244043/8	Method Blank	107	103	102
MB 310-244047/7	Method Blank	103	100	100
MB 310-244251/8	Method Blank	100	104	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-244038/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244038

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/26/19 21:17	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 21:17	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/26/19 21:17	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/26/19 21:17	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/26/19 21:17	1
Tetrachloroethene	<1.00		1.00		ug/L			06/26/19 21:17	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/26/19 21:17	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/26/19 21:17	1
Trichloroethene	<1.00		1.00		ug/L			06/26/19 21:17	1
Vinyl chloride	<1.00		1.00		ug/L			06/26/19 21:17	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*06/26/19 21:17*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*06/26/19 21:17*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*06/26/19 21:17*	*1*

Lab Sample ID: LCS 310-244038/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244038

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	18.95		ug/L		95	77 - 120
1,1-Dichloroethane	20.0	19.53		ug/L		98	75 - 125
1,2-Dichloroethane	20.0	18.55		ug/L		93	75 - 123
1,1-Dichloroethene	20.0	21.49		ug/L		107	75 - 124
Tetrachloroethene	20.0	19.63		ug/L		98	72 - 129
trans-1,2-Dichloroethene	20.0	19.46		ug/L		97	75 - 122
1,1,1-Trichloroethane	20.0	19.87		ug/L		99	76 - 127
Trichloroethene	20.0	19.32		ug/L		97	77 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*89*		*80 - 120*
Toluene-d8 (Surr)	*109*		*80 - 120*

Lab Sample ID: LCS 310-244038/7 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244038

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	17.58		ug/L		88	69 - 129
Vinyl chloride	20.0	17.90		ug/L		90	67 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 120*
Toluene-d8 (Surr)	*96*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 310-244043/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244043

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 08:20	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 08:20	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 08:20	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 08:20	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 08:20	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 08:20	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 08:20	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 08:20	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 08:20	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 08:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*80 - 120*		*06/27/19 08:20*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/27/19 08:20*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/27/19 08:20*	*1*

Lab Sample ID: LCS 310-244043/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	19.47		ug/L		97	77 - 120
1,1-Dichloroethane	20.0	20.05		ug/L		100	75 - 125
1,2-Dichloroethane	20.0	19.20		ug/L		96	75 - 123
1,1-Dichloroethene	20.0	21.00		ug/L		105	75 - 124
Tetrachloroethene	20.0	18.31		ug/L		92	72 - 129
trans-1,2-Dichloroethene	20.0	18.88		ug/L		94	75 - 122
1,1,1-Trichloroethane	20.0	19.63		ug/L		98	76 - 127
Trichloroethene	20.0	19.18		ug/L		96	77 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*
Dibromofluoromethane (Surr)	*91*		*80 - 120*
Toluene-d8 (Surr)	*107*		*80 - 120*

Lab Sample ID: LCS 310-244043/7 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244043

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	18.17		ug/L		91	69 - 129
Vinyl chloride	20.0	17.92		ug/L		90	67 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*
Dibromofluoromethane (Surr)	*97*		*80 - 120*
Toluene-d8 (Surr)	*96*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 310-244047/7 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244047

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/27/19 19:06	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 19:06	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/27/19 19:06	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/27/19 19:06	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/27/19 19:06	1
Tetrachloroethene	<1.00		1.00		ug/L			06/27/19 19:06	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/27/19 19:06	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/27/19 19:06	1
Trichloroethene	<1.00		1.00		ug/L			06/27/19 19:06	1
Vinyl chloride	<1.00		1.00		ug/L			06/27/19 19:06	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*06/27/19 19:06*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*06/27/19 19:06*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/27/19 19:06*	*1*

Lab Sample ID: LCS 310-244047/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	20.10		ug/L		101	77 - 120
1,1-Dichloroethane	20.0	20.49		ug/L		102	75 - 125
1,2-Dichloroethane	20.0	19.92		ug/L		100	75 - 123
1,1-Dichloroethene	20.0	22.65		ug/L		113	75 - 124
Tetrachloroethene	20.0	19.86		ug/L		99	72 - 129
trans-1,2-Dichloroethene	20.0	20.61		ug/L		103	75 - 122
1,1,1-Trichloroethane	20.0	20.41		ug/L		102	76 - 127
Trichloroethene	20.0	19.82		ug/L		99	77 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*91*		*80 - 120*
Toluene-d8 (Surr)	*102*		*80 - 120*

Lab Sample ID: LCS 310-244047/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244047

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	20.82		ug/L		104	69 - 129
Vinyl chloride	20.0	20.64		ug/L		103	67 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*96*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-114745-15 MS
Matrix: Water
Analysis Batch: 244047

Client Sample ID: GP-4 (5-7)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	<1.00		20.0	16.37		ug/L		82	46 - 130
1,1-Dichloroethane	<1.00		20.0	15.72		ug/L		79	50 - 127
1,2-Dichloroethane	<1.00		20.0	17.68		ug/L		88	55 - 128
1,1-Dichloroethene	<2.00		20.0	13.93		ug/L		70	47 - 124
Tetrachloroethene	<1.00		20.0	11.79		ug/L		59	40 - 129
trans-1,2-Dichloroethene	<1.00		20.0	14.47		ug/L		72	51 - 122
1,1,1-Trichloroethane	<1.00		20.0	13.19		ug/L		66	50 - 127
Trichloroethene	<1.00		20.0	12.86		ug/L		64	54 - 123

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*96*		*80 - 120*
Toluene-d8 (Surr)	*105*		*80 - 120*

Lab Sample ID: 240-114745-15 MSD
Matrix: Water
Analysis Batch: 244047

Client Sample ID: GP-4 (5-7)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	<1.00		20.0	14.80		ug/L		74	46 - 130	10	22
1,1-Dichloroethane	<1.00		20.0	14.73		ug/L		74	50 - 127	7	23
1,2-Dichloroethane	<1.00		20.0	16.91		ug/L		85	55 - 128	4	21
1,1-Dichloroethene	<2.00		20.0	11.96		ug/L		60	47 - 124	15	24
Tetrachloroethene	<1.00		20.0	11.44		ug/L		57	40 - 129	3	21
trans-1,2-Dichloroethene	<1.00		20.0	12.37		ug/L		62	51 - 122	16	23
1,1,1-Trichloroethane	<1.00		20.0	11.99		ug/L		60	50 - 127	9	21
Trichloroethene	<1.00		20.0	12.09		ug/L		60	54 - 123	6	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 120*
Toluene-d8 (Surr)	*104*		*80 - 120*

Lab Sample ID: MB 310-244251/8
Matrix: Water
Analysis Batch: 244251

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 00:57	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 00:57	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 00:57	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 00:57	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 00:57	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 00:57	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 00:57	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 00:57	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 00:57	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 00:57	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		06/29/19 00:57	1
Dibromofluoromethane (Surr)	104		80 - 120		06/29/19 00:57	1
Toluene-d8 (Surr)	99		80 - 120		06/29/19 00:57	1

Lab Sample ID: LCS 310-244251/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	21.44		ug/L		107	77 - 120
1,1-Dichloroethane	20.0	20.35		ug/L		102	75 - 125
1,2-Dichloroethane	20.0	21.21		ug/L		106	75 - 123
1,1-Dichloroethene	20.0	20.30		ug/L		101	75 - 124
Tetrachloroethene	20.0	21.96		ug/L		110	72 - 129
trans-1,2-Dichloroethene	20.0	20.63		ug/L		103	75 - 122
1,1,1-Trichloroethane	20.0	20.56		ug/L		103	76 - 127
Trichloroethene	20.0	21.67		ug/L		108	77 - 123

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	98		80 - 120

Lab Sample ID: LCS 310-244251/7 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244251

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	18.49		ug/L		92	69 - 129
Vinyl chloride	20.0	17.47		ug/L		87	67 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Lab Sample ID: 240-114745-24 MS — **Client Sample ID: GP-6 (7-10)**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244251

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	<1.00	F1	20.0	12.79		ug/L		62	46 - 130
1,1-Dichloroethane	<1.00	F1	20.0	11.07		ug/L		55	50 - 127
1,2-Dichloroethane	<1.00	F1	20.0	16.41		ug/L		82	55 - 128
1,1-Dichloroethene	<2.00	F1	20.0	5.561	F1	ug/L		28	47 - 124
Tetrachloroethene	<1.00	F1	20.0	7.035	F1	ug/L		35	40 - 129
trans-1,2-Dichloroethene	<1.00	F1	20.0	9.471	F1	ug/L		45	51 - 122
1,1,1-Trichloroethane	<1.00	F1	20.0	7.073	F1	ug/L		35	50 - 127
Trichloroethene	5.53	F1	20.0	12.39	F1	ug/L		34	54 - 123

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-114745-24 MS
Matrix: Water
Analysis Batch: 244251

Client Sample ID: GP-6 (7-10)
Prep Type: Total/NA

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	106		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: 240-114745-24 MSD
Matrix: Water
Analysis Batch: 244251

Client Sample ID: GP-6 (7-10)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	<1.00	F1	20.0	14.85		ug/L		72	46 - 130	15	22
1,1-Dichloroethane	<1.00	F1	20.0	12.88		ug/L		64	50 - 127	15	23
1,2-Dichloroethane	<1.00	F1	20.0	17.69		ug/L		88	55 - 128	8	21
1,1-Dichloroethene	<2.00	F1	20.0	6.846	F1	ug/L		34	47 - 124	21	24
Tetrachloroethene	<1.00	F1	20.0	8.366		ug/L		42	40 - 129	17	21
trans-1,2-Dichloroethene	<1.00	F1	20.0	10.97		ug/L		53	51 - 122	15	23
1,1,1-Trichloroethane	<1.00	F1	20.0	8.088	F1	ug/L		40	50 - 127	13	21
Trichloroethene	5.53	F1	20.0	14.03	F1	ug/L		42	54 - 123	12	20

Surrogate	MSD %Recovery	MSD Qualifier	Limits
4-Bromofluorobenzene (Surr)	99		80 - 120
Dibromofluoromethane (Surr)	103		80 - 120
Toluene-d8 (Surr)	99		80 - 120

Lab Sample ID: MB 240-387575/1-A
Matrix: Solid
Analysis Batch: 387562

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387575

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
Trichloroethene	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/21/19 13:16	06/21/19 20:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	79		48 - 151	06/21/19 13:16	06/21/19 20:11	1
Dibromofluoromethane (Surr)	73		49 - 138	06/21/19 13:16	06/21/19 20:11	1
Toluene-d8 (Surr)	80		49 - 147	06/21/19 13:16	06/21/19 20:11	1
1,2-Dichloroethane-d4 (Surr)	84		53 - 155	06/21/19 13:16	06/21/19 20:11	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 240-387575/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387562 — **Prep Batch: 387575**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	1.00	0.4375		mg/Kg		44	15 - 155
cis-1,2-Dichloroethene	1.00	0.8525		mg/Kg		85	74 - 123
1,1-Dichloroethane	1.00	0.7843		mg/Kg		78	72 - 122
1,2-Dichloroethane	1.00	0.9045		mg/Kg		90	64 - 126
1,1-Dichloroethene	1.00	0.7522		mg/Kg		75	57 - 139
Tetrachloroethene	1.00	0.8876		mg/Kg		89	76 - 120
trans-1,2-Dichloroethene	1.00	0.8147		mg/Kg		81	71 - 133
1,1,1-Trichloroethane	1.00	0.6568		mg/Kg		66	64 - 135
Trichloroethene	1.00	0.8331		mg/Kg		83	73 - 126
Vinyl chloride	1.00	0.5774		mg/Kg		58	52 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*77*		*48 - 151*
Dibromofluoromethane (Surr)	*78*		*49 - 138*
Toluene-d8 (Surr)	*78*		*49 - 147*
1,2-Dichloroethane-d4 (Surr)	*82*		*53 - 155*

Lab Sample ID: 240-114745-14 MS — **Client Sample ID: GP-4 (4-6)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387562 — **Prep Batch: 387575**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	<0.231		0.746	0.4097		mg/Kg	☼	55	17 - 162
cis-1,2-Dichloroethene	<0.231		0.746	0.7687		mg/Kg	☼	103	50 - 128
1,1-Dichloroethane	<0.231		0.746	0.7047		mg/Kg	☼	94	50 - 133
1,2-Dichloroethane	<0.231		0.746	0.8246		mg/Kg	☼	110	42 - 127
1,1-Dichloroethene	<0.231		0.746	0.6402		mg/Kg	☼	86	36 - 150
Tetrachloroethene	<0.231		0.746	0.7746		mg/Kg	☼	104	20 - 151
trans-1,2-Dichloroethene	<0.231		0.746	0.7103		mg/Kg	☼	95	44 - 141
1,1,1-Trichloroethane	<0.231		0.746	0.5573		mg/Kg	☼	75	38 - 143
Trichloroethene	<0.231		0.746	0.7358		mg/Kg	☼	99	25 - 148
Vinyl chloride	<0.231		0.746	0.4854		mg/Kg	☼	65	31 - 148

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*93*		*48 - 151*
Dibromofluoromethane (Surr)	*99*		*49 - 138*
Toluene-d8 (Surr)	*96*		*49 - 147*
1,2-Dichloroethane-d4 (Surr)	*105*		*53 - 155*

Lab Sample ID: 240-114745-14 MSD — **Client Sample ID: GP-4 (4-6)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387562 — **Prep Batch: 387575**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroethane	<0.231		0.691	0.3520		mg/Kg	☼	51	17 - 162	15	40
cis-1,2-Dichloroethene	<0.231		0.691	0.6984		mg/Kg	☼	101	50 - 128	10	40
1,1-Dichloroethane	<0.231		0.691	0.6369		mg/Kg	☼	92	50 - 133	10	40
1,2-Dichloroethane	<0.231		0.691	0.7551		mg/Kg	☼	109	42 - 127	9	34

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-114745-14 MSD — **Client Sample ID: GP-4 (4-6)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387562 — **Prep Batch: 387575**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,1-Dichloroethene	<0.231		0.691	0.5703		mg/Kg	☼	82	36 - 150	12	40
Tetrachloroethene	<0.231		0.691	0.6668		mg/Kg	☼	96	20 - 151	15	40
trans-1,2-Dichloroethene	<0.231		0.691	0.6422		mg/Kg	☼	93	44 - 141	10	40
1,1,1-Trichloroethane	<0.231		0.691	0.5066		mg/Kg	☼	73	38 - 143	10	40
Trichloroethene	<0.231		0.691	0.6571		mg/Kg	☼	95	25 - 148	11	40
Vinyl chloride	<0.231		0.691	0.4355		mg/Kg	☼	63	31 - 148	11	37

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*48 - 151*
Dibromofluoromethane (Surr)	*98*		*49 - 138*
Toluene-d8 (Surr)	*95*		*49 - 147*
1,2-Dichloroethane-d4 (Surr)	*107*		*53 - 155*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 240-387634/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387634**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		mg/Kg		06/24/19 08:00	06/25/19 12:58	1

Lab Sample ID: LCS 240-387634/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387634**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	100	99.31		mg/Kg		99	80 - 120

Lab Sample ID: 240-114745-34 MS — **Client Sample ID: GP-8 (0-1)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387634**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	25.8		83.3	96.58		mg/Kg	☼	85	75 - 125

Lab Sample ID: 240-114745-34 MSD — **Client Sample ID: GP-8 (0-1)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387634**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	25.8		83.3	92.30		mg/Kg	☼	80	75 - 125	5	20

QC Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Method: Moisture - Percent Moisture

Lab Sample ID: 240-114745-14 DU — **Client Sample ID: GP-4 (4-6)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388117

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	86.6			87.0		%				0.5	20
Percent Moisture	13.4			13.0		%				3	20

Lab Sample ID: 240-114745-20 DU — **Client Sample ID: GP-5 (2-4)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388117

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	90.0			90.6		%				0.6	20
Percent Moisture	10			9.4		%				5	20

Lab Sample ID: 240-114745-34 DU — **Client Sample ID: GP-8 (0-1)**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388117

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	97.6			96.3		%				1	20
Percent Moisture	2.4			3.7	F3	%				43	20

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

GC/MS VOA

Analysis Batch: 244038

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-4	GP-2 (7-10)	Total/NA	Water	8260B	
240-114745-5	GP-2 (15-17)	Total/NA	Water	8260B	
240-114745-6	GP-2 (22-24)	Total/NA	Water	8260B	
240-114745-10	GP-3 (8-11)	Total/NA	Water	8260B	
240-114745-11	GP-3 (16-18)	Total/NA	Water	8260B	
MB 310-244038/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244038/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244038/7	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 244043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-12	GP-3 (23-25)	Total/NA	Water	8260B	
240-114745-15	GP-4 (5-7)	Total/NA	Water	8260B	
240-114745-16	GP-4 (12-14)	Total/NA	Water	8260B	
240-114745-17	GP-4 (19-21)	Total/NA	Water	8260B	
240-114745-18	GP-4 (26-28)	Total/NA	Water	8260B	
MB 310-244043/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244043/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244043/7	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 244047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-25	GP-6 (15-17)	Total/NA	Water	8260B	
240-114745-26	GP-6 (22-24)	Total/NA	Water	8260B	
240-114745-28	061819-A	Total/NA	Water	8260B	
240-114745-29	GP-7 (6-9)	Total/NA	Water	8260B	
240-114745-32	GP-7 (14-16)	Total/NA	Water	8260B	
240-114745-33	GP-7 (21-23)	Total/NA	Water	8260B	
240-114745-36	GP-8 (5-7)	Total/NA	Water	8260B	
240-114745-37	RINSATE #1	Total/NA	Water	8260B	
240-114745-38	GP-8 (12-14)	Total/NA	Water	8260B	
240-114745-39	GP-8 (19-21)	Total/NA	Water	8260B	
240-114745-43	GP-9 (6-8)	Total/NA	Water	8260B	
240-114745-44	RINSATE #2	Total/NA	Water	8260B	
240-114745-45	GP-9 (13-15)	Total/NA	Water	8260B	
240-114745-46	GP-9 (20-22)	Total/NA	Water	8260B	
240-114745-47	061819-B	Total/NA	Water	8260B	
MB 310-244047/7	Method Blank	Total/NA	Water	8260B	
LCS 310-244047/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244047/6	Lab Control Sample	Total/NA	Water	8260B	
240-114745-15 MS	GP-4 (5-7)	Total/NA	Water	8260B	
240-114745-15 MSD	GP-4 (5-7)	Total/NA	Water	8260B	

Analysis Batch: 244251

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-24	GP-6 (7-10)	Total/NA	Water	8260B	
240-114745-48	TRIP BLANK Water	Total/NA	Water	8260B	
MB 310-244251/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244251/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244251/7	Lab Control Sample	Total/NA	Water	8260B	
240-114745-24 MS	GP-6 (7-10)	Total/NA	Water	8260B	

GC/MS VOA (Continued)

Analysis Batch: 244251 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-24 MSD	GP-6 (7-10)	Total/NA	Water	8260B	

Analysis Batch: 387562

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-2	GP-2 (5-7)	Total/NA	Solid	8260B	387575
240-114745-3	GP-2 (22-24)	Total/NA	Solid	8260B	387575
240-114745-8	GP-3 (0-2)	Total/NA	Solid	8260B	387575
240-114745-9	GP-3 (26-28)	Total/NA	Solid	8260B	387575
240-114745-14	GP-4 (4-6)	Total/NA	Solid	8260B	387575
240-114745-20	GP-5 (2-4)	Total/NA	Solid	8260B	387575
240-114745-23	GP-6 (4-6)	Total/NA	Solid	8260B	387575
240-114745-30	GP-7 (2-4)	Total/NA	Solid	8260B	387575
240-114745-31	GP-7 (10-12)	Total/NA	Solid	8260B	387575
240-114745-35	GP-8 (6-8)	Total/NA	Solid	8260B	387575
240-114745-42	GP-9 (6-8)	Total/NA	Solid	8260B	387575
MB 240-387575/1-A	Method Blank	Total/NA	Solid	8260B	387575
LCS 240-387575/2-A	Lab Control Sample	Total/NA	Solid	8260B	387575
240-114745-14 MS	GP-4 (4-6)	Total/NA	Solid	8260B	387575
240-114745-14 MSD	GP-4 (4-6)	Total/NA	Solid	8260B	387575

Prep Batch: 387575

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-2	GP-2 (5-7)	Total/NA	Solid	5035	
240-114745-3	GP-2 (22-24)	Total/NA	Solid	5035	
240-114745-8	GP-3 (0-2)	Total/NA	Solid	5035	
240-114745-9	GP-3 (26-28)	Total/NA	Solid	5035	
240-114745-14	GP-4 (4-6)	Total/NA	Solid	5035	
240-114745-20	GP-5 (2-4)	Total/NA	Solid	5035	
240-114745-23	GP-6 (4-6)	Total/NA	Solid	5035	
240-114745-30	GP-7 (2-4)	Total/NA	Solid	5035	
240-114745-31	GP-7 (10-12)	Total/NA	Solid	5035	
240-114745-35	GP-8 (6-8)	Total/NA	Solid	5035	
240-114745-42	GP-9 (6-8)	Total/NA	Solid	5035	
240-114745-49	TRIP BLANK Soil	Total/NA	Solid	5035	
MB 240-387575/1-A	Method Blank	Total/NA	Solid	5035	
LCS 240-387575/2-A	Lab Control Sample	Total/NA	Solid	5035	
240-114745-14 MS	GP-4 (4-6)	Total/NA	Solid	5035	
240-114745-14 MSD	GP-4 (4-6)	Total/NA	Solid	5035	

Analysis Batch: 387724

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-49	TRIP BLANK Soil	Total/NA	Solid	8260B	387575

Metals

Prep Batch: 387634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-1	GP-2 (0-1)	Total/NA	Solid	3050B	
240-114745-7	GP-3 (0-1)	Total/NA	Solid	3050B	
240-114745-13	GP-4 (0-1)	Total/NA	Solid	3050B	
240-114745-19	GP-5 (0-1)	Total/NA	Solid	3050B	

Metals (Continued)

Prep Batch: 387634 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-21	GP-6 (0-1)	Total/NA	Solid	3050B	
240-114745-22	GP-6 (2-4)	Total/NA	Solid	3050B	
240-114745-27	GP-7 (0-1)	Total/NA	Solid	3050B	
240-114745-34	GP-8 (0-1)	Total/NA	Solid	3050B	
240-114745-40	GP-9 (0-1)	Total/NA	Solid	3050B	
240-114745-41	GP-9 (5-7)	Total/NA	Solid	3050B	
MB 240-387634/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 240-387634/2-A	Lab Control Sample	Total/NA	Solid	3050B	
240-114745-34 MS	GP-8 (0-1)	Total/NA	Solid	3050B	
240-114745-34 MSD	GP-8 (0-1)	Total/NA	Solid	3050B	

Analysis Batch: 388280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-1	GP-2 (0-1)	Total/NA	Solid	6010D	387634
240-114745-7	GP-3 (0-1)	Total/NA	Solid	6010D	387634
240-114745-13	GP-4 (0-1)	Total/NA	Solid	6010D	387634
240-114745-19	GP-5 (0-1)	Total/NA	Solid	6010D	387634
240-114745-21	GP-6 (0-1)	Total/NA	Solid	6010D	387634
240-114745-22	GP-6 (2-4)	Total/NA	Solid	6010D	387634
240-114745-27	GP-7 (0-1)	Total/NA	Solid	6010D	387634
240-114745-34	GP-8 (0-1)	Total/NA	Solid	6010D	387634
240-114745-40	GP-9 (0-1)	Total/NA	Solid	6010D	387634
240-114745-41	GP-9 (5-7)	Total/NA	Solid	6010D	387634
MB 240-387634/1-A	Method Blank	Total/NA	Solid	6010D	387634
LCS 240-387634/2-A	Lab Control Sample	Total/NA	Solid	6010D	387634
240-114745-34 MS	GP-8 (0-1)	Total/NA	Solid	6010D	387634
240-114745-34 MSD	GP-8 (0-1)	Total/NA	Solid	6010D	387634

General Chemistry

Analysis Batch: 388117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-1	GP-2 (0-1)	Total/NA	Solid	Moisture	
240-114745-2	GP-2 (5-7)	Total/NA	Solid	Moisture	
240-114745-3	GP-2 (22-24)	Total/NA	Solid	Moisture	
240-114745-7	GP-3 (0-1)	Total/NA	Solid	Moisture	
240-114745-8	GP-3 (0-2)	Total/NA	Solid	Moisture	
240-114745-9	GP-3 (26-28)	Total/NA	Solid	Moisture	
240-114745-13	GP-4 (0-1)	Total/NA	Solid	Moisture	
240-114745-14	GP-4 (4-6)	Total/NA	Solid	Moisture	
240-114745-19	GP-5 (0-1)	Total/NA	Solid	Moisture	
240-114745-20	GP-5 (2-4)	Total/NA	Solid	Moisture	
240-114745-21	GP-6 (0-1)	Total/NA	Solid	Moisture	
240-114745-22	GP-6 (2-4)	Total/NA	Solid	Moisture	
240-114745-23	GP-6 (4-6)	Total/NA	Solid	Moisture	
240-114745-27	GP-7 (0-1)	Total/NA	Solid	Moisture	
240-114745-30	GP-7 (2-4)	Total/NA	Solid	Moisture	
240-114745-31	GP-7 (10-12)	Total/NA	Solid	Moisture	
240-114745-34	GP-8 (0-1)	Total/NA	Solid	Moisture	
240-114745-35	GP-8 (6-8)	Total/NA	Solid	Moisture	
240-114745-40	GP-9 (0-1)	Total/NA	Solid	Moisture	

General Chemistry (Continued)

Analysis Batch: 388117 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114745-41	GP-9 (5-7)	Total/NA	Solid	Moisture	
240-114745-42	GP-9 (6-8)	Total/NA	Solid	Moisture	
240-114745-14 DU	GP-4 (4-6)	Total/NA	Solid	Moisture	
240-114745-20 DU	GP-5 (2-4)	Total/NA	Solid	Moisture	
240-114745-34 DU	GP-8 (0-1)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-2 (0-1)
Lab Sample ID: 240-114745-1

Date Collected: 06/17/19 09:30
Date Received: 06/20/19 11:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 13:43	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-2 (5-7)
Lab Sample ID: 240-114745-2

Date Collected: 06/17/19 10:00
Date Received: 06/20/19 11:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/21/19 21:29	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-2 (22-24)
Lab Sample ID: 240-114745-3

Date Collected: 06/17/19 10:05
Date Received: 06/20/19 11:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/21/19 21:55	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-2 (7-10)
Lab Sample ID: 240-114745-4

Date Collected: 06/17/19 10:10
Date Received: 06/20/19 11:15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244038	06/27/19 03:10	SJN	TAL CF

Client Sample ID: GP-2 (15-17)
Lab Sample ID: 240-114745-5

Date Collected: 06/17/19 10:20
Date Received: 06/20/19 11:15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244038	06/27/19 03:32	SJN	TAL CF

Client Sample ID: GP-2 (22-24)
Lab Sample ID: 240-114745-6

Date Collected: 06/17/19 10:40
Date Received: 06/20/19 11:15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244038	06/27/19 03:54	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-3 (0-1)
Lab Sample ID: 240-114745-7
Date Collected: 06/17/19 11:20
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 13:48	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-3 (0-2)
Lab Sample ID: 240-114745-8
Date Collected: 06/17/19 11:50
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/21/19 22:21	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-3 (26-28)
Lab Sample ID: 240-114745-9
Date Collected: 06/17/19 12:00
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/21/19 22:47	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-3 (8-11)
Lab Sample ID: 240-114745-10
Date Collected: 06/17/19 11:50
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244038	06/27/19 04:16	SJN	TAL CF

Client Sample ID: GP-3 (16-18)
Lab Sample ID: 240-114745-11
Date Collected: 06/17/19 12:10
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244038	06/27/19 04:39	SJN	TAL CF

Client Sample ID: GP-3 (23-25)
Lab Sample ID: 240-114745-12
Date Collected: 06/17/19 12:30
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244043	06/27/19 08:46	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-4 (0-1)
Lab Sample ID: 240-114745-13
Date Collected: 06/17/19 13:40
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 13:52	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-4 (4-6)
Lab Sample ID: 240-114745-14
Date Collected: 06/17/19 14:20
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/21/19 23:13	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-4 (5-7)
Lab Sample ID: 240-114745-15
Date Collected: 06/17/19 14:40
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244043	06/27/19 09:08	SJN	TAL CF

Client Sample ID: GP-4 (12-14)
Lab Sample ID: 240-114745-16
Date Collected: 06/17/19 15:00
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244043	06/27/19 09:30	SJN	TAL CF

Client Sample ID: GP-4 (19-21)
Lab Sample ID: 240-114745-17
Date Collected: 06/17/19 15:05
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244043	06/27/19 09:52	SJN	TAL CF

Client Sample ID: GP-4 (26-28)
Lab Sample ID: 240-114745-18
Date Collected: 06/17/19 15:15
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244043	06/27/19 10:14	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-5 (0-1)
Lab Sample ID: 240-114745-19
Date Collected: 06/17/19 15:45
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 13:57	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-5 (2-4)
Lab Sample ID: 240-114745-20
Date Collected: 06/17/19 16:40
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/22/19 00:30	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-6 (0-1)
Lab Sample ID: 240-114745-21
Date Collected: 06/18/19 09:10
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:02	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-6 (2-4)
Lab Sample ID: 240-114745-22
Date Collected: 06/18/19 09:40
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:06	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-6 (4-6)
Lab Sample ID: 240-114745-23
Date Collected: 06/18/19 09:50
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/22/19 00:56	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-6 (7-10)
Lab Sample ID: 240-114745-24
Date Collected: 06/18/19 10:00
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244251	06/29/19 01:22	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-6 (15-17)
Lab Sample ID: 240-114745-25
Date Collected: 06/18/19 10:40
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 21:19	SJN	TAL CF

Client Sample ID: GP-6 (22-24)
Lab Sample ID: 240-114745-26
Date Collected: 06/18/19 10:50
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 21:41	SJN	TAL CF

Client Sample ID: GP-7 (0-1)
Lab Sample ID: 240-114745-27
Date Collected: 06/18/19 11:40
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:11	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: 061819-A
Lab Sample ID: 240-114745-28
Date Collected: 06/18/19 00:00
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 22:03	SJN	TAL CF

Client Sample ID: GP-7 (6-9)
Lab Sample ID: 240-114745-29
Date Collected: 06/18/19 11:50
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 22:25	SJN	TAL CF

Client Sample ID: GP-7 (2-4)
Lab Sample ID: 240-114745-30
Date Collected: 06/18/19 12:20
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/22/19 01:21	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-7 (10-12)
Lab Sample ID: 240-114745-31
Date Collected: 06/18/19 12:25
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/22/19 01:48	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-7 (14-16)
Lab Sample ID: 240-114745-32
Date Collected: 06/18/19 12:30
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 22:47	SJN	TAL CF

Client Sample ID: GP-7 (21-23)
Lab Sample ID: 240-114745-33
Date Collected: 06/18/19 12:45
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 23:10	SJN	TAL CF

Client Sample ID: GP-8 (0-1)
Lab Sample ID: 240-114745-34
Date Collected: 06/18/19 13:30
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 13:12	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-8 (6-8)
Lab Sample ID: 240-114745-35
Date Collected: 06/18/19 14:05
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/22/19 02:13	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-8 (5-7)
Lab Sample ID: 240-114745-36
Date Collected: 06/18/19 14:15
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 23:32	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: RINSATE #1
Lab Sample ID: 240-114745-37
Date Collected: 06/18/19 13:15
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/27/19 23:54	SJN	TAL CF

Client Sample ID: GP-8 (12-14)
Lab Sample ID: 240-114745-38
Date Collected: 06/18/19 14:30
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/28/19 00:16	SJN	TAL CF

Client Sample ID: GP-8 (19-21)
Lab Sample ID: 240-114745-39
Date Collected: 06/18/19 14:45
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/28/19 00:38	SJN	TAL CF

Client Sample ID: GP-9 (0-1)
Lab Sample ID: 240-114745-40
Date Collected: 06/18/19 15:15
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:24	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-9 (5-7)
Lab Sample ID: 240-114745-41
Date Collected: 06/18/19 15:30
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:29	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Client Sample ID: GP-9 (6-8)
Lab Sample ID: 240-114745-42
Date Collected: 06/18/19 15:45
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387562	06/22/19 02:39	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388117	06/25/19 10:47	AJO	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Client Sample ID: GP-9 (6-8)
Lab Sample ID: 240-114745-43
Date Collected: 06/18/19 15:35
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/28/19 01:00	SJN	TAL CF

Client Sample ID: RINSATE #2
Lab Sample ID: 240-114745-44
Date Collected: 06/18/19 15:00
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/28/19 01:22	SJN	TAL CF

Client Sample ID: GP-9 (13-15)
Lab Sample ID: 240-114745-45
Date Collected: 06/18/19 15:55
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/28/19 01:44	SJN	TAL CF

Client Sample ID: GP-9 (20-22)
Lab Sample ID: 240-114745-46
Date Collected: 06/18/19 16:05
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/28/19 02:07	SJN	TAL CF

Client Sample ID: 061819-B
Lab Sample ID: 240-114745-47
Date Collected: 06/18/19 00:01
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244047	06/28/19 02:29	SJN	TAL CF

Client Sample ID: TRIP BLANK Water
Lab Sample ID: 240-114745-48
Date Collected: 06/18/19 00:00
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244251	06/29/19 01:48	SJN	TAL CF

Client Sample ID: TRIP BLANK Soil
Lab Sample ID: 240-114745-49
Date Collected: 06/18/19 00:01
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387575	06/21/19 13:16	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387724	06/23/19 09:07	TJL2	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114745-1
SDG: 2606-0016

Laboratory: Eurofins TestAmerica, Canton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	039-999-348	12-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Laboratory: Eurofins TestAmerica, Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

2.2/C2.3 1.0/C1.1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613
Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK Client #: _____
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN
Project Manager: SHANE WATERMAN / CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number: _____ Fax: _____
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature: [signature] / [signature]

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE State: MN
Report To: SHANE WATERMAN / CHRIS BRATSCH
Invoice To: KELLY JAWORSKI / BEN KRAMKA
Quote #: _____ PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)

Date Needed: 5-DAY

Fax Results: Y N
Email Results: Y N

Matrix: SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify, Other

Preservation & # of Containers

Analyze For:

240-114745 Chain of Custody

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
___ Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify, Other	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	LEAD (6020)	VOC Modified list	MOISTURE								MARKS
GP-2 (0-1)	6/17	930	G	NA	S						1		X										2001004918
GP-2 (5-7)	6/17	1000	G	NA	S					1	1			X	X								2001004918
GP-2 (22-24)	6/17	1005	G	NA	S					1	1			X	X								2001004918
GP-2 (7-10)	6/17	1010	G	N	GW		3							X									2001004838
GP-2 (15-17)	6/17	1020	G	N	GW		3							X									2001004838
GP-2 (22-24)	6/17	1040	G	N	GW		3							X									2001004838
GP-3 (0-1)	6/17	1120	G	NA	S						1		X										2001004919
GP-3 (0-2)	6/17	1150	G	NA	S					1	1			X	X								2001004919
GP-3 (26-28)	6/17	1200	G	NA	S					1	1			X	X								2001004919
GP-3 (8-11)	6/17	1150	G	N	GW		3							X									2001004839

Special Instructions:

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/19	9:00	Barb Butten	6/19	9:00
Barb Butten	6/19	1720	[signature]	6/20/19	1115

TAL-0033 (0708)

Page 1 of 5

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Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES
Client #: _____
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN / CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number: _____
Fax: _____
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature: [signature]

Project Name: WATER GREMLIN
Project # WHITE BEAR LAKE
Site/Location ID: 21006-0016
State: MN
Report To: SHANE WATERMAN / CHRIS BRATSCH
Invoice To: BEN KRAMKA / KELLY JAWORSKI
Quote #: _____
PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y (N)
Email Results: (Y) N

Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other

Preservation & # of Containers: HNO_3, HCl, NaOH, H_2SO_4, Methanol, None, Other (Specify)

Analyze For: LEAD (EPA 6020), VOC Modified List, MOISTURE

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix	HNO3	HCl	NaOH	H2SO4	Methanol	None	Other (Specify)	LEAD (EPA 6020)	VOC Modified List	MOISTURE	REMARKS
GP-3 (16-18)	6/17	1240	G	N	GW		3							X		200100 4839
GP-3 (23-25)	6/17	1230	G	N	GW		3							X		200100 4839
GP-4 (0-1)	6/17	1340	G	N	S						1		X			200100 4920
GP-4 (4-6)	6/17	1420	G	N	S					3	1			X	X	200100 4920 MS/MSD
GP-4 (5-7)	6/17	1440	G	N	GW		3							X		200100 4840
~~GP-4 (5-7)~~	~~6/17~~	~~1440~~	~~G~~	~~N~~	~~GW~~		~~3~~							~~X~~		~~200100 4840~~
GP-4 (12-14)	6/17	1500	G	N	GW		3							X		200100 4840
GP-4 (19-21)	6/17	1505	G	N	GW		3							X		200100 4840
GP-4 (26-28)	6/17	1515	G	N	GW		3							X		200100 4840
GP-5 (0-1)	6/17	1545	G	N	S						1		X			200100 4921

Special Instructions:

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/19	9:00	[signature]	6/19	9:00
[signature]	6/19	1700	[signature]	6/20/19	1115
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0033 (0708)

Page 2 of 5

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES Client #: _____
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY - MN 55125
Project Manager: SHANE WATERMAN / CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number: 651-294-4588 Fax: _____
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature: [signature] / [signature]

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE State: MN
Report To: SHANE WATERMAN / CHRIS BRATSCH
Invoice To: BEN KRAMKA / KELLY JAWORSKI
Quote #: _____ PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)

Date Needed: 5-DAY

Fax Results: Y (N)
Email Results: (Y) N

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
X Level 4
Other: _____

Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other

Preservation & # of Containers

Analyze For:

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	LEAD (EPA 6020)	VOC MODIFIED LIST	MOISTURE								REMARKS
GP-5 (2-4)	6/17	1640	G	NA	S					1	1			X	X								2001004921
GP-6 (0-1)	6/18	910	G	NA	S						1		X										2001004922
GP-6 (2-4)	6/18	940	G	NA	S						1		X										2001004922
GP-6 (4-6)	6/18	950	G	NA	S					1	1			X	X								2001004922
GP-6 (7-10) MS/MSD	6/18	1000	G	N	GW		9							X									2001004842
GP-6 (15-17)	6/18	1040	G	N	GW		3							X									2001004842
GP-6 (22-24)	6/18	1050	G	N	GW		3							X									2001004842
GP-7 (0-1)	6/18	1140	G	N	S						1		X										2001004923
061819-A	6/18	—	G	N	GW		3							X									Blind Dup 1
GP-7 (6-9)	6/18	1150	G	N	GW		3							X									2001004843

Special Instructions: *GP-6(7-10) is an MS/MSD sample

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/19	900	Barb Rutten	6/19	900
Barb Rutten	6/19	1720	[signature]	6/20/19	1115

TAL-0033 (0708)

Page 3 of 5

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring

Client Name: Wenck Associates
Client #:
Address: 1802 Wooddale Drive
City/State/Zip Code: Woodbury, MN 55125
Project Manager: Shane Waterman / Chris Bratsch
Email Address: swaterman@wenck.com
Telephone Number: 651-294-4588
Fax:
Sampler Name: (Print Name) Ben Kramka / Kelly Jaworski
Sampler Signature:

Project Name: Water Gremlin
Project #: 2606-0016
Site/Location ID: White Bear Lake
State: MN
Report To: Shane Waterman, Chris Bratsh, Kelly, Ben
Invoice To:
Quote #:
PO#:

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-day
Fax Results: Y (N)
Email Results: (Y) N

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
X Level 4
Other: ___

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: LEAD (EPA 6020)	VOC modified list	Moisture								REMARKS
GP-7 (2-4)	6/18/19	1220	G	NA	S					1	1			X	X								2001004923
GP-7 (10-12)	6/18	1225	G	NA	S					1	1			X	X								2001004923
GP-7 (14-16)	6/18	1230	G	N	GW		3							X									2001004843
GP-7 (21-23)	6/18	1245	G	N	GW		3							X									2001004843
GP-8 (0-1) MS/MSD	6/18	1330	G	NA	S						2		X										2001004924
GP-8 (6-8)	6/18	1405	G	NA	S					1	1			X	X								2001004924
GP-8 (5-7)	6/18	1415	G	N	GW		3							X									2001004844
Rinsate #1	6/18	1315	G	N	RW		3							X									~~2001004844~~
GP-8 (12-14)	6/18	1430	G	N	GW		3							X									2001004844
GP-8 (19-21)	6/18	1445	G	N	GW		3							X									2001004844

Special Instructions: RW = Rinse Water

TestAmerica Minneapolis SC
213

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/19	9:00	Brad Butler	6/19	900
Brad Butler	6/19	1700	[illegible]	6/19/19	1115
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

LABORATORY COMMENTS:

TAL-0033 (0708)

Page 4 of 5

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THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES
Client #: _____
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: CHRIS BRATSCH / SHANE WATERMAN
Email Address: SWATERMAN@WENCK.COM
Telephone Number: 651-294-4588
Fax: _____
Sampler Name: (Print Name) Kelly JANOSKI / BEN KRAMKA
Sampler Signature:

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE
State: MN
Report To: SHANE WATERMAN, CHRIS BRATSCH
~~Invoice To:~~ KELLY JANOSKI, BEN KRAMKA
Quote #: _____
PO#: _____

TAT: ✓ Standard; ___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y (N)
Email Results: (Y) N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: Lead (EPA 6020)	VOC Modified List	Moisture	QC Deliverables: ___ None, ___ Level 2 (Batch QC), ___ Level 3, ___ Level 4, Other: _____ REMARKS
GP-9 (0-1)	6/18	1515	G	NA	S						1		X			2001004925
GP-9 (5-7)	6/18	1530	G	NA	S						1		X			2001004925
GP9 (6-8)	6/18	1545	G	NA	S					1	1			X		2001004925
GP-9 (6-8)	6/18	1535	G	N	GW		3							X		2001004845
RINSATE #2	6/18	1500	G	N	RW		3							X		
GP-9 (13-15)	6/18	1555	G	N	GW		3							X		2001004845
GP-9 (20-22)	6/18	1605	G	N	GW		3							X		2001004845
GW1819-B	6/18		G	N	GW		3							X		BLIND DUP 2

Special Instructions: ↳ RW = RINSE WATER

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly JANOSKI	6/19	9:00	Barb Butler	6/19	9:00
Barb Butler	6/19	1720	[illegible]	6/20/19	1115
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0033 (0708)

Page 5 of 5

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 114745
Canton Facility

Client Werck Site Name _____ Cooler unpacked by: [illegible]
Cooler Received on 6/20/19 Opened on 6/20/19
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # _____ Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF **+0.6**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM ZB Date 6-20-19 by NS via Verbal Voice Mail Other email

Concerning #17

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: _____

Received 3 water trip blanks and 1 soil trip blank not on chain, will log at end.

18. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION
Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 114745

TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	2.2	2.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	1.0	1.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
				☐ See Temperature Excursion Form

WI-NC-099 Cooler Receipt Form Page 2 - Multiple Coolers

eurofins | Environment Testing TestAmerica

240-114745 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: Canton TA Eurofins			
City/State: CITY	STATE	Project:	
Receipt Information			
Date/Time Received: DATE 6/26/19	TIME 0905	Received By: YB	
Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____			
Condition of Cooler/Containers			
Sample(s) received in Cooler? ☑ Yes ☐ No	*If yes:* Cooler ID: ST7-D		
Multiple Coolers? ☑ Yes ☐ No	*If yes:* Cooler # 1 of 2		
Cooler Custody Seals Present? ☐ Yes ☑ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No		
Sample Custody Seals Present? ☐ Yes ☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No		
Trip Blank Present? ☐ Yes ☑ No	*If yes:* Which VOA samples are in cooler? ↓		
Temperature Record			
Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE			
Thermometer ID: M	Correction Factor (°C): -0.1		
• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):	Corrected Temp (°C):		
• **Sample Container Temperature**			
Container(s) used:	CONTAINER 1: 40mL HCL Vial Glass	CONTAINER 2:	
Uncorrected Temp (°C):	4.3		
Corrected Temp (°C):	4.2		
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No			
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No			
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			
#'s - 25, 26, 28, 29, 32, 33, 36, 24 (I, G, H, C, F, E), 17, 18			

Document: CF-LG-WI-002
Revision: 25
Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C
Bacteria temperature criteria is 0 to 10°C

eurofins | Environment Testing TestAmerica

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Canton TA Eurofins

City/State: CITY Canton STATE OH | Project:

Receipt Information

Date/Time Received: DATE 6/26/19 TIME 0905 | Received By: ZB

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No *If yes:* Cooler # 2 of 2

Cooler Custody Seals Present? ☐ Yes ☑ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☑ Yes ☐ No *If yes:* Which VOA samples are in cooler? ↓

#'s - 4, 5, 6, 10, 11, 12, 15, 16, 24(D, B, A), 37, 38, 39, 43, 44, 45, 46, 47, 48

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): | Corrected Temp (°C):

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:	250 mL NT-Plastic	
Uncorrected Temp (°C):	0.7	
Corrected Temp (°C):	0.6	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 240-105744.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: zach.bindert@testamericainc.com	State of Origin: Minnesota	Page: Page 1 of 3
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): NELAP - Minnesota		Job #: 240-114745-1
Address: 3019 Venture Way, ,	Due Date Requested: 6/26/2019			
City: Cedar Falls	TAT Requested (days):			
State, Zip: IA, 50613				
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO #:			
Email:	WO #:			
Project Name: Water Gremlin Co. Remedial Investigation	Project #: 31011233			
Site:	SSOW#:			

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B/5030B (MOD) Volatile Minnesota Sublist	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GP-2 (7-10) (240-114745-4)	6/17/19	10:10 Central		Water			X	3	
GP-2 (15-17) (240-114745-5)	6/17/19	10:20 Central		Water			X	3	
GP-2 (22-24) (240-114745-6)	6/17/19	10:40 Central		Water			X	3	
GP-3 (8-11) (240-114745-10)	6/17/19	11:50 Central		Water			X	3	
GP-3 (16-18) (240-114745-11)	6/17/19	12:10 Central		Water			X	3	
GP-3 (23-25) (240-114745-12)	6/17/19	12:30 Central		Water			X	3	
GP-4 (5-7) (240-114745-15)	6/17/19	14:40 Central		Water			X	3	
GP-4 (12-14) (240-114745-16)	6/17/19	15:00 Central		Water			X	3	
GP-4 (19-21) (240-114745-17)	6/17/19	15:05 Central		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by:	Date/Time: 6/20	Company	Received by:	Date/Time: 6/20/19 0905	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 240-105744.2
Client Contact: Shipping/Receiving	Phone:	E-Mail: zach.bindert@testamericainc.com	State of Origin: Minnesota	Page: Page 2 of 3
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): NELAP - Minnesota		Job #: 240-114745-1
Address: 3019 Venture Way, ,	Due Date Requested: 6/26/2019			
City: Cedar Falls	TAT Requested (days):			
State, Zip: IA, 50613				
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO #:			
Email:	WO #:			
Project Name: Water Gremlin Co. Remedial Investigation	Project #: 31011233			
Site:	SSOW#:			

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B/5030B (MOD) Volatile Minnesota Sublist	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GP-4 (26-28) (240-114745-18)	6/17/19	15:15 Central		Water			X	3	
GP-6 (7-10) (240-114745-24)	6/18/19	10:00 Central		Water			X	9	
GP-6 (15-17) (240-114745-25)	6/18/19	10:40 Central		Water			X	3	
GP-6 (22-24) (240-114745-26)	6/18/19	10:50 Central		Water			X	3	
061819-A (240-114745-28)	6/18/19	Central		Water			X	3	
GP-7 (6-9) (240-114745-29)	6/18/19	11:50 Central		Water			X	3	
GP-7 (14-16) (240-114745-32)	6/18/19	12:30 Central		Water			X	3	
GP-7 (21-23) (240-114745-33)	6/18/19	12:45 Central		Water			X	3	
GP-8 (5-7) (240-114745-36)	6/18/19	14:15 Central		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by:	Date/Time: 6/21 1730	Company	Received by:	Date/Time: 6/26/19 0905	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 240-105744.3
Client Contact: Shipping/Receiving	Phone:	E-Mail: zach.bindert@testamericainc.com	State of Origin: Minnesota	Page: Page 3 of 3
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): NELAP - Minnesota		Job #: 240-114745-1
Address: 3019 Venture Way, ,	Due Date Requested: 6/26/2019			
City: Cedar Falls	TAT Requested (days):			
State, Zip: IA, 50613				
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO #:			
Email:	WO #:			
Project Name: Water Gremlin Co. Remedial Investigation	Project #: 31011233			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B/5030B (MOD) Volatile Minnesota Sublist	Total Number of containers	Special Instructions/Note:
				Preservation Code:					
RINSATE #1 (240-114745-37)	6/18/19	13:15 Central		Water			X	3	
GP-8 (12-14) (240-114745-38)	6/18/19	14:30 Central		Water			X	3	
GP-8 (19-21) (240-114745-39)	6/18/19	14:45 Central		Water			X	3	
GP-9 (6-8) (240-114745-43)	6/18/19	15:35 Central		Water			X	3	
RINSATE #2 (240-114745-44)	6/18/19	15:00 Central		Water			X	3	
GP-9 (13-15) (240-114745-45)	6/18/19	15:55 Central		Water			X	3	
GP-9 (20-22) (240-114745-46)	6/18/19	16:05 Central		Water			X	3	
061819-B (240-114745-47)	6/18/19	Central		Water			X	3	
TRIP BLANK (240-114745-48)	6/18/19	Central		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. I

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by:	Date/Time: 6/25 1730	Company	Received by:	Date/Time: 6/26/19	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114745-1
SDG Number: 2606-0016

Login Number: 114745
List Number: 2
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 01:56 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114745-1
SDG Number: 2606-0016

Login Number: 114745
List Number: 3
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 02:04 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114745-1
SDG Number: 2606-0016

Login Number: 114745
List Number: 4
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 02:10 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-114766-1
Laboratory Sample Delivery Group: 2606-0016
Client Project/Site: Water Gremlin Co. Remedial Investigation

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
7/1/2019 5:05:00 PM

Zach Bindert, Project Manager I
(319)277-2401
zach.bindert@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Method Summary 5
Sample Summary 6
Detection Summary 7
Client Sample Results 9
Surrogate Summary 24
QC Sample Results 25
QC Association Summary 28
Lab Chronicle 30
Certification Summary 33
Chain of Custody 34
Receipt Checklists 39

Definitions/Glossary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-114766-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-114766-1

Comments
No additional comments.

Receipt
The samples were received on 6/20/2019 11:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5º C.

GC/MS VOA
Method(s) 8260B: Surrogate recovery for the following sample was outside of acceptance limits: HA-4 (240-114766-10). There was insufficient sample to perform a re-extraction; therefore, the data have been reported.

Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-10 (10-12) (240-114766-4), GP-10 (17-19) (240-114766-5) and HA-1 (240-114766-7).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CF
6010D	Metals (ICP)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
3050B	Preparation, Metals	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CF
5035	Closed System Purge and Trap	SW846	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114766-1	GP-10 (0-1)	Solid	06/19/19 09:00	06/20/19 11:15	
240-114766-2	GP-10 (0-5)	Water	06/19/19 09:45	06/20/19 11:15	
240-114766-3	GP-10 (1-3)	Solid	06/19/19 10:00	06/20/19 11:15	
240-114766-4	GP-10 (10-12)	Water	06/19/19 10:15	06/20/19 11:15	
240-114766-5	GP-10 (17-19)	Water	06/19/19 10:30	06/20/19 11:15	
240-114766-6	HA-1 (0-1)	Solid	06/19/19 14:00	06/20/19 11:15	
240-114766-7	HA-1	Water	06/19/19 13:00	06/20/19 11:15	
240-114766-8	HA-2	Solid	06/19/19 14:30	06/20/19 11:15	
240-114766-9	HA-3	Solid	06/19/19 14:45	06/20/19 11:15	
240-114766-10	HA-4	Solid	06/19/19 14:50	06/20/19 11:15	
240-114766-11	HA-5 (0-1)	Solid	06/19/19 14:55	06/20/19 11:15	
240-114766-12	HA-6 (0-0.5)	Solid	06/19/19 15:20	06/20/19 11:15	
240-114766-13	HA-7 (0-0.5)	Solid	06/19/19 15:30	06/20/19 11:15	
240-114766-14	TRIP BLANK	Water	06/19/19 00:00	06/20/19 11:15	
240-114766-15	TRIP BLANK	Solid	06/19/19 00:00	06/20/19 11:15	

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: GP-10 (0-1) — Lab Sample ID: 240-114766-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	3.51		0.832		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-10 (0-5) — Lab Sample ID: 240-114766-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	1.91		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	23.9		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-10 (1-3) — Lab Sample ID: 240-114766-3

No Detections.

Client Sample ID: GP-10 (10-12) — Lab Sample ID: 240-114766-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	5.06		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-10 (17-19) — Lab Sample ID: 240-114766-5

No Detections.

Client Sample ID: HA-1 (0-1) — Lab Sample ID: 240-114766-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	982		2.65		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: HA-1 — Lab Sample ID: 240-114766-7

No Detections.

Client Sample ID: HA-2 — Lab Sample ID: 240-114766-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	566		3.72		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: HA-3 — Lab Sample ID: 240-114766-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	498		2.28		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: HA-4 — Lab Sample ID: 240-114766-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	563		2.88		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: HA-5 (0-1) — Lab Sample ID: 240-114766-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	979		3.67		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: HA-6 (0-0.5) — Lab Sample ID: 240-114766-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	60.1		0.891		mg/Kg	1	☼	6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-7 (0-0.5) — Lab Sample ID: 240-114766-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	71.1		1.02		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-114766-14

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-114766-15

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: GP-10 (0-1)

Lab Sample ID: 240-114766-1

Date Collected: 06/19/19 09:00
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	3.51		0.832		mg/Kg	☼	06/24/19 08:00	06/25/19 14:34	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96.2		0.1		%			06/26/19 16:25	1
Percent Moisture	3.8		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: GP-10 (0-5)

Lab Sample ID: 240-114766-2

Date Collected: 06/19/19 09:45
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/30/19 06:28	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 06:28	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/30/19 06:28	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/30/19 06:28	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/30/19 06:28	1
Tetrachloroethene	<1.00		1.00		ug/L			06/30/19 06:28	1
trans-1,2-Dichloroethene	**1.91**		1.00		ug/L			06/30/19 06:28	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/30/19 06:28	1
Trichloroethene	**23.9**		1.00		ug/L			06/30/19 06:28	1
Vinyl chloride	<1.00		1.00		ug/L			06/30/19 06:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/30/19 06:28*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 120*		*06/30/19 06:28*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/30/19 06:28*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: GP-10 (1-3)

Lab Sample ID: 240-114766-3

Date Collected: 06/19/19 10:00
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
cis-1,2-Dichloroethene	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
1,1-Dichloroethane	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
1,2-Dichloroethane	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
1,1-Dichloroethene	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
Tetrachloroethene	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
trans-1,2-Dichloroethene	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
1,1,1-Trichloroethane	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
Trichloroethene	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1
Vinyl chloride	<0.174		0.174		mg/Kg	☼	06/23/19 18:19	06/24/19 18:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*48 - 151*	*06/23/19 18:19*	*06/24/19 18:25*	*1*
Dibromofluoromethane (Surr)	*89*		*49 - 138*	*06/23/19 18:19*	*06/24/19 18:25*	*1*
Toluene-d8 (Surr)	*90*		*49 - 147*	*06/23/19 18:19*	*06/24/19 18:25*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*53 - 155*	*06/23/19 18:19*	*06/24/19 18:25*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**93.3**		0.1		%			06/26/19 16:25	1
Percent Moisture	**6.7**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: GP-10 (10-12)

Lab Sample ID: 240-114766-4

Date Collected: 06/19/19 10:15
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/30/19 06:53	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 06:53	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/30/19 06:53	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/30/19 06:53	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/30/19 06:53	1
Tetrachloroethene	<1.00		1.00		ug/L			06/30/19 06:53	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 06:53	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/30/19 06:53	1
Trichloroethene	**5.06**		1.00		ug/L			06/30/19 06:53	1
Vinyl chloride	<1.00		1.00		ug/L			06/30/19 06:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/30/19 06:53*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*06/30/19 06:53*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/30/19 06:53*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: GP-10 (17-19)

Lab Sample ID: 240-114766-5

Date Collected: 06/19/19 10:30

Matrix: Water

Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/30/19 07:19	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 07:19	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/30/19 07:19	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/30/19 07:19	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/30/19 07:19	1
Tetrachloroethene	<1.00		1.00		ug/L			06/30/19 07:19	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 07:19	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/30/19 07:19	1
Trichloroethene	<1.00		1.00		ug/L			06/30/19 07:19	1
Vinyl chloride	<1.00		1.00		ug/L			06/30/19 07:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/30/19 07:19*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/30/19 07:19*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/30/19 07:19*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-1 (0-1)

Lab Sample ID: 240-114766-6

Date Collected: 06/19/19 14:00
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
cis-1,2-Dichloroethene	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
1,1-Dichloroethane	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
1,2-Dichloroethane	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
1,1-Dichloroethene	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
Tetrachloroethene	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
trans-1,2-Dichloroethene	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
1,1,1-Trichloroethane	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
Trichloroethene	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1
Vinyl chloride	<1.63		1.63		mg/Kg	☼	06/23/19 18:19	06/24/19 18:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*53*		*48 - 151*	*06/23/19 18:19*	*06/24/19 18:51*	*1*
Dibromofluoromethane (Surr)	*64*		*49 - 138*	*06/23/19 18:19*	*06/24/19 18:51*	*1*
Toluene-d8 (Surr)	*62*		*49 - 147*	*06/23/19 18:19*	*06/24/19 18:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*75*		*53 - 155*	*06/23/19 18:19*	*06/24/19 18:51*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**982**		2.65		mg/Kg	☼	06/24/19 08:00	06/25/19 14:38	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**25.9**		0.1		%			06/26/19 16:25	1
Percent Moisture	**74.1**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-1

Lab Sample ID: 240-114766-7

Date Collected: 06/19/19 13:00
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/30/19 07:44	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 07:44	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/30/19 07:44	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/30/19 07:44	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/30/19 07:44	1
Tetrachloroethene	<1.00		1.00		ug/L			06/30/19 07:44	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 07:44	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/30/19 07:44	1
Trichloroethene	<1.00		1.00		ug/L			06/30/19 07:44	1
Vinyl chloride	<1.00		1.00		ug/L			06/30/19 07:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/30/19 07:44*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/30/19 07:44*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/30/19 07:44*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-2

Lab Sample ID: 240-114766-8

Date Collected: 06/19/19 14:30
Date Received: 06/20/19 11:15

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
cis-1,2-Dichloroethene	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
1,1-Dichloroethane	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
1,2-Dichloroethane	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
1,1-Dichloroethene	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
Tetrachloroethene	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
trans-1,2-Dichloroethene	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
1,1,1-Trichloroethane	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
Trichloroethene	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1
Vinyl chloride	<1.78		1.78		mg/Kg	☼	06/23/19 18:19	06/24/19 19:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*128*		*48 - 151*	*06/23/19 18:19*	*06/24/19 19:16*	*1*
Dibromofluoromethane (Surr)	*130*		*49 - 138*	*06/23/19 18:19*	*06/24/19 19:16*	*1*
Toluene-d8 (Surr)	*130*		*49 - 147*	*06/23/19 18:19*	*06/24/19 19:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*146*		*53 - 155*	*06/23/19 18:19*	*06/24/19 19:16*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**566**		3.72		mg/Kg	☼	06/24/19 08:00	06/25/19 14:43	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**24.5**		0.1		%			06/26/19 16:25	1
Percent Moisture	**75.5**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-3

Date Collected: 06/19/19 14:45
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114766-9

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
cis-1,2-Dichloroethene	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
1,1-Dichloroethane	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
1,2-Dichloroethane	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
1,1-Dichloroethene	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
Tetrachloroethene	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
trans-1,2-Dichloroethene	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
1,1,1-Trichloroethane	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
Trichloroethene	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1
Vinyl chloride	<0.957		0.957		mg/Kg	☼	06/23/19 18:19	06/24/19 19:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*48 - 151*	*06/23/19 18:19*	*06/24/19 19:42*	*1*
Dibromofluoromethane (Surr)	*125*		*49 - 138*	*06/23/19 18:19*	*06/24/19 19:42*	*1*
Toluene-d8 (Surr)	*121*		*49 - 147*	*06/23/19 18:19*	*06/24/19 19:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*139*		*53 - 155*	*06/23/19 18:19*	*06/24/19 19:42*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**498**		2.28		mg/Kg	☼	06/24/19 08:00	06/25/19 14:48	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**35.1**		0.1		%			06/26/19 16:25	1
Percent Moisture	**64.9**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-4

Date Collected: 06/19/19 14:50
Date Received: 06/20/19 11:15

Lab Sample ID: 240-114766-10

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
cis-1,2-Dichloroethene	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
1,1-Dichloroethane	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
1,2-Dichloroethane	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
1,1-Dichloroethene	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
Tetrachloroethene	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
trans-1,2-Dichloroethene	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
1,1,1-Trichloroethane	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
Trichloroethene	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1
Vinyl chloride	<1.66		1.66		mg/Kg	☼	06/23/19 18:19	06/24/19 20:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*141*		*48 - 151*	*06/23/19 18:19*	*06/24/19 20:08*	*1*
Dibromofluoromethane (Surr)	*149*	*X*	*49 - 138*	*06/23/19 18:19*	*06/24/19 20:08*	*1*
Toluene-d8 (Surr)	*150*	*X*	*49 - 147*	*06/23/19 18:19*	*06/24/19 20:08*	*1*
1,2-Dichloroethane-d4 (Surr)	*162*	*X*	*53 - 155*	*06/23/19 18:19*	*06/24/19 20:08*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**563**		2.88		mg/Kg	☼	06/24/19 08:00	06/25/19 14:52	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**24.1**		0.1		%			06/26/19 16:25	1
Percent Moisture	**75.9**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-5 (0-1)

Lab Sample ID: 240-114766-11

Date Collected: 06/19/19 14:55
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
cis-1,2-Dichloroethene	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
1,1-Dichloroethane	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
1,2-Dichloroethane	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
1,1-Dichloroethene	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
Tetrachloroethene	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
trans-1,2-Dichloroethene	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
1,1,1-Trichloroethane	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
Trichloroethene	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1
Vinyl chloride	<2.28		2.28		mg/Kg	☼	06/23/19 18:19	06/24/19 20:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*48 - 151*	*06/23/19 18:19*	*06/24/19 20:33*	*1*
Dibromofluoromethane (Surr)	*99*		*49 - 138*	*06/23/19 18:19*	*06/24/19 20:33*	*1*
Toluene-d8 (Surr)	*105*		*49 - 147*	*06/23/19 18:19*	*06/24/19 20:33*	*1*
1,2-Dichloroethane-d4 (Surr)	*111*		*53 - 155*	*06/23/19 18:19*	*06/24/19 20:33*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**979**		3.67		mg/Kg	☼	06/24/19 08:00	06/25/19 14:57	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**23.9**		0.1		%			06/26/19 16:25	1
Percent Moisture	**76.1**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-6 (0-0.5)

Lab Sample ID: 240-114766-12

Date Collected: 06/19/19 15:20
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
cis-1,2-Dichloroethene	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
1,1-Dichloroethane	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
1,2-Dichloroethane	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
1,1-Dichloroethene	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
Tetrachloroethene	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
trans-1,2-Dichloroethene	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
1,1,1-Trichloroethane	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
Trichloroethene	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1
Vinyl chloride	<0.301		0.301		mg/Kg	☼	06/23/19 18:19	06/24/19 20:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*75*		*48 - 151*	*06/23/19 18:19*	*06/24/19 20:59*	*1*
Dibromofluoromethane (Surr)	*74*		*49 - 138*	*06/23/19 18:19*	*06/24/19 20:59*	*1*
Toluene-d8 (Surr)	*77*		*49 - 147*	*06/23/19 18:19*	*06/24/19 20:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*82*		*53 - 155*	*06/23/19 18:19*	*06/24/19 20:59*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**60.1**		0.891		mg/Kg	☼	06/24/19 08:00	06/25/19 15:01	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**95.1**		0.1		%			06/26/19 16:25	1
Percent Moisture	**4.9**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-7 (0-0.5)

Lab Sample ID: 240-114766-13

Date Collected: 06/19/19 15:30
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
cis-1,2-Dichloroethene	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
1,1-Dichloroethane	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
1,2-Dichloroethane	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
1,1-Dichloroethene	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
Tetrachloroethene	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
trans-1,2-Dichloroethene	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
1,1,1-Trichloroethane	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
Trichloroethene	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1
Vinyl chloride	<0.236		0.236		mg/Kg	☼	06/23/19 18:19	06/24/19 21:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 151*	*06/23/19 18:19*	*06/24/19 21:24*	*1*
Dibromofluoromethane (Surr)	*96*		*49 - 138*	*06/23/19 18:19*	*06/24/19 21:24*	*1*
Toluene-d8 (Surr)	*99*		*49 - 147*	*06/23/19 18:19*	*06/24/19 21:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*53 - 155*	*06/23/19 18:19*	*06/24/19 21:24*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**71.1**		1.02		mg/Kg	☼	06/24/19 08:00	06/25/19 15:06	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**84.3**		0.1		%			06/26/19 16:25	1
Percent Moisture	**15.7**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114766-14

Date Collected: 06/19/19 00:00
Date Received: 06/20/19 11:15

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/30/19 08:09	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 08:09	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/30/19 08:09	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/30/19 08:09	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/30/19 08:09	1
Tetrachloroethene	<1.00		1.00		ug/L			06/30/19 08:09	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 08:09	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/30/19 08:09	1
Trichloroethene	<1.00		1.00		ug/L			06/30/19 08:09	1
Vinyl chloride	<1.00		1.00		ug/L			06/30/19 08:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/30/19 08:09*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*06/30/19 08:09*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/30/19 08:09*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114766-15

Date Collected: 06/19/19 00:00
Matrix: Solid
Date Received: 06/20/19 11:15

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
Trichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 21:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*80*		*48 - 151*	*06/23/19 18:19*	*06/24/19 21:50*	*1*
Dibromofluoromethane (Surr)	*79*		*49 - 138*	*06/23/19 18:19*	*06/24/19 21:50*	*1*
Toluene-d8 (Surr)	*81*		*49 - 147*	*06/23/19 18:19*	*06/24/19 21:50*	*1*
1,2-Dichloroethane-d4 (Surr)	*88*		*53 - 155*	*06/23/19 18:19*	*06/24/19 21:50*	*1*

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(48-151)	(49-138)	(49-147)	(53-155)
240-114766-3	GP-10 (1-3)	89	89	90	94
240-114766-6	HA-1 (0-1)	53	64	62	75
240-114766-8	HA-2	128	130	130	146
240-114766-9	HA-3	105	125	121	139
240-114766-10	HA-4	141	149 X	150 X	162 X
240-114766-11	HA-5 (0-1)	100	99	105	111
240-114766-12	HA-6 (0-0.5)	75	74	77	82
240-114766-13	HA-7 (0-0.5)	98	96	99	108
240-114766-15	TRIP BLANK	80	79	81	88
LCS 240-387766/2-A	Lab Control Sample	81	84	86	78
MB 240-387766/1-A	Method Blank	81	80	85	81

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
240-114766-2	GP-10 (0-5)	98	107	100
240-114766-4	GP-10 (10-12)	100	106	100
240-114766-5	GP-10 (17-19)	100	104	100
240-114766-7	HA-1	102	105	101
240-114766-14	TRIP BLANK	100	106	100
LCS 310-244310/6	Lab Control Sample	99	101	105
LCS 310-244310/7	Lab Control Sample	98	103	99
MB 310-244310/8	Method Blank	100	103	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-244310/8
Matrix: Water
Analysis Batch: 244310

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/30/19 02:43	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 02:43	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/30/19 02:43	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/30/19 02:43	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/30/19 02:43	1
Tetrachloroethene	<1.00		1.00		ug/L			06/30/19 02:43	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/30/19 02:43	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/30/19 02:43	1
Trichloroethene	<1.00		1.00		ug/L			06/30/19 02:43	1
Vinyl chloride	<1.00		1.00		ug/L			06/30/19 02:43	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/30/19 02:43*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/30/19 02:43*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/30/19 02:43*	*1*

Lab Sample ID: LCS 310-244310/6
Matrix: Water
Analysis Batch: 244310

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	17.77		ug/L		89	77 - 120
1,1-Dichloroethane	20.0	16.69		ug/L		83	75 - 125
1,2-Dichloroethane	20.0	17.85		ug/L		89	75 - 123
1,1-Dichloroethene	20.0	16.91		ug/L		85	75 - 124
Tetrachloroethene	20.0	19.60		ug/L		98	72 - 129
trans-1,2-Dichloroethene	20.0	17.16		ug/L		86	75 - 122
1,1,1-Trichloroethane	20.0	17.49		ug/L		87	76 - 127
Trichloroethene	20.0	18.29		ug/L		91	77 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*80 - 120*
Toluene-d8 (Surr)	*105*		*80 - 120*

Lab Sample ID: LCS 310-244310/7
Matrix: Water
Analysis Batch: 244310

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	19.42		ug/L		97	69 - 129
Vinyl chloride	20.0	18.35		ug/L		92	67 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-387766/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387902 — **Prep Batch: 387766**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
Trichloroethene	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/23/19 18:19	06/24/19 15:14	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*81*		*48 - 151*	*06/23/19 18:19*	*06/24/19 15:14*	*1*
Dibromofluoromethane (Surr)	*80*		*49 - 138*	*06/23/19 18:19*	*06/24/19 15:14*	*1*
Toluene-d8 (Surr)	*85*		*49 - 147*	*06/23/19 18:19*	*06/24/19 15:14*	*1*
1,2-Dichloroethane-d4 (Surr)	*81*		*53 - 155*	*06/23/19 18:19*	*06/24/19 15:14*	*1*

Lab Sample ID: LCS 240-387766/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387902 — **Prep Batch: 387766**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	1.00	0.2600		mg/Kg		26	15 - 155
cis-1,2-Dichloroethene	1.00	0.9117		mg/Kg		91	74 - 123
1,1-Dichloroethane	1.00	0.8041		mg/Kg		80	72 - 122
1,2-Dichloroethane	1.00	0.8396		mg/Kg		84	64 - 126
1,1-Dichloroethene	1.00	0.7864		mg/Kg		79	57 - 139
Tetrachloroethene	1.00	0.9785		mg/Kg		98	76 - 120
trans-1,2-Dichloroethene	1.00	0.9305		mg/Kg		93	71 - 133
1,1,1-Trichloroethane	1.00	0.7852		mg/Kg		79	64 - 135
Trichloroethene	1.00	0.9997		mg/Kg		100	73 - 126
Vinyl chloride	1.00	0.7762		mg/Kg		78	52 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*81*		*48 - 151*
Dibromofluoromethane (Surr)	*84*		*49 - 138*
Toluene-d8 (Surr)	*86*		*49 - 147*
1,2-Dichloroethane-d4 (Surr)	*78*		*53 - 155*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 240-387634/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387634**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		mg/Kg		06/24/19 08:00	06/25/19 12:58	1

Method: 6010D - Metals (ICP) (Continued)

Lab Sample ID: LCS 240-387634/2-A
Matrix: Solid
Analysis Batch: 388280

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 387634

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			100	99.31		mg/Kg		99	80 - 120		

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

GC/MS VOA

Analysis Batch: 244310

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114766-2	GP-10 (0-5)	Total/NA	Water	8260B	
240-114766-4	GP-10 (10-12)	Total/NA	Water	8260B	
240-114766-5	GP-10 (17-19)	Total/NA	Water	8260B	
240-114766-7	HA-1	Total/NA	Water	8260B	
240-114766-14	TRIP BLANK	Total/NA	Water	8260B	
MB 310-244310/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244310/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244310/7	Lab Control Sample	Total/NA	Water	8260B	

Prep Batch: 387766

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114766-3	GP-10 (1-3)	Total/NA	Solid	5035	
240-114766-6	HA-1 (0-1)	Total/NA	Solid	5035	
240-114766-8	HA-2	Total/NA	Solid	5035	
240-114766-9	HA-3	Total/NA	Solid	5035	
240-114766-10	HA-4	Total/NA	Solid	5035	
240-114766-11	HA-5 (0-1)	Total/NA	Solid	5035	
240-114766-12	HA-6 (0-0.5)	Total/NA	Solid	5035	
240-114766-13	HA-7 (0-0.5)	Total/NA	Solid	5035	
240-114766-15	TRIP BLANK	Total/NA	Solid	5035	
MB 240-387766/1-A	Method Blank	Total/NA	Solid	5035	
LCS 240-387766/2-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 387901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114766-3	GP-10 (1-3)	Total/NA	Solid	8260B	387766
240-114766-6	HA-1 (0-1)	Total/NA	Solid	8260B	387766
240-114766-8	HA-2	Total/NA	Solid	8260B	387766
240-114766-9	HA-3	Total/NA	Solid	8260B	387766
240-114766-10	HA-4	Total/NA	Solid	8260B	387766
240-114766-11	HA-5 (0-1)	Total/NA	Solid	8260B	387766
240-114766-12	HA-6 (0-0.5)	Total/NA	Solid	8260B	387766
240-114766-13	HA-7 (0-0.5)	Total/NA	Solid	8260B	387766
240-114766-15	TRIP BLANK	Total/NA	Solid	8260B	387766

Analysis Batch: 387902

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-387766/1-A	Method Blank	Total/NA	Solid	8260B	387766
LCS 240-387766/2-A	Lab Control Sample	Total/NA	Solid	8260B	387766

Metals

Prep Batch: 387634

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114766-1	GP-10 (0-1)	Total/NA	Solid	3050B	
240-114766-6	HA-1 (0-1)	Total/NA	Solid	3050B	
240-114766-8	HA-2	Total/NA	Solid	3050B	
240-114766-9	HA-3	Total/NA	Solid	3050B	
240-114766-10	HA-4	Total/NA	Solid	3050B	
240-114766-11	HA-5 (0-1)	Total/NA	Solid	3050B	
240-114766-12	HA-6 (0-0.5)	Total/NA	Solid	3050B	

Metals (Continued)

Prep Batch: 387634 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114766-13	HA-7 (0-0.5)	Total/NA	Solid	3050B	
MB 240-387634/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 240-387634/2-A	Lab Control Sample	Total/NA	Solid	3050B	

Analysis Batch: 388280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114766-1	GP-10 (0-1)	Total/NA	Solid	6010D	387634
240-114766-6	HA-1 (0-1)	Total/NA	Solid	6010D	387634
240-114766-8	HA-2	Total/NA	Solid	6010D	387634
240-114766-9	HA-3	Total/NA	Solid	6010D	387634
240-114766-10	HA-4	Total/NA	Solid	6010D	387634
240-114766-11	HA-5 (0-1)	Total/NA	Solid	6010D	387634
240-114766-12	HA-6 (0-0.5)	Total/NA	Solid	6010D	387634
240-114766-13	HA-7 (0-0.5)	Total/NA	Solid	6010D	387634
MB 240-387634/1-A	Method Blank	Total/NA	Solid	6010D	387634
LCS 240-387634/2-A	Lab Control Sample	Total/NA	Solid	6010D	387634

General Chemistry

Analysis Batch: 388470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114766-1	GP-10 (0-1)	Total/NA	Solid	Moisture	
240-114766-3	GP-10 (1-3)	Total/NA	Solid	Moisture	
240-114766-6	HA-1 (0-1)	Total/NA	Solid	Moisture	
240-114766-8	HA-2	Total/NA	Solid	Moisture	
240-114766-9	HA-3	Total/NA	Solid	Moisture	
240-114766-10	HA-4	Total/NA	Solid	Moisture	
240-114766-11	HA-5 (0-1)	Total/NA	Solid	Moisture	
240-114766-12	HA-6 (0-0.5)	Total/NA	Solid	Moisture	
240-114766-13	HA-7 (0-0.5)	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: GP-10 (0-1)
Lab Sample ID: 240-114766-1

Date Collected: 06/19/19 09:00
Date Received: 06/20/19 11:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:34	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: GP-10 (0-5)
Lab Sample ID: 240-114766-2

Date Collected: 06/19/19 09:45
Date Received: 06/20/19 11:15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244310	06/30/19 06:28	SJN	TAL CF

Client Sample ID: GP-10 (1-3)
Lab Sample ID: 240-114766-3

Date Collected: 06/19/19 10:00
Date Received: 06/20/19 11:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 18:25	SAM	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: GP-10 (10-12)
Lab Sample ID: 240-114766-4

Date Collected: 06/19/19 10:15
Date Received: 06/20/19 11:15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244310	06/30/19 06:53	SJN	TAL CF

Client Sample ID: GP-10 (17-19)
Lab Sample ID: 240-114766-5

Date Collected: 06/19/19 10:30
Date Received: 06/20/19 11:15
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244310	06/30/19 07:19	SJN	TAL CF

Client Sample ID: HA-1 (0-1)
Lab Sample ID: 240-114766-6

Date Collected: 06/19/19 14:00
Date Received: 06/20/19 11:15
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 18:51	SAM	TAL CAN
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:38	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-1
Lab Sample ID: 240-114766-7
Date Collected: 06/19/19 13:00
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244310	06/30/19 07:44	SJN	TAL CF

Client Sample ID: HA-2
Lab Sample ID: 240-114766-8
Date Collected: 06/19/19 14:30
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 19:16	SAM	TAL CAN
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:43	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: HA-3
Lab Sample ID: 240-114766-9
Date Collected: 06/19/19 14:45
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 19:42	SAM	TAL CAN
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:48	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: HA-4
Lab Sample ID: 240-114766-10
Date Collected: 06/19/19 14:50
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 20:08	SAM	TAL CAN
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:52	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: HA-5 (0-1)
Lab Sample ID: 240-114766-11
Date Collected: 06/19/19 14:55
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 20:33	SAM	TAL CAN
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 14:57	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Client Sample ID: HA-6 (0-0.5)

Lab Sample ID: 240-114766-12
Date Collected: 06/19/19 15:20
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 20:59	SAM	TAL CAN
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 15:01	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: HA-7 (0-0.5)

Lab Sample ID: 240-114766-13
Date Collected: 06/19/19 15:30
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 21:24	SAM	TAL CAN
Total/NA	Prep	3050B			387634	06/24/19 08:00	MBB	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 15:06	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114766-14
Date Collected: 06/19/19 00:00
Matrix: Water
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244310	06/30/19 08:09	SJN	TAL CF

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114766-15
Date Collected: 06/19/19 00:00
Matrix: Solid
Date Received: 06/20/19 11:15

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387766	06/23/19 18:19	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387901	06/24/19 21:50	SAM	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114766-1
SDG: 2606-0016

Laboratory: Eurofins TestAmerica, Canton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	039-999-348	12-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Laboratory: Eurofins TestAmerica, Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

1.4/C1.5

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES
Client #: _____
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN / CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number:
Fax:
Sampler Name: (Print Name) Kelly J. JANOSKI / BEN L. KRAMICA
Sampler Signature:

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE
State: MN
Report To: SHANE WATERMAN, CHRIS BRATSCH
~~Invoice To~~: KELLY JANOSKI, BEN KRAMICA
Quote #:
PO#:

TAT
✓ Standard
___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y (N)
Email Results: (Y) N

Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other
Preservation & # of Containers
Analyze For:
240-114766 Chain of Custody

QC Deliverables
__ None
__ Level 2 (Batch QC)
__ Level 3
__ Level 4
__ Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	LEAD (EPA) (6020)	VOC Modified List	MOISTURE	REMARKS
GP-10 (0-1)	6/19	900	G	NA	S						1		X			200100 4726
GP-10 (0-5)	6/19	945	G	N	GW		3							X		200100 4846 GP-10(0-5)
GP-10 (1-3)	6/19	1000	G	NA	S						1	1		X	X	200100 4926
GP-10 (10-12)	6/19	1015	G	N	GW		3							X		200100 4846
GP-10 (17-19)	6/19	1030	G	N	GW		3							X		200100 4846
HA-1 (0-1)	6/19	1400	G	NA	S					1	1		X	X		200100 4927
HA-1	6/19	1300	G	N	GW		3							X		200100 4847
HA-2	6/19	1430	G	NA	S					1	1		X	X		200100 4928
HA-3	6/19	1445	G	N	S					1	1		X	X		200100 4929
HA-4	6/19	1450	G	N	S					1	1		X	X		200100 4930

Special Instructions:

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

Relinquished By: Kelly JANOSKI	Date: 6/19	Time: 1625	Received By:	Date: 6-19-19	Time: 1625
Relinquished By:	Date: 6-19-19	Time: 1700	Received By:	Date: 6-20-19	Time: 1115
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0033 (0708)

Page 1 of 2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES Client #: _____
Address: 1002 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN / CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number: _____ Fax: _____
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature: [signature] / [signature]

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE State: MN
Report To: SHANE WATERMAN, CHRIS BRATSCH
~~Invoice To~~: KELLY JAWORSKI, BEN KRAMKA
Quote #: _____ PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y N
Email Results: Y N

Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other
Preservation & # of Containers
Analyze For:

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	LEAD (EPA 6020)	VOC Modified list	MOISTURE								REMARKS
HA-5(0-1)	6/19	1455	G	N	S					1	1		X	X									200100493 1
HA-6(0-0.5)	6/19	1520	G	N	S					1	1		X	X									200100493 2
HA-7(0-0.5)	6/19	1530	G	N	S					1	1		X	X									200100493 3

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

Special Instructions:

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
KELLY JAWORSKI	6/19	1625	[signature]	6-19-19	1625
[signature]	6-19-19	1700	[signature]	6-20-19	1115

TAL-003

Page 2 of 2

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 114766

Client Wenck Associates Site Name _____ Cooler unpacked by: [signature]

Cooler Received on 6-20-19 Opened on 6-20-19

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp. 1.4 °C Corrected Cooler Temp. 1.5 °C
   IR GUN #36 (CF **+0.6**°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   - Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   - Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   - Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # N/A Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: JS

Recd 3x40 H2O + 1x40 Mech TB not on COC will log.

18. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

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240-114766 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Canton Eurofins TA

City/State: CITY Canton STATE OH | Project:

Receipt Information

Date/Time Received: DATE 6/26/19 TIME 0905 | Received By: LB

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☑ No	*If yes:* Cooler # _____ of _____
Cooler Custody Seals Present?	☐ Yes	☑ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☑ Yes	☐ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M | Correction Factor (°C): -0.1

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): | Corrected Temp (°C):

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:	40 mL HCl	
Uncorrected Temp (°C):	4.3	
Corrected Temp (°C):	4.2	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 240-105739.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: zach.bindert@testamericainc.com	State of Origin: Minnesota	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): NELAP - Minnesota		Job #: 240-114766-1
Address: 3019 Venture Way, ,	Due Date Requested: 6/26/2019			
City: Cedar Falls	TAT Requested (days):			
State, Zip: IA, 50613				
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO #:			
Email:	WO #:			
Project Name: Water Gremlin Co. Remedial Investigation	Project #: 31011233			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B/5030B (MOD) Volatile Minnesota Sublist	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GP-10 (0-5) (240-114766-2)	6/19/19	09:45 Central		Water			X	3	
GP-10 (10-12) (240-114766-4)	6/19/19	10:15 Central		Water			X	3	
GP-10 (17-19) (240-114766-5)	6/19/19	10:30 Central		Water			X	3	
HA-1 (240-114766-7)	6/19/19	13:00 Central		Water			X	3	
TRIP BLANK (240-114766-14)	6/19/19	Central		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:		Method of Shipment:	
Relinquished by:	Date/Time: 6/25 1330	Company	Received by:	Date/Time: 6/26/19 0905	Company TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:		

Ver: 01/16/2019

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114766-1
SDG Number: 2606-0016

Login Number: 114766
List Number: 2
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 01:06 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-114843-1
Laboratory Sample Delivery Group: 2606-0016
Client Project/Site: Water Gremlin Co. Remedial Investigation

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
7/1/2019 5:12:51 PM

Zach Bindert, Project Manager I
(319)277-2401
zach.bindert@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Method Summary 5
Sample Summary 6
Detection Summary 7
Client Sample Results 9
Surrogate Summary 28
QC Sample Results 29
QC Association Summary 34
Lab Chronicle 37
Certification Summary 41
Chain of Custody 42
Receipt Checklists 48

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits
F4	MS/MSD RPD exceeds control limits due to sample size difference.
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-114843-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-114843-1

Comments
No additional comments.

Receipt
The samples were received on 6/21/2019 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 3.3º C and 4.1º C.

GC/MS VOA
Method(s) 8260B: A MS/MSD was prepared for batch 240-387767, but was analyzed in a different analytical batch.

SED-3 (240-114843-10)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CF
6010D	Metals (ICP)	SW846	TAL CAN
6020B	Metals (ICP/MS)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL CAN
3050B	Preparation, Metals	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CF
5035	Closed System Purge and Trap	SW846	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114843-1	SW-1	Water	06/20/19 10:00	06/21/19 09:35	
240-114843-2	SW-2	Water	06/20/19 10:10	06/21/19 09:35	
240-114843-3	SW-3	Water	06/20/19 10:20	06/21/19 09:35	
240-114843-4	SW-4	Water	06/20/19 10:30	06/21/19 09:35	
240-114843-5	SW-5	Water	06/20/19 10:40	06/21/19 09:35	
240-114843-6	SW-6	Water	06/20/19 10:50	06/21/19 09:35	
240-114843-7	062019-A	Water	06/20/19 00:00	06/21/19 09:35	
240-114843-8	SED-1	Solid	06/20/19 11:00	06/21/19 09:35	
240-114843-9	SED-2	Solid	06/20/19 11:10	06/21/19 09:35	
240-114843-10	SED-3	Solid	06/20/19 11:20	06/21/19 09:35	
240-114843-11	SED-4	Solid	06/20/19 11:30	06/21/19 09:35	
240-114843-12	SED-5	Solid	06/20/19 11:40	06/21/19 09:35	
240-114843-13	SED-6	Solid	06/20/19 11:50	06/21/19 09:35	
240-114843-14	SED-7	Solid	06/20/19 12:00	06/21/19 09:35	
240-114843-15	SED-8	Solid	06/20/19 12:10	06/21/19 09:35	
240-114843-16	062019-13	Solid	06/20/19 00:00	06/21/19 09:35	
240-114843-17	RINSATE #3	Water	06/20/19 00:00	06/21/19 09:35	
240-114843-18	TRIP BLANK	Water	06/20/19 00:00	06/21/19 09:35	
240-114843-19	TRIP BLANK	Solid	06/20/19 00:00	06/21/19 09:35	

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-1 — Lab Sample ID: 240-114843-1

No Detections.

Client Sample ID: SW-2 — Lab Sample ID: 240-114843-2

No Detections.

Client Sample ID: SW-3 — Lab Sample ID: 240-114843-3

No Detections.

Client Sample ID: SW-4 — Lab Sample ID: 240-114843-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	11.6		1.00		ug/L	1		6020B	Total Recoverable

Client Sample ID: SW-5 — Lab Sample ID: 240-114843-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	12.2		1.00		ug/L	1		6020B	Total Recoverable

Client Sample ID: SW-6 — Lab Sample ID: 240-114843-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	3.74		1.00		ug/L	1		6020B	Total Recoverable

Client Sample ID: 062019-A — Lab Sample ID: 240-114843-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	12.5		1.00		ug/L	1		6020B	Total Recoverable

Client Sample ID: SED-1 — Lab Sample ID: 240-114843-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	113		2.32		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: SED-2 — Lab Sample ID: 240-114843-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	66.2		2.89		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: SED-3 — Lab Sample ID: 240-114843-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	77.7		3.55		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: SED-4 — Lab Sample ID: 240-114843-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	81.7		3.71		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: SED-5 — Lab Sample ID: 240-114843-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	7.01		1.01		mg/Kg	1	☼	6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-6 — Lab Sample ID: 240-114843-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	215		1.47		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: SED-7 — Lab Sample ID: 240-114843-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	1060		0.997		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: SED-8 — Lab Sample ID: 240-114843-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	71.2		1.18		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: 062019-13 — Lab Sample ID: 240-114843-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	87.7		2.72		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: RINSATE #3 — Lab Sample ID: 240-114843-17

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-114843-18

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 240-114843-19

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-1

Date Collected: 06/20/19 10:00
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-1

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 21:42	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 21:42	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 21:42	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 21:42	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 21:42	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 21:42	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 21:42	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 21:42	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 21:42	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/29/19 21:42*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 21:42*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/29/19 21:42*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		ug/L		06/24/19 14:00	06/25/19 13:44	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-2

Date Collected: 06/20/19 10:10
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-2

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 21:17	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 21:17	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 21:17	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 21:17	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 21:17	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 21:17	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 21:17	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 21:17	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 21:17	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 21:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*06/29/19 21:17*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*06/29/19 21:17*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/29/19 21:17*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		ug/L		06/24/19 14:00	06/25/19 14:00	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-3

Lab Sample ID: 240-114843-3

Date Collected: 06/20/19 10:20
Date Received: 06/21/19 09:35

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 20:52	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 20:52	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 20:52	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 20:52	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 20:52	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 20:52	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 20:52	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 20:52	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 20:52	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 20:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/29/19 20:52*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 20:52*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/29/19 20:52*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		ug/L		06/24/19 14:00	06/25/19 14:03	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-4

Date Collected: 06/20/19 10:30
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-4

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 20:27	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 20:27	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 20:27	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 20:27	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 20:27	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 20:27	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 20:27	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 20:27	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 20:27	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 20:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*06/29/19 20:27*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 20:27*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*06/29/19 20:27*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**11.6**		1.00		ug/L		06/24/19 14:00	06/25/19 14:05	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-5

Lab Sample ID: 240-114843-5

Date Collected: 06/20/19 10:40
Date Received: 06/21/19 09:35

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 20:01	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 20:01	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 20:01	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 20:01	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 20:01	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 20:01	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 20:01	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 20:01	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 20:01	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 20:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/29/19 20:01*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/29/19 20:01*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/29/19 20:01*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**12.2**		1.00		ug/L		06/24/19 14:00	06/25/19 14:08	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-6

Lab Sample ID: 240-114843-6

Date Collected: 06/20/19 10:50
Date Received: 06/21/19 09:35

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 19:36	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 19:36	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 19:36	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 19:36	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 19:36	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 19:36	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 19:36	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 19:36	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 19:36	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 19:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/29/19 19:36*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/29/19 19:36*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/29/19 19:36*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**3.74**		1.00		ug/L		06/24/19 14:00	06/25/19 14:10	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: 062019-A

Date Collected: 06/20/19 00:00
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-7

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 19:10	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 19:10	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 19:10	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 19:10	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 19:10	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 19:10	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 19:10	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 19:10	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 19:10	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 19:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/29/19 19:10*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/29/19 19:10*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/29/19 19:10*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**12.5**		1.00		ug/L		06/24/19 14:00	06/25/19 14:13	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-1

Lab Sample ID: 240-114843-8

Date Collected: 06/20/19 11:00
Date Received: 06/21/19 09:35

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.57	F2	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
cis-1,2-Dichloroethene	<1.57	F2 F1	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
1,1-Dichloroethane	<1.57	F2 F1	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
1,2-Dichloroethane	<1.57	F2 F1	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
1,1-Dichloroethene	<1.57	F2	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
Tetrachloroethene	<1.57	F2	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
trans-1,2-Dichloroethene	<1.57	F2 F1	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
1,1,1-Trichloroethane	<1.57	F2 F1	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
Trichloroethene	<1.57	F2	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1
Vinyl chloride	<1.57	F2	1.57		mg/Kg	☼	06/23/19 19:46	06/25/19 09:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*112*		*48 - 151*	*06/23/19 19:46*	*06/25/19 09:27*	*1*
Dibromofluoromethane (Surr)	*114*		*49 - 138*	*06/23/19 19:46*	*06/25/19 09:27*	*1*
Toluene-d8 (Surr)	*113*		*49 - 147*	*06/23/19 19:46*	*06/25/19 09:27*	*1*
1,2-Dichloroethane-d4 (Surr)	*135*		*53 - 155*	*06/23/19 19:46*	*06/25/19 09:27*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**113**		2.32		mg/Kg	☼	06/24/19 14:00	06/25/19 19:00	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**29.3**		0.1		%			06/26/19 16:25	1
Percent Moisture	**70.7**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-2

Lab Sample ID: 240-114843-9

Date Collected: 06/20/19 11:10
Date Received: 06/21/19 09:35

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
cis-1,2-Dichloroethene	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
1,1-Dichloroethane	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
1,2-Dichloroethane	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
1,1-Dichloroethene	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
Tetrachloroethene	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
trans-1,2-Dichloroethene	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
1,1,1-Trichloroethane	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
Trichloroethene	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1
Vinyl chloride	<1.50		1.50		mg/Kg	☼	06/23/19 19:46	06/25/19 10:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*48 - 151*	*06/23/19 19:46*	*06/25/19 10:32*	*1*
Dibromofluoromethane (Surr)	*119*		*49 - 138*	*06/23/19 19:46*	*06/25/19 10:32*	*1*
Toluene-d8 (Surr)	*108*		*49 - 147*	*06/23/19 19:46*	*06/25/19 10:32*	*1*
1,2-Dichloroethane-d4 (Surr)	*133*		*53 - 155*	*06/23/19 19:46*	*06/25/19 10:32*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**66.2**		2.89		mg/Kg	☼	06/24/19 14:00	06/25/19 19:22	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**27.5**		0.1		%			06/26/19 16:25	1
Percent Moisture	**72.5**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-3

Date Collected: 06/20/19 11:20
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-10

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
cis-1,2-Dichloroethene	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
1,1-Dichloroethane	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
1,2-Dichloroethane	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
1,1-Dichloroethene	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
Tetrachloroethene	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
trans-1,2-Dichloroethene	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
1,1,1-Trichloroethane	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
Trichloroethene	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1
Vinyl chloride	<1.71		1.71		mg/Kg	☼	06/23/19 19:46	06/26/19 06:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*71*		*48 - 151*	*06/23/19 19:46*	*06/26/19 06:59*	*1*
Dibromofluoromethane (Surr)	*103*		*49 - 138*	*06/23/19 19:46*	*06/26/19 06:59*	*1*
Toluene-d8 (Surr)	*88*		*49 - 147*	*06/23/19 19:46*	*06/26/19 06:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*122*		*53 - 155*	*06/23/19 19:46*	*06/26/19 06:59*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**77.7**		3.55		mg/Kg	☼	06/24/19 14:00	06/25/19 19:27	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**21.7**		0.1		%			06/26/19 16:25	1
Percent Moisture	**78.3**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-4

Lab Sample ID: 240-114843-11

Date Collected: 06/20/19 11:30
Date Received: 06/21/19 09:35

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
cis-1,2-Dichloroethene	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
1,1-Dichloroethane	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
1,2-Dichloroethane	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
1,1-Dichloroethene	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
Tetrachloroethene	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
trans-1,2-Dichloroethene	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
1,1,1-Trichloroethane	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
Trichloroethene	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1
Vinyl chloride	<1.68		1.68		mg/Kg	☼	06/23/19 19:46	06/25/19 11:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*48 - 151*	*06/23/19 19:46*	*06/25/19 11:16*	*1*
Dibromofluoromethane (Surr)	*117*		*49 - 138*	*06/23/19 19:46*	*06/25/19 11:16*	*1*
Toluene-d8 (Surr)	*112*		*49 - 147*	*06/23/19 19:46*	*06/25/19 11:16*	*1*
1,2-Dichloroethane-d4 (Surr)	*134*		*53 - 155*	*06/23/19 19:46*	*06/25/19 11:16*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**81.7**		3.71		mg/Kg	☼	06/24/19 14:00	06/25/19 19:31	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**24.7**		0.1		%			06/26/19 16:25	1
Percent Moisture	**75.3**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-5

Lab Sample ID: 240-114843-12

Date Collected: 06/20/19 11:40
Date Received: 06/21/19 09:35

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
cis-1,2-Dichloroethene	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
1,1-Dichloroethane	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
1,2-Dichloroethane	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
1,1-Dichloroethene	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
Tetrachloroethene	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
trans-1,2-Dichloroethene	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
1,1,1-Trichloroethane	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
Trichloroethene	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1
Vinyl chloride	<0.351		0.351		mg/Kg	☼	06/23/19 19:46	06/25/19 11:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*48 - 151*	*06/23/19 19:46*	*06/25/19 11:37*	*1*
Dibromofluoromethane (Surr)	*102*		*49 - 138*	*06/23/19 19:46*	*06/25/19 11:37*	*1*
Toluene-d8 (Surr)	*96*		*49 - 147*	*06/23/19 19:46*	*06/25/19 11:37*	*1*
1,2-Dichloroethane-d4 (Surr)	*116*		*53 - 155*	*06/23/19 19:46*	*06/25/19 11:37*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**7.01**		1.01		mg/Kg	☼	06/24/19 14:00	06/25/19 19:36	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**71.8**		0.1		%			06/26/19 16:25	1
Percent Moisture	**28.2**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-6

Date Collected: 06/20/19 11:50
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-13

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
cis-1,2-Dichloroethene	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
1,1-Dichloroethane	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
1,2-Dichloroethane	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
1,1-Dichloroethene	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
Tetrachloroethene	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
trans-1,2-Dichloroethene	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
1,1,1-Trichloroethane	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
Trichloroethene	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1
Vinyl chloride	<0.464		0.464		mg/Kg	☼	06/23/19 19:46	06/25/19 11:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*48 - 151*	*06/23/19 19:46*	*06/25/19 11:59*	*1*
Dibromofluoromethane (Surr)	*131*		*49 - 138*	*06/23/19 19:46*	*06/25/19 11:59*	*1*
Toluene-d8 (Surr)	*123*		*49 - 147*	*06/23/19 19:46*	*06/25/19 11:59*	*1*
1,2-Dichloroethane-d4 (Surr)	*152*		*53 - 155*	*06/23/19 19:46*	*06/25/19 11:59*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**215**		1.47		mg/Kg	☼	06/24/19 14:00	06/25/19 19:41	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**53.6**		0.1		%			06/26/19 16:25	1
Percent Moisture	**46.4**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-7

Date Collected: 06/20/19 12:00
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-14

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
cis-1,2-Dichloroethene	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
1,1-Dichloroethane	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
1,2-Dichloroethane	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
1,1-Dichloroethene	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
Tetrachloroethene	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
trans-1,2-Dichloroethene	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
1,1,1-Trichloroethane	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
Trichloroethene	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1
Vinyl chloride	<0.263		0.263		mg/Kg	☼	06/23/19 19:46	06/25/19 12:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*75*		*48 - 151*	*06/23/19 19:46*	*06/25/19 12:21*	*1*
Dibromofluoromethane (Surr)	*82*		*49 - 138*	*06/23/19 19:46*	*06/25/19 12:21*	*1*
Toluene-d8 (Surr)	*81*		*49 - 147*	*06/23/19 19:46*	*06/25/19 12:21*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*53 - 155*	*06/23/19 19:46*	*06/25/19 12:21*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**1060**		0.997		mg/Kg	☼	06/24/19 14:00	06/25/19 19:54	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**84.3**		0.1		%			06/26/19 16:25	1
Percent Moisture	**15.7**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-8

Date Collected: 06/20/19 12:10
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-15

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
cis-1,2-Dichloroethene	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
1,1-Dichloroethane	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
1,2-Dichloroethane	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
1,1-Dichloroethene	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
Tetrachloroethene	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
trans-1,2-Dichloroethene	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
1,1,1-Trichloroethane	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
Trichloroethene	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1
Vinyl chloride	<0.334		0.334		mg/Kg	☼	06/23/19 19:46	06/25/19 12:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*48 - 151*	*06/23/19 19:46*	*06/25/19 12:43*	*1*
Dibromofluoromethane (Surr)	*106*		*49 - 138*	*06/23/19 19:46*	*06/25/19 12:43*	*1*
Toluene-d8 (Surr)	*103*		*49 - 147*	*06/23/19 19:46*	*06/25/19 12:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*123*		*53 - 155*	*06/23/19 19:46*	*06/25/19 12:43*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**71.2**		1.18		mg/Kg	☼	06/24/19 14:00	06/25/19 19:59	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**70.9**		0.1		%			06/26/19 16:25	1
Percent Moisture	**29.1**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: 062019-13

Date Collected: 06/20/19 00:00
Date Received: 06/21/19 09:35

Lab Sample ID: 240-114843-16

Matrix: Solid

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
cis-1,2-Dichloroethene	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
1,1-Dichloroethane	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
1,2-Dichloroethane	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
1,1-Dichloroethene	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
Tetrachloroethene	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
trans-1,2-Dichloroethene	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
1,1,1-Trichloroethane	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
Trichloroethene	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1
Vinyl chloride	<1.70		1.70		mg/Kg	☼	06/23/19 19:46	06/25/19 13:04	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*89*		*48 - 151*	*06/23/19 19:46*	*06/25/19 13:04*	*1*
Dibromofluoromethane (Surr)	*104*		*49 - 138*	*06/23/19 19:46*	*06/25/19 13:04*	*1*
Toluene-d8 (Surr)	*97*		*49 - 147*	*06/23/19 19:46*	*06/25/19 13:04*	*1*
1,2-Dichloroethane-d4 (Surr)	*122*		*53 - 155*	*06/23/19 19:46*	*06/25/19 13:04*	*1*

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**87.7**		2.72		mg/Kg	☼	06/24/19 14:00	06/25/19 20:03	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**27.4**		0.1		%			06/26/19 16:25	1
Percent Moisture	**72.6**		0.1		%			06/26/19 16:25	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: RINSATE #3

Lab Sample ID: 240-114843-17

Date Collected: 06/20/19 00:00
Date Received: 06/21/19 09:35

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 18:44	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 18:44	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 18:44	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 18:44	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 18:44	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 18:44	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 18:44	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 18:44	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 18:44	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 18:44	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*06/29/19 18:44*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/29/19 18:44*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/29/19 18:44*	*1*

Method: 6020B - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		ug/L		06/24/19 14:00	06/25/19 14:15	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114843-18

Date Collected: 06/20/19 00:00
Date Received: 06/21/19 09:35

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 18:19	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 18:19	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 18:19	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 18:19	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 18:19	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 18:19	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 18:19	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 18:19	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 18:19	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 18:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/29/19 18:19*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/29/19 18:19*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/29/19 18:19*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK

Lab Sample ID: 240-114843-19

Date Collected: 06/20/19 00:00
Matrix: Solid
Date Received: 06/21/19 09:35

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
Trichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 13:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*88*		*48 - 151*	*06/23/19 19:46*	*06/25/19 13:26*	*1*
Dibromofluoromethane (Surr)	*89*		*49 - 138*	*06/23/19 19:46*	*06/25/19 13:26*	*1*
Toluene-d8 (Surr)	*91*		*49 - 147*	*06/23/19 19:46*	*06/25/19 13:26*	*1*
1,2-Dichloroethane-d4 (Surr)	*107*		*53 - 155*	*06/23/19 19:46*	*06/25/19 13:26*	*1*

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(48-151)	(49-138)	(49-147)	(53-155)
240-114843-8	SED-1	112	114	113	135
240-114843-8 MS	SED-1	88	128	100	142
240-114843-8 MSD	SED-1	142	154 X	135	159 X
240-114843-9	SED-2	99	119	108	133
240-114843-10	SED-3	71	103	88	122
240-114843-11	SED-4	107	117	112	134
240-114843-12	SED-5	95	102	96	116
240-114843-13	SED-6	117	131	123	152
240-114843-14	SED-7	75	82	81	95
240-114843-15	SED-8	99	106	103	123
240-114843-16	062019-13	89	104	97	122
240-114843-19	TRIP BLANK	88	89	91	107
LCS 240-387767/2-A	Lab Control Sample	94	90	89	97
MB 240-387767/1-A	Method Blank	88	86	84	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
240-114843-1	SW-1	102	104	100
240-114843-1 MS	SW-1	96	103	103
240-114843-1 MSD	SW-1	95	103	101
240-114843-2	SW-2	100	106	101
240-114843-3	SW-3	99	104	99
240-114843-4	SW-4	104	104	103
240-114843-5	SW-5	99	103	98
240-114843-6	SW-6	99	105	97
240-114843-7	062019-A	98	102	98
240-114843-17	RINSATE #3	101	103	100
240-114843-18	TRIP BLANK	102	105	100
LCS 310-244255/6	Lab Control Sample	99	104	103
LCS 310-244255/7	Lab Control Sample	99	106	98
MB 310-244255/8	Method Blank	99	104	102

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-244255/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244255

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 14:02	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 14:02	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 14:02	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 14:02	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 14:02	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 14:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/29/19 14:02*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 14:02*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/29/19 14:02*	*1*

Lab Sample ID: LCS 310-244255/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244255

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	21.60		ug/L		108	77 - 120
1,1-Dichloroethane	20.0	20.01		ug/L		100	75 - 125
1,2-Dichloroethane	20.0	21.43		ug/L		107	75 - 123
1,1-Dichloroethene	20.0	20.23		ug/L		101	75 - 124
Tetrachloroethene	20.0	22.30		ug/L		111	72 - 129
trans-1,2-Dichloroethene	20.0	20.12		ug/L		101	75 - 122
1,1,1-Trichloroethane	20.0	20.61		ug/L		103	76 - 127
Trichloroethene	20.0	21.02		ug/L		105	77 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*104*		*80 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*

Lab Sample ID: LCS 310-244255/7 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244255

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	20.48		ug/L		102	69 - 129
Vinyl chloride	20.0	20.18		ug/L		101	67 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*106*		*80 - 120*
Toluene-d8 (Surr)	*98*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-114843-1 MS
Matrix: Water
Analysis Batch: 244255

Client Sample ID: SW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	<1.00		20.0	19.68		ug/L		98	46 - 130
1,1-Dichloroethane	<1.00		20.0	18.06		ug/L		90	50 - 127
1,2-Dichloroethane	<1.00		20.0	19.11		ug/L		96	55 - 128
1,1-Dichloroethene	<2.00		20.0	17.78		ug/L		89	47 - 124
Tetrachloroethene	<1.00		20.0	18.55		ug/L		93	40 - 129
trans-1,2-Dichloroethene	<1.00		20.0	18.25		ug/L		91	51 - 122
1,1,1-Trichloroethane	<1.00		20.0	17.39		ug/L		87	50 - 127
Trichloroethene	<1.00		20.0	18.49		ug/L		92	54 - 123

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*

Lab Sample ID: 240-114843-1 MSD
Matrix: Water
Analysis Batch: 244255

Client Sample ID: SW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	<1.00		20.0	18.60		ug/L		93	46 - 130	6	22
1,1-Dichloroethane	<1.00		20.0	17.72		ug/L		89	50 - 127	2	23
1,2-Dichloroethane	<1.00		20.0	18.32		ug/L		92	55 - 128	4	21
1,1-Dichloroethene	<2.00		20.0	18.54		ug/L		93	47 - 124	4	24
Tetrachloroethene	<1.00		20.0	18.02		ug/L		90	40 - 129	3	21
trans-1,2-Dichloroethene	<1.00		20.0	18.26		ug/L		91	51 - 122	0	23
1,1,1-Trichloroethane	<1.00		20.0	17.79		ug/L		89	50 - 127	2	21
Trichloroethene	<1.00		20.0	18.17		ug/L		91	54 - 123	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*80 - 120*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: MB 240-387767/1-A
Matrix: Solid
Analysis Batch: 387999

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 387767

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
Trichloroethene	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/23/19 19:46	06/25/19 06:08	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	88		48 - 151	06/23/19 19:46	06/25/19 06:08	1
Dibromofluoromethane (Surr)	86		49 - 138	06/23/19 19:46	06/25/19 06:08	1
Toluene-d8 (Surr)	84		49 - 147	06/23/19 19:46	06/25/19 06:08	1
1,2-Dichloroethane-d4 (Surr)	97		53 - 155	06/23/19 19:46	06/25/19 06:08	1

Lab Sample ID: LCS 240-387767/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387999 — **Prep Batch: 387767**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	1.00	1.118		mg/Kg		112	15 - 155
cis-1,2-Dichloroethene	1.00	0.9995		mg/Kg		100	74 - 123
1,1-Dichloroethane	1.00	1.007		mg/Kg		101	72 - 122
1,2-Dichloroethane	1.00	0.9951		mg/Kg		100	64 - 126
1,1-Dichloroethene	1.00	1.064		mg/Kg		106	57 - 139
Tetrachloroethene	1.00	1.156		mg/Kg		116	76 - 120
trans-1,2-Dichloroethene	1.00	1.066		mg/Kg		107	71 - 133
1,1,1-Trichloroethane	1.00	1.046		mg/Kg		105	64 - 135
Trichloroethene	1.00	1.044		mg/Kg		104	73 - 126
Vinyl chloride	1.00	1.037		mg/Kg		104	52 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	94		48 - 151
Dibromofluoromethane (Surr)	90		49 - 138
Toluene-d8 (Surr)	89		49 - 147
1,2-Dichloroethane-d4 (Surr)	97		53 - 155

Lab Sample ID: 240-114843-8 MS — **Client Sample ID: SED-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387999 — **Prep Batch: 387767**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	<1.57	F2	6.10	8.095		mg/Kg	☼	133	17 - 162
cis-1,2-Dichloroethene	<1.57	F2 F1	6.10	8.071	F1	mg/Kg	☼	132	50 - 128
1,1-Dichloroethane	<1.57	F2 F1	6.10	7.831		mg/Kg	☼	128	50 - 133
1,2-Dichloroethane	<1.57	F2 F1	6.10	8.417	F1	mg/Kg	☼	138	42 - 127
1,1-Dichloroethene	<1.57	F2	6.10	6.383		mg/Kg	☼	105	36 - 150
Tetrachloroethene	<1.57	F2	6.10	5.136		mg/Kg	☼	84	20 - 151
trans-1,2-Dichloroethene	<1.57	F2 F1	6.10	7.564		mg/Kg	☼	124	44 - 141
1,1,1-Trichloroethane	<1.57	F2 F1	6.10	7.027		mg/Kg	☼	115	38 - 143
Trichloroethene	<1.57	F2	6.10	6.825		mg/Kg	☼	112	25 - 148
Vinyl chloride	<1.57	F2	6.10	5.527		mg/Kg	☼	91	31 - 148

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	88		48 - 151
Dibromofluoromethane (Surr)	128		49 - 138
Toluene-d8 (Surr)	100		49 - 147
1,2-Dichloroethane-d4 (Surr)	142		53 - 155

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 240-114843-8 MSD — **Client Sample ID: SED-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 387999 — **Prep Batch: 387767**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloroethane	<1.57	F2	2.28	3.668	F4	mg/Kg	☼	161	17 - 162	75	40
cis-1,2-Dichloroethene	<1.57	F2 F1	2.28	3.557	F1 F4	mg/Kg	☼	156	50 - 128	78	40
1,1-Dichloroethane	<1.57	F2 F1	2.28	3.572	F1 F4	mg/Kg	☼	156	50 - 133	75	40
1,2-Dichloroethane	<1.57	F2 F1	2.28	3.589	F1 F4	mg/Kg	☼	157	42 - 127	80	34
1,1-Dichloroethene	<1.57	F2	2.28	3.246	F4	mg/Kg	☼	142	36 - 150	65	40
Tetrachloroethene	<1.57	F2	2.28	3.111	F4	mg/Kg	☼	136	20 - 151	49	40
trans-1,2-Dichloroethene	<1.57	F2 F1	2.28	3.420	F1 F4	mg/Kg	☼	150	44 - 141	75	40
1,1,1-Trichloroethane	<1.57	F2 F1	2.28	3.556	F1 F4	mg/Kg	☼	156	38 - 143	66	40
Trichloroethene	<1.57	F2	2.28	3.279	F4	mg/Kg	☼	144	25 - 148	70	40
Vinyl chloride	<1.57	F2	2.28	3.184	F4	mg/Kg	☼	139	31 - 148	54	37

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*142*		*48 - 151*
Dibromofluoromethane (Surr)	*154*	*X*	*49 - 138*
Toluene-d8 (Surr)	*135*		*49 - 147*
1,2-Dichloroethane-d4 (Surr)	*159*	*X*	*53 - 155*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 240-387912/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387912**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		mg/Kg		06/24/19 14:00	06/25/19 17:48	1

Lab Sample ID: LCS 240-387912/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387912**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			100	98.22		mg/Kg		98	80 - 120		

Lab Sample ID: 240-114843-8 MS — **Client Sample ID: SED-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387912**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead	113		287	377.4		mg/Kg	☼	92	75 - 125		

Lab Sample ID: 240-114843-8 MSD — **Client Sample ID: SED-1**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388280 — **Prep Batch: 387912**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	113		287	384.3		mg/Kg	☼	95	75 - 125	2	20

QC Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 240-387824/1-A
Matrix: Water
Analysis Batch: 388292

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 387824

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		ug/L		06/24/19 14:00	06/25/19 13:39	1

Lab Sample ID: LCS 240-387824/2-A
Matrix: Water
Analysis Batch: 388292

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 387824

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	500	508.2		ug/L		102	80 - 120

Lab Sample ID: 240-114843-1 MS
Matrix: Water
Analysis Batch: 388292

Client Sample ID: SW-1
Prep Type: Total Recoverable
Prep Batch: 387824

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	<1.00		500	510.3		ug/L		102	80 - 120

Lab Sample ID: 240-114843-1 MSD
Matrix: Water
Analysis Batch: 388292

Client Sample ID: SW-1
Prep Type: Total Recoverable
Prep Batch: 387824

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	<1.00		500	506.7		ug/L		101	80 - 120	1	20

Method: Moisture - Percent Moisture

Lab Sample ID: 240-114843-8 DU
Matrix: Solid
Analysis Batch: 388470

Client Sample ID: SED-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Solids	29.3		29.6		%		1	20
Percent Moisture	70.7		70.4		%		0.4	20

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

GC/MS VOA

Analysis Batch: 244255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-1	SW-1	Total/NA	Water	8260B	
240-114843-2	SW-2	Total/NA	Water	8260B	
240-114843-3	SW-3	Total/NA	Water	8260B	
240-114843-4	SW-4	Total/NA	Water	8260B	
240-114843-5	SW-5	Total/NA	Water	8260B	
240-114843-6	SW-6	Total/NA	Water	8260B	
240-114843-7	062019-A	Total/NA	Water	8260B	
240-114843-17	RINSATE #3	Total/NA	Water	8260B	
240-114843-18	TRIP BLANK	Total/NA	Water	8260B	
MB 310-244255/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244255/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244255/7	Lab Control Sample	Total/NA	Water	8260B	
240-114843-1 MS	SW-1	Total/NA	Water	8260B	
240-114843-1 MSD	SW-1	Total/NA	Water	8260B	

Prep Batch: 387767

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-8	SED-1	Total/NA	Solid	5035	
240-114843-9	SED-2	Total/NA	Solid	5035	
240-114843-10	SED-3	Total/NA	Solid	5035	
240-114843-11	SED-4	Total/NA	Solid	5035	
240-114843-12	SED-5	Total/NA	Solid	5035	
240-114843-13	SED-6	Total/NA	Solid	5035	
240-114843-14	SED-7	Total/NA	Solid	5035	
240-114843-15	SED-8	Total/NA	Solid	5035	
240-114843-16	062019-13	Total/NA	Solid	5035	
240-114843-19	TRIP BLANK	Total/NA	Solid	5035	
MB 240-387767/1-A	Method Blank	Total/NA	Solid	5035	
LCS 240-387767/2-A	Lab Control Sample	Total/NA	Solid	5035	
240-114843-8 MS	SED-1	Total/NA	Solid	5035	
240-114843-8 MSD	SED-1	Total/NA	Solid	5035	

Analysis Batch: 387999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-8	SED-1	Total/NA	Solid	8260B	387767
240-114843-9	SED-2	Total/NA	Solid	8260B	387767
240-114843-11	SED-4	Total/NA	Solid	8260B	387767
240-114843-12	SED-5	Total/NA	Solid	8260B	387767
240-114843-13	SED-6	Total/NA	Solid	8260B	387767
240-114843-14	SED-7	Total/NA	Solid	8260B	387767
240-114843-15	SED-8	Total/NA	Solid	8260B	387767
240-114843-16	062019-13	Total/NA	Solid	8260B	387767
240-114843-19	TRIP BLANK	Total/NA	Solid	8260B	387767
MB 240-387767/1-A	Method Blank	Total/NA	Solid	8260B	387767
LCS 240-387767/2-A	Lab Control Sample	Total/NA	Solid	8260B	387767
240-114843-8 MS	SED-1	Total/NA	Solid	8260B	387767
240-114843-8 MSD	SED-1	Total/NA	Solid	8260B	387767

Analysis Batch: 388244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-10	SED-3	Total/NA	Solid	8260B	387767

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Metals

Prep Batch: 387824

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-1	SW-1	Total Recoverable	Water	3005A	
240-114843-2	SW-2	Total Recoverable	Water	3005A	
240-114843-3	SW-3	Total Recoverable	Water	3005A	
240-114843-4	SW-4	Total Recoverable	Water	3005A	
240-114843-5	SW-5	Total Recoverable	Water	3005A	
240-114843-6	SW-6	Total Recoverable	Water	3005A	
240-114843-7	062019-A	Total Recoverable	Water	3005A	
240-114843-17	RINSATE #3	Total Recoverable	Water	3005A	
MB 240-387824/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 240-387824/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
240-114843-1 MS	SW-1	Total Recoverable	Water	3005A	
240-114843-1 MSD	SW-1	Total Recoverable	Water	3005A	

Prep Batch: 387912

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-8	SED-1	Total/NA	Solid	3050B	
240-114843-9	SED-2	Total/NA	Solid	3050B	
240-114843-10	SED-3	Total/NA	Solid	3050B	
240-114843-11	SED-4	Total/NA	Solid	3050B	
240-114843-12	SED-5	Total/NA	Solid	3050B	
240-114843-13	SED-6	Total/NA	Solid	3050B	
240-114843-14	SED-7	Total/NA	Solid	3050B	
240-114843-15	SED-8	Total/NA	Solid	3050B	
240-114843-16	062019-13	Total/NA	Solid	3050B	
MB 240-387912/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 240-387912/2-A	Lab Control Sample	Total/NA	Solid	3050B	
240-114843-8 MS	SED-1	Total/NA	Solid	3050B	
240-114843-8 MSD	SED-1	Total/NA	Solid	3050B	

Analysis Batch: 388280

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-8	SED-1	Total/NA	Solid	6010D	387912
240-114843-9	SED-2	Total/NA	Solid	6010D	387912
240-114843-10	SED-3	Total/NA	Solid	6010D	387912
240-114843-11	SED-4	Total/NA	Solid	6010D	387912
240-114843-12	SED-5	Total/NA	Solid	6010D	387912
240-114843-13	SED-6	Total/NA	Solid	6010D	387912
240-114843-14	SED-7	Total/NA	Solid	6010D	387912
240-114843-15	SED-8	Total/NA	Solid	6010D	387912
240-114843-16	062019-13	Total/NA	Solid	6010D	387912
MB 240-387912/1-A	Method Blank	Total/NA	Solid	6010D	387912
LCS 240-387912/2-A	Lab Control Sample	Total/NA	Solid	6010D	387912
240-114843-8 MS	SED-1	Total/NA	Solid	6010D	387912
240-114843-8 MSD	SED-1	Total/NA	Solid	6010D	387912

Analysis Batch: 388292

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-1	SW-1	Total Recoverable	Water	6020B	387824
240-114843-2	SW-2	Total Recoverable	Water	6020B	387824
240-114843-3	SW-3	Total Recoverable	Water	6020B	387824
240-114843-4	SW-4	Total Recoverable	Water	6020B	387824

Metals (Continued)

Analysis Batch: 388292 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-5	SW-5	Total Recoverable	Water	6020B	387824
240-114843-6	SW-6	Total Recoverable	Water	6020B	387824
240-114843-7	062019-A	Total Recoverable	Water	6020B	387824
240-114843-17	RINSATE #3	Total Recoverable	Water	6020B	387824
MB 240-387824/1-A	Method Blank	Total Recoverable	Water	6020B	387824
LCS 240-387824/2-A	Lab Control Sample	Total Recoverable	Water	6020B	387824
240-114843-1 MS	SW-1	Total Recoverable	Water	6020B	387824
240-114843-1 MSD	SW-1	Total Recoverable	Water	6020B	387824

General Chemistry

Analysis Batch: 388470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114843-8	SED-1	Total/NA	Solid	Moisture	
240-114843-9	SED-2	Total/NA	Solid	Moisture	
240-114843-10	SED-3	Total/NA	Solid	Moisture	
240-114843-11	SED-4	Total/NA	Solid	Moisture	
240-114843-12	SED-5	Total/NA	Solid	Moisture	
240-114843-13	SED-6	Total/NA	Solid	Moisture	
240-114843-14	SED-7	Total/NA	Solid	Moisture	
240-114843-15	SED-8	Total/NA	Solid	Moisture	
240-114843-16	062019-13	Total/NA	Solid	Moisture	
240-114843-8 DU	SED-1	Total/NA	Solid	Moisture	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-1
Lab Sample ID: 240-114843-1

Date Collected: 06/20/19 10:00
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 21:42	SJN	TAL CF
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 13:44	DSH	TAL CAN

Client Sample ID: SW-2
Lab Sample ID: 240-114843-2

Date Collected: 06/20/19 10:10
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 21:17	SJN	TAL CF
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 14:00	DSH	TAL CAN

Client Sample ID: SW-3
Lab Sample ID: 240-114843-3

Date Collected: 06/20/19 10:20
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 20:52	SJN	TAL CF
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 14:03	DSH	TAL CAN

Client Sample ID: SW-4
Lab Sample ID: 240-114843-4

Date Collected: 06/20/19 10:30
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 20:27	SJN	TAL CF
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 14:05	DSH	TAL CAN

Client Sample ID: SW-5
Lab Sample ID: 240-114843-5

Date Collected: 06/20/19 10:40
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 20:01	SJN	TAL CF
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 14:08	DSH	TAL CAN

Client Sample ID: SW-6
Lab Sample ID: 240-114843-6

Date Collected: 06/20/19 10:50
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 19:36	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SW-6
Lab Sample ID: 240-114843-6

Date Collected: 06/20/19 10:50
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 14:10	DSH	TAL CAN

Client Sample ID: 062019-A
Lab Sample ID: 240-114843-7

Date Collected: 06/20/19 00:00
Date Received: 06/21/19 09:35
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 19:10	SJN	TAL CF
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 14:13	DSH	TAL CAN

Client Sample ID: SED-1
Lab Sample ID: 240-114843-8

Date Collected: 06/20/19 11:00
Date Received: 06/21/19 09:35
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 09:27	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:00	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: SED-2
Lab Sample ID: 240-114843-9

Date Collected: 06/20/19 11:10
Date Received: 06/21/19 09:35
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 10:32	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:22	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: SED-3
Lab Sample ID: 240-114843-10

Date Collected: 06/20/19 11:20
Date Received: 06/21/19 09:35
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	388244	06/26/19 06:59	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:27	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-4
Lab Sample ID: 240-114843-11
Date Collected: 06/20/19 11:30
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 11:16	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:31	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: SED-5
Lab Sample ID: 240-114843-12
Date Collected: 06/20/19 11:40
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 11:37	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:36	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: SED-6
Lab Sample ID: 240-114843-13
Date Collected: 06/20/19 11:50
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 11:59	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:41	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: SED-7
Lab Sample ID: 240-114843-14
Date Collected: 06/20/19 12:00
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 12:21	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:54	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Client Sample ID: SED-8
Lab Sample ID: 240-114843-15
Date Collected: 06/20/19 12:10
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 12:43	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 19:59	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: 062019-13
Lab Sample ID: 240-114843-16
Date Collected: 06/20/19 00:00
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 13:04	TJL2	TAL CAN
Total/NA	Prep	3050B			387912	06/24/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388280	06/25/19 20:03	RKT	TAL CAN
Total/NA	Analysis	Moisture		1	388470	06/26/19 16:25	EHC	TAL CAN

Client Sample ID: RINSATE #3
Lab Sample ID: 240-114843-17
Date Collected: 06/20/19 00:00
Matrix: Water
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 18:44	SJN	TAL CF
Total Recoverable	Prep	3005A			387824	06/24/19 14:00	SLD	TAL CAN
Total Recoverable	Analysis	6020B		1	388292	06/25/19 14:15	DSH	TAL CAN

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-114843-18
Date Collected: 06/20/19 00:00
Matrix: Water
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 18:19	SJN	TAL CF

Client Sample ID: TRIP BLANK
Lab Sample ID: 240-114843-19
Date Collected: 06/20/19 00:00
Matrix: Solid
Date Received: 06/21/19 09:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			387767	06/23/19 19:46	LAM	TAL CAN
Total/NA	Analysis	8260B		1	387999	06/25/19 13:26	TJL2	TAL CAN

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114843-1
SDG: 2606-0016

Laboratory: Eurofins TestAmerica, Canton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	039-999-348	12-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Solid	Percent Moisture
Moisture		Solid	Percent Solids

Laboratory: Eurofins TestAmerica, Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: Wenck Associates
Client #: _____
Address: 1802 Wooddale Drive
City/State/Zip Code: Woodbury, MN 55125
Project Manager: Shane Waterman / Chris Brasch
Email Address: SWaterman@wenck.com
Telephone Number: _____
Fax: _____
Sampler Name: (Print Name) Kelly Jawarski, Ben Kramka
Sampler Signature: [signature]

Project Name: Water Gremlin
Project #: 26006-0016
Site/Location ID: White Bear Lake
State: MN
Report To: Shane Waterman, Chris Brasch
~~Invoice To~~: Kelly Jawarski, Ben Kramka
Quote #: _____
PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y (N)
Email Results: (Y) N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix (SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify Other)	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: Lead (EPA 6020)	VOCs Modified List	Moisture	QC Deliverables: ___ None, ___ Level 2 (Batch QC), ___ Level 3, ___ Level 4, Other: _____	REMARKS
SW-1	6/20	1000	G	NO	SW								X	X			
SW-2	6/20	1010	G										X	X			
SW-3	6/20	1020	G										X	X			
SW-4	6/20	1030	G										X	X			
SW-5	6/20	1040	G										X	X			
SW-6	6/20	1050	G										X	X			
062019-A	6/20		G										X	X			
SED-1	6/20	1100	G	NA	S						1	1	X	X			
SED-2	6/20	1110	G	NA	S						1	1	X	X			
SED-3	6/20	1120	G	NA	S						1	1	X	X			

Special Instructions: SW = Surface Water

TestAmerica Minneapolis SC
213

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jawarski	6/20	1430	[signature]	6/20	1430
[signature]	6/20	1700	[signature]	6-21-19	935
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

LABORATORY COMMENTS:
240-114843 Chain of Custody

TAL-0033 (0708)

Page 1 of 2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

4.0/4.1 3.2/3.3

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring

Client Name: WENCK ASSOCIATES Client #:
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN / CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number: Fax:
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature:

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE State: MN
Report To: SHANE WATERMAN, CHRIS BRATSCH
Invoice To: KELLY JAWORSKI, BEN KRAMKA
Quote #: PO#:

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y N
Email Results: Y N

Matrix: SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify, Other
Preservation & # of Containers
Analyze For:

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify, Other	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	LEAD (EPA 6020)	VOC Modified List	MOISTURE	REMARKS
SED-4	6/20	1130	G	NA	S					1	1		X	X		
SED-5	6/20	1140	G	NA	S					1	1		X	X		
SED-6	6/20	1150	G	NA	S					1	1		X	X		
SED-7	6/20	1200	G	NA	S					1	1		X	X		
SED-8	6/20	1210	G	NA	S					1	1		X	X		
062019-13	6/20		G	NA	S					1	1		X	X		

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

Special Instructions:

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
KELLY JAWORSKI	6/20	1430	Barb Butler	6/20	1430
Barb Butler	6/20	1710	[signature]	6-21-19	935

TAL-0033 (0708)

Page 2 of 2

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # :** 114843
Canton Facility

Client Wenck Associates Site Name _____ Cooler unpacked by: Ryan Cribler
Cooler Received on 6-21-19 Opened on 6-21-19 935
FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____
Packing material used: Bubble Wrap Foam Plastic Bag None Other _____
COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☒ See Multiple Cooler Form
   IR GUN# IR-8 (CF **+0.1** °C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
   IR GUN #36 (CF **+0.6**°C) Observed Cooler Temp._____°C Corrected Cooler Temp._____°C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 2 total — Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? — Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? — Yes No
   -Were tamper/custody seals intact and uncompromised? — Yes No NA
3. Shippers' packing slip attached to the cooler(s)? — Yes No
4. Did custody papers accompany the sample(s)? — Yes No
5. Were the custody papers relinquished & signed in the appropriate place? — Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? — Yes No
7. Did all bottles arrive in good condition (Unbroken)? — Yes No
8. Could all bottle labels be reconciled with the COC? — ~~Yes~~ No
9. Were correct bottle(s) used for the test(s) indicated? — Yes No
10. Sufficient quantity received to perform indicated analyses? — Yes No
11. Are these work share samples? — Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? — Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? — Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. — Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # #375 — Yes No
16. Was a LL Hg or Me Hg trip blank present? _____ — Yes No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES Samples processed by: JB

1) 2-250ml Plastic bottles labeled: "062019" with sample date of "6/20" matched two lines on CoC: "062019-A" and "062019-B". I grouped ~~one each~~ both under line #7
2) Received 2-250ml Plastic bottles: "Rinsate #3" and 3-40ml VOA vials labeled "Rinsate #3" not on CoC.
3) Received 3 Trip Blanks and 1 soil trip blank not on CoC

18. SAMPLE CONDITION
Sample(s) _____ were received after the recommended holding time had expired.
Sample(s) _____ were received in a broken container.
Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.
Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

WI-NC-099

Login # : 114843

TestAmerica Canton Sample Receipt Multiple Cooler Form				
Cooler Description (Circle)	IR Gun # (Circle)	Observed Temp °C	Corrected Temp °C	Coolant (Circle)
TA Client Box Other	IR-8 #36	4.0	4.1	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36	3.2	3.3	Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
TA Client Box Other	IR-8 #36			Wet Ice Blue Ice Dry Ice Water None
☐ See Temperature Excursion Form				

WI-NC-099 Cooler Receipt Form Page 2 Multiple Coolers

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

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Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 240-105739.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: zach.bindert@testamericainc.com	State of Origin: Minnesota	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): NELAP - Minnesota		Job #: 240-114843-1
Address: 3019 Venture Way, ,	Due Date Requested: 6/27/2019			
City: Cedar Falls	TAT Requested (days):			
State, Zip: IA, 50613				
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO #:			
Email:	WO #:			
Project Name: Water Gremlin Co. Remedial Investigation	Project #: 31011233			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B/5030B (MOD) Volatile Minnesota Sublist	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
SW-1 (240-114843-1)	6/20/19	10:00 Central		Water			X	9	
SW-2 (240-114843-2)	6/20/19	10:10 Central		Water			X	3	
SW-3 (240-114843-3)	6/20/19	10:20 Central		Water			X	3	
SW-4 (240-114843-4)	6/20/19	10:30 Central		Water			X	3	
SW-5 (240-114843-5)	6/20/19	10:40 Central		Water			X	3	
SW-6 (240-114843-6)	6/20/19	10:50 Central		Water			X	3	
062019-A (240-114843-7)	6/20/19	Central		Water			X	3	
RINSATE #3 (240-114843-17)	6/20/19	Central		Water			X	3	
TRIP BLANK (240-114843-18)	6/20/19	Central		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information			
Client: Canton TA			
City/State: CITY North Canton	STATE OH	Project:	
Receipt Information			
Date/Time Received: DATE 10/26/19	TIME 0905	Received By: KB	
Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____			
Condition of Cooler/Containers			
Sample(s) received in Cooler?	☑ Yes ☐ No	*If yes:* Cooler ID:	
Multiple Coolers?	☐ Yes ☑ No	*If yes:* Cooler # _____ of _____	
Cooler Custody Seals Present?	☐ Yes ☑ No	*If yes:* Cooler custody seals intact?	☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes ☑ No	*If yes:* Sample custody seals intact?	☐ Yes ☐ No
Trip Blank Present?	☑ Yes ☐ No	*If yes:* Which VOA samples are in cooler? ↓	
Temperature Record			
Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE			
Thermometer ID: M		Correction Factor (°C): -0.1	
• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature			
Uncorrected Temp (°C):		Corrected Temp (°C):	
• **Sample Container Temperature**			
Container(s) used:	CONTAINER 1: 40mL HCl vial - Glass	CONTAINER 2:	
Uncorrected Temp (°C):	4.3		
Corrected Temp (°C):	4.2		
Exceptions Noted			
1) If temperature exceeds criteria, was sample(s) received same day of sampling?		☐ Yes	☐ No
a) *If yes:* Is there evidence that the chilling process began?		☐ Yes	☐ No
2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?)		☐ Yes	☐ No
NOTE: If yes, contact PM before proceeding. If no, proceed with login			
Additional Comments			

Document: CF-LG-WI-002
Revision: 25
Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C
Bacteria temperature criteria is 0 to 10°C

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114843-1
SDG Number: 2606-0016

Login Number: 114843
List Number: 2
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 01:27 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114843-1
SDG Number: 2606-0016

Login Number: 114843
List Number: 3
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 01:28 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114843-1
SDG Number: 2606-0016

Login Number: 114843
List Number: 4
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 01:34 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-114912-1
Laboratory Sample Delivery Group: 2606-0016
Client Project/Site: Water Gremlin Co. Remedial Investigation

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
7/1/2019 5:03:06 PM

Zach Bindert, Project Manager I
(319)277-2401
zach.bindert@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Definitions/Glossary 3
Case Narrative 4
Method Summary 5
Sample Summary 6
Detection Summary 7
Client Sample Results 9
Surrogate Summary 25
QC Sample Results 27
QC Association Summary 31
Lab Chronicle 33
Certification Summary 36
Chain of Custody 37
Receipt Checklists 42

Definitions/Glossary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job ID: 240-114912-1

Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-114912-1

Comments
No additional comments.

Receipt
The samples were received on 6/22/2019 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.1º C.

The laboratoy did not receive a methanol blank with this set of samples. The laboratory did receive HCl trip blanks.

GC/MS VOA
Method(s) 5035: This methanol preserved terra core was received dry and is not usable. The client was conctacted and instructed the laboratory to cancel analysis on this sample as they were unable to obtain additional sample volume.

GP-13 (8-10) (240-114912-13)

Method(s) 8260B: A MS/MSD was prepared for batch 240-388063, but was analyzed in a different analytical batch.

GP-11 (6-8) (240-114912-3), GP-12 (8-9.5) (240-114912-7) and GP-12 (4-6) (240-114912-8)

Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-11 (5-10) (240-114912-2), GP-11 (15-17) (240-114912-4), GP-12 (7-10) (240-114912-9), GP-12 (15-17) (240-114912-10), GP-12 (22-24) (240-114912-11), GP-13 (7-10) (240-114912-14), GP-13 (15-17) (240-114912-15) and GP-13 (22-24) (240-114912-16).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CAN
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CF
6010D	Metals (ICP)	SW846	TAL CAN
Moisture	Percent Moisture	EPA	TAL CAN
3050B	Preparation, Metals	SW846	TAL CAN
5030B	Purge and Trap	SW846	TAL CF
5035	Closed System Purge and Trap	SW846	TAL CAN

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-114912-1	GP-11 (0-1)	Soil	06/21/19 09:00	06/22/19 09:45	
240-114912-2	GP-11 (5-10)	Ground Water	06/21/19 09:45	06/22/19 09:45	
240-114912-3	GP-11 (6-8)	Soil	06/21/19 10:00	06/22/19 09:45	
240-114912-4	GP-11 (15-17)	Ground Water	06/21/19 10:20	06/22/19 09:45	
240-114912-5	GP-12 (0-1)	Soil	06/21/19 10:50	06/22/19 09:45	
240-114912-6	GP-12 (6-8)	Soil	06/21/19 11:05	06/22/19 09:45	
240-114912-7	GP-12 (8-9.5)	Soil	06/21/19 11:20	06/22/19 09:45	
240-114912-8	GP-12 (4-6)	Soil	06/21/19 11:30	06/22/19 09:45	
240-114912-9	GP-12 (7-10)	Ground Water	06/21/19 11:50	06/22/19 09:45	
240-114912-10	GP-12 (15-17)	Ground Water	06/21/19 12:15	06/22/19 09:45	
240-114912-11	GP-12 (22-24)	Ground Water	06/21/19 12:30	06/22/19 09:45	
240-114912-12	GP-13 (0-1)	Soil	06/21/19 13:00	06/22/19 09:45	
240-114912-14	GP-13 (7-10)	Ground Water	06/21/19 13:45	06/22/19 09:45	
240-114912-15	GP-13 (15-17)	Ground Water	06/21/19 14:25	06/22/19 09:45	
240-114912-16	GP-13 (22-24)	Ground Water	06/21/19 14:45	06/22/19 09:45	
240-114912-17	HCL Trip Blank	Water	06/21/19 00:00	06/22/19 09:45	

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-11 (0-1) — Lab Sample ID: 240-114912-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	157	F1	0.972		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-11 (5-10) — Lab Sample ID: 240-114912-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	3.87		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-11 (6-8) — Lab Sample ID: 240-114912-3

No Detections.

Client Sample ID: GP-11 (15-17) — Lab Sample ID: 240-114912-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.27		1.00		ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.31		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	1.31		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-12 (0-1) — Lab Sample ID: 240-114912-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	147		0.992		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-12 (6-8) — Lab Sample ID: 240-114912-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	17.5		1.04		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-12 (8-9.5) — Lab Sample ID: 240-114912-7

No Detections.

Client Sample ID: GP-12 (4-6) — Lab Sample ID: 240-114912-8

No Detections.

Client Sample ID: GP-12 (7-10) — Lab Sample ID: 240-114912-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	15.7		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-12 (15-17) — Lab Sample ID: 240-114912-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	28.4		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-12 (22-24) — Lab Sample ID: 240-114912-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.05		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-13 (0-1) — Lab Sample ID: 240-114912-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	158		0.893		mg/Kg	1	☼	6010D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-13 (7-10) — Lab Sample ID: 240-114912-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroethane	4.91		4.00		ug/L	1		8260B	Total/NA
1,1-Dichloroethane	15.1		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-13 (15-17) — Lab Sample ID: 240-114912-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloroethane	6.58		4.00		ug/L	1		8260B	Total/NA
1,1-Dichloroethane	22.3		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-13 (22-24) — Lab Sample ID: 240-114912-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	2.35		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: HCL Trip Blank — Lab Sample ID: 240-114912-17

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-11 (0-1)

Lab Sample ID: 240-114912-1

Date Collected: 06/21/19 09:00
Matrix: Soil
Date Received: 06/22/19 09:45

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	157	F1	0.972		mg/Kg	☼	06/25/19 14:00	06/27/19 04:34	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	93.5		0.1		%			06/27/19 17:01	1
Percent Moisture	6.5		0.1		%			06/27/19 17:01	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-11 (5-10)

Date Collected: 06/21/19 09:45
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-2

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 17:53	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 17:53	1
1,1-Dichloroethane	**3.87**		1.00		ug/L			06/29/19 17:53	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 17:53	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 17:53	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 17:53	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 17:53	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 17:53	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 17:53	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 17:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*06/29/19 17:53*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 17:53*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/29/19 17:53*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-11 (6-8)

Lab Sample ID: 240-114912-3

Date Collected: 06/21/19 10:00
Date Received: 06/22/19 09:45

Matrix: Soil

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
cis-1,2-Dichloroethene	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
1,1-Dichloroethane	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
1,2-Dichloroethane	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
1,1-Dichloroethene	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
Tetrachloroethene	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
trans-1,2-Dichloroethene	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
1,1,1-Trichloroethane	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
Trichloroethene	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1
Vinyl chloride	<0.153		0.153		mg/Kg	☼	06/25/19 08:54	06/26/19 09:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*48 - 151*	*06/25/19 08:54*	*06/26/19 09:31*	*1*
Dibromofluoromethane (Surr)	*103*		*49 - 138*	*06/25/19 08:54*	*06/26/19 09:31*	*1*
Toluene-d8 (Surr)	*106*		*49 - 147*	*06/25/19 08:54*	*06/26/19 09:31*	*1*
1,2-Dichloroethane-d4 (Surr)	*125*		*53 - 155*	*06/25/19 08:54*	*06/26/19 09:31*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**89.8**		0.1		%			06/27/19 17:01	1
Percent Moisture	**10.2**		0.1		%			06/27/19 17:01	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-11 (15-17)

Lab Sample ID: 240-114912-4

Date Collected: 06/21/19 10:20
Date Received: 06/22/19 09:45

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 17:28	1
cis-1,2-Dichloroethene	**1.27**		1.00		ug/L			06/29/19 17:28	1
1,1-Dichloroethane	**1.31**		1.00		ug/L			06/29/19 17:28	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 17:28	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 17:28	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 17:28	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 17:28	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 17:28	1
Trichloroethene	**1.31**		1.00		ug/L			06/29/19 17:28	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 17:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/29/19 17:28*	*1*
Dibromofluoromethane (Surr)	*105*		*80 - 120*		*06/29/19 17:28*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/29/19 17:28*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (0-1)

Lab Sample ID: 240-114912-5

Date Collected: 06/21/19 10:50
Matrix: Soil
Date Received: 06/22/19 09:45

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	147		0.992		mg/Kg	☼	06/25/19 14:00	06/27/19 04:54	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	94.2		0.1		%			06/27/19 17:01	1
Percent Moisture	5.8		0.1		%			06/27/19 17:01	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (6-8)

Lab Sample ID: 240-114912-6

Date Collected: 06/21/19 11:05
Matrix: Soil
Date Received: 06/22/19 09:45

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	17.5		1.04		mg/Kg	☼	06/25/19 14:00	06/27/19 04:59	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	89.6		0.1		%			06/27/19 17:01	1
Percent Moisture	10.4		0.1		%			06/27/19 17:01	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (8-9.5)

Lab Sample ID: 240-114912-7

Date Collected: 06/21/19 11:20
Matrix: Soil
Date Received: 06/22/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
cis-1,2-Dichloroethene	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
1,1-Dichloroethane	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
1,2-Dichloroethane	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
1,1-Dichloroethene	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
Tetrachloroethene	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
trans-1,2-Dichloroethene	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
1,1,1-Trichloroethane	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
Trichloroethene	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1
Vinyl chloride	<0.277		0.277		mg/Kg	☼	06/25/19 08:54	06/26/19 09:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*48 - 151*	*06/25/19 08:54*	*06/26/19 09:53*	*1*
Dibromofluoromethane (Surr)	*100*		*49 - 138*	*06/25/19 08:54*	*06/26/19 09:53*	*1*
Toluene-d8 (Surr)	*100*		*49 - 147*	*06/25/19 08:54*	*06/26/19 09:53*	*1*
1,2-Dichloroethane-d4 (Surr)	*117*		*53 - 155*	*06/25/19 08:54*	*06/26/19 09:53*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**84.2**		0.1		%			06/27/19 17:01	1
Percent Moisture	**15.8**		0.1		%			06/27/19 17:01	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (4-6)

Lab Sample ID: 240-114912-8

Date Collected: 06/21/19 11:30
Date Received: 06/22/19 09:45

Matrix: Soil

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
cis-1,2-Dichloroethene	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
1,1-Dichloroethane	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
1,2-Dichloroethane	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
1,1-Dichloroethene	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
Tetrachloroethene	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
trans-1,2-Dichloroethene	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
1,1,1-Trichloroethane	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
Trichloroethene	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1
Vinyl chloride	<0.230		0.230		mg/Kg	☼	06/25/19 08:54	06/26/19 10:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*48 - 151*	*06/25/19 08:54*	*06/26/19 10:15*	*1*
Dibromofluoromethane (Surr)	*96*		*49 - 138*	*06/25/19 08:54*	*06/26/19 10:15*	*1*
Toluene-d8 (Surr)	*97*		*49 - 147*	*06/25/19 08:54*	*06/26/19 10:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*114*		*53 - 155*	*06/25/19 08:54*	*06/26/19 10:15*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	**91.5**		0.1		%			06/27/19 17:01	1
Percent Moisture	**8.5**		0.1		%			06/27/19 17:01	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (7-10)

Date Collected: 06/21/19 11:50
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-9

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 17:02	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 17:02	1
1,1-Dichloroethane	**15.7**		1.00		ug/L			06/29/19 17:02	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 17:02	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 17:02	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 17:02	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 17:02	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 17:02	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 17:02	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 17:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/29/19 17:02*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*06/29/19 17:02*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/29/19 17:02*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (15-17)

Date Collected: 06/21/19 12:15
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-10

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 16:36	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 16:36	1
1,1-Dichloroethane	**28.4**		1.00		ug/L			06/29/19 16:36	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 16:36	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 16:36	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 16:36	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 16:36	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 16:36	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 16:36	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 16:36	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/29/19 16:36*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*06/29/19 16:36*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*06/29/19 16:36*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (22-24)

Date Collected: 06/21/19 12:30
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-11

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 16:11	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 16:11	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 16:11	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 16:11	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 16:11	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 16:11	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 16:11	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 16:11	1
Trichloroethene	**1.05**		1.00		ug/L			06/29/19 16:11	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 16:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*06/29/19 16:11*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/29/19 16:11*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/29/19 16:11*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-13 (0-1)

Date Collected: 06/21/19 13:00
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-12

Matrix: Soil

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	158		0.893		mg/Kg	☼	06/25/19 14:00	06/27/19 05:11	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	81.7		0.1		%			06/27/19 17:01	1
Percent Moisture	18.3		0.1		%			06/27/19 17:01	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-13 (7-10)

Date Collected: 06/21/19 13:45
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-14

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	**4.91**		4.00		ug/L			06/29/19 15:45	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 15:45	1
1,1-Dichloroethane	**15.1**		1.00		ug/L			06/29/19 15:45	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 15:45	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 15:45	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 15:45	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 15:45	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 15:45	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 15:45	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 15:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/29/19 15:45*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*06/29/19 15:45*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/29/19 15:45*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-13 (15-17)

Date Collected: 06/21/19 14:25
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-15

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	**6.58**		4.00		ug/L			06/29/19 15:19	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 15:19	1
1,1-Dichloroethane	**22.3**		1.00		ug/L			06/29/19 15:19	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 15:19	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 15:19	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 15:19	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 15:19	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 15:19	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 15:19	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*06/29/19 15:19*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/29/19 15:19*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*06/29/19 15:19*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-13 (22-24)

Date Collected: 06/21/19 14:45
Date Received: 06/22/19 09:45

Lab Sample ID: 240-114912-16

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 14:27	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:27	1
1,1-Dichloroethane	**2.35**		1.00		ug/L			06/29/19 14:27	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 14:27	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 14:27	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 14:27	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:27	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 14:27	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 14:27	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 14:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*06/29/19 14:27*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 14:27*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*06/29/19 14:27*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: HCL Trip Blank

Lab Sample ID: 240-114912-17

Date Collected: 06/21/19 00:00
Matrix: Water
Date Received: 06/22/19 09:45

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 14:53	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:53	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 14:53	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 14:53	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 14:53	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 14:53	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:53	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 14:53	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 14:53	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 14:53	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*06/29/19 14:53*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*06/29/19 14:53*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*06/29/19 14:53*	*1*

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Ground Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
240-114912-2	GP-11 (5-10)	105	104	100
240-114912-4	GP-11 (15-17)	99	105	102
240-114912-9	GP-12 (7-10)	98	102	98
240-114912-10	GP-12 (15-17)	99	106	98
240-114912-11	GP-12 (22-24)	101	103	101
240-114912-14	GP-13 (7-10)	102	106	101
240-114912-15	GP-13 (15-17)	98	103	100
240-114912-16	GP-13 (22-24)	102	104	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Soil — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(48-151)	(49-138)	(49-147)	(53-155)
240-114912-3	GP-11 (6-8)	105	103	106	125
240-114912-7	GP-12 (8-9.5)	98	100	100	117
240-114912-8	GP-12 (4-6)	95	96	97	114

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(48-151)	(49-138)	(49-147)	(53-155)
LCS 240-388063/2-A	Lab Control Sample	84	83	86	76
MB 240-388063/1-A	Method Blank	77	75	79	75

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	DBFM	TOL	DCA
Lab Sample ID	Client Sample ID	(10-150)	(10-150)	(10-150)	(10-150)
MRL 240-388063/3-A	Lab Control Sample	75	75	77	70

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	**Client Sample ID**	**(80-120)**	**(80-120)**	**(80-120)**
240-114912-17	HCL Trip Blank	101	103	99
LCS 310-244255/6	Lab Control Sample	99	104	103
LCS 310-244255/7	Lab Control Sample	99	106	98
MB 310-244255/8	Method Blank	99	104	102

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-244255/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244255

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			06/29/19 14:02	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
1,1-Dichloroethane	<1.00		1.00		ug/L			06/29/19 14:02	1
1,2-Dichloroethane	<1.00		1.00		ug/L			06/29/19 14:02	1
1,1-Dichloroethene	<2.00		2.00		ug/L			06/29/19 14:02	1
Tetrachloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			06/29/19 14:02	1
Trichloroethene	<1.00		1.00		ug/L			06/29/19 14:02	1
Vinyl chloride	<1.00		1.00		ug/L			06/29/19 14:02	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*06/29/19 14:02*	*1*
Dibromofluoromethane (Surr)	*104*		*80 - 120*		*06/29/19 14:02*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*06/29/19 14:02*	*1*

Lab Sample ID: LCS 310-244255/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244255

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	21.60		ug/L		108	77 - 120
1,1-Dichloroethane	20.0	20.01		ug/L		100	75 - 125
1,2-Dichloroethane	20.0	21.43		ug/L		107	75 - 123
1,1-Dichloroethene	20.0	20.23		ug/L		101	75 - 124
Tetrachloroethene	20.0	22.30		ug/L		111	72 - 129
trans-1,2-Dichloroethene	20.0	20.12		ug/L		101	75 - 122
1,1,1-Trichloroethane	20.0	20.61		ug/L		103	76 - 127
Trichloroethene	20.0	21.02		ug/L		105	77 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*104*		*80 - 120*
Toluene-d8 (Surr)	*103*		*80 - 120*

Lab Sample ID: LCS 310-244255/7 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244255

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	20.48		ug/L		102	69 - 129
Vinyl chloride	20.0	20.18		ug/L		101	67 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*106*		*80 - 120*
Toluene-d8 (Surr)	*98*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 240-388063/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388104 — **Prep Batch: 388063**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
cis-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
1,1-Dichloroethane	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
1,2-Dichloroethane	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
1,1-Dichloroethene	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
Tetrachloroethene	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
trans-1,2-Dichloroethene	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
1,1,1-Trichloroethane	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
Trichloroethene	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1
Vinyl chloride	<0.250		0.250		mg/Kg		06/25/19 08:54	06/25/19 17:45	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*77*		*48 - 151*	*06/25/19 08:54*	*06/25/19 17:45*	*1*
Dibromofluoromethane (Surr)	*75*		*49 - 138*	*06/25/19 08:54*	*06/25/19 17:45*	*1*
Toluene-d8 (Surr)	*79*		*49 - 147*	*06/25/19 08:54*	*06/25/19 17:45*	*1*
1,2-Dichloroethane-d4 (Surr)	*75*		*53 - 155*	*06/25/19 08:54*	*06/25/19 17:45*	*1*

Lab Sample ID: LCS 240-388063/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388104 — **Prep Batch: 388063**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	1.00	0.2894		mg/Kg		29	15 - 155
cis-1,2-Dichloroethene	1.00	0.8772		mg/Kg		88	74 - 123
1,1-Dichloroethane	1.00	0.7645		mg/Kg		76	72 - 122
1,2-Dichloroethane	1.00	0.8214		mg/Kg		82	64 - 126
1,1-Dichloroethene	1.00	0.5863		mg/Kg		59	57 - 139
Tetrachloroethene	1.00	0.8569		mg/Kg		86	76 - 120
trans-1,2-Dichloroethene	1.00	0.8745		mg/Kg		87	71 - 133
1,1,1-Trichloroethane	1.00	0.7321		mg/Kg		73	64 - 135
Trichloroethene	1.00	0.9528		mg/Kg		95	73 - 126
Vinyl chloride	1.00	0.8557		mg/Kg		86	52 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*84*		*48 - 151*
Dibromofluoromethane (Surr)	*83*		*49 - 138*
Toluene-d8 (Surr)	*86*		*49 - 147*
1,2-Dichloroethane-d4 (Surr)	*76*		*53 - 155*

Lab Sample ID: MRL 240-388063/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388104 — **Prep Batch: 388063**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	0.250	0.06014		ng/uL		24	10 - 150
cis-1,2-Dichloroethene	0.250	0.2130		ng/uL		85	10 - 150
1,1-Dichloroethane	0.250	0.1820		ng/uL		73	10 - 150
1,2-Dichloroethane	0.250	0.1951		ng/uL		78	10 - 150

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MRL 240-388063/3-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388104 — **Prep Batch: 388063**

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
1,1-Dichloroethene	0.250	0.1936		ng/uL		77	10 - 150
Tetrachloroethene	0.250	0.2447		ng/uL		98	10 - 150
trans-1,2-Dichloroethene	0.250	0.2085		ng/uL		83	10 - 150
1,1,1-Trichloroethane	0.250	0.1605		ng/uL		64	10 - 150
Trichloroethene	0.250	0.2200		ng/uL		88	10 - 150
Vinyl chloride	0.250	0.1878		ng/uL		75	10 - 150

Surrogate	*MRL %Recovery*	*MRL Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*75*		*10 - 150*
Dibromofluoromethane (Surr)	*75*		*10 - 150*
Toluene-d8 (Surr)	*77*		*10 - 150*
1,2-Dichloroethane-d4 (Surr)	*70*		*10 - 150*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 240-388116/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388536 — **Prep Batch: 388116**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<1.00		1.00		mg/Kg		06/25/19 14:00	06/27/19 04:26	1

Lab Sample ID: LCS 240-388116/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 388536 — **Prep Batch: 388116**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	100	93.87		mg/Kg		94	80 - 120

Lab Sample ID: 240-114912-1 MS — **Client Sample ID: GP-11 (0-1)**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 388536 — **Prep Batch: 388116**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	157	F1	91.4	293.8	F1	mg/Kg	☼	149	75 - 125

Lab Sample ID: 240-114912-1 MSD — **Client Sample ID: GP-11 (0-1)**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 388536 — **Prep Batch: 388116**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	157	F1	91.4	287.7	F1	mg/Kg	☼	143	75 - 125	2	20

QC Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Method: Moisture - Percent Moisture

Lab Sample ID: 240-114912-12 DU
Matrix: Soil
Analysis Batch: 388727

Client Sample ID: GP-13 (0-1)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Percent Solids	81.7			81.8		%				0.08	20
Percent Moisture	18.3			18.2		%				0.4	20

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

GC/MS VOA

Analysis Batch: 244255

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114912-2	GP-11 (5-10)	Total/NA	Ground Water	8260B	
240-114912-4	GP-11 (15-17)	Total/NA	Ground Water	8260B	
240-114912-9	GP-12 (7-10)	Total/NA	Ground Water	8260B	
240-114912-10	GP-12 (15-17)	Total/NA	Ground Water	8260B	
240-114912-11	GP-12 (22-24)	Total/NA	Ground Water	8260B	
240-114912-14	GP-13 (7-10)	Total/NA	Ground Water	8260B	
240-114912-15	GP-13 (15-17)	Total/NA	Ground Water	8260B	
240-114912-16	GP-13 (22-24)	Total/NA	Ground Water	8260B	
240-114912-17	HCL Trip Blank	Total/NA	Water	8260B	
MB 310-244255/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244255/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244255/7	Lab Control Sample	Total/NA	Water	8260B	

Prep Batch: 388063

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114912-3	GP-11 (6-8)	Total/NA	Soil	5035	
240-114912-7	GP-12 (8-9.5)	Total/NA	Soil	5035	
240-114912-8	GP-12 (4-6)	Total/NA	Soil	5035	
MB 240-388063/1-A	Method Blank	Total/NA	Solid	5035	
LCS 240-388063/2-A	Lab Control Sample	Total/NA	Solid	5035	
MRL 240-388063/3-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 388104

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 240-388063/1-A	Method Blank	Total/NA	Solid	8260B	388063
LCS 240-388063/2-A	Lab Control Sample	Total/NA	Solid	8260B	388063
MRL 240-388063/3-A	Lab Control Sample	Total/NA	Solid	8260B	388063

Analysis Batch: 388244

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114912-3	GP-11 (6-8)	Total/NA	Soil	8260B	388063
240-114912-7	GP-12 (8-9.5)	Total/NA	Soil	8260B	388063
240-114912-8	GP-12 (4-6)	Total/NA	Soil	8260B	388063

Metals

Prep Batch: 388116

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114912-1	GP-11 (0-1)	Total/NA	Soil	3050B	
240-114912-5	GP-12 (0-1)	Total/NA	Soil	3050B	
240-114912-6	GP-12 (6-8)	Total/NA	Soil	3050B	
240-114912-12	GP-13 (0-1)	Total/NA	Soil	3050B	
MB 240-388116/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 240-388116/2-A	Lab Control Sample	Total/NA	Solid	3050B	
240-114912-1 MS	GP-11 (0-1)	Total/NA	Soil	3050B	
240-114912-1 MSD	GP-11 (0-1)	Total/NA	Soil	3050B	

Analysis Batch: 388536

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114912-1	GP-11 (0-1)	Total/NA	Soil	6010D	388116
240-114912-5	GP-12 (0-1)	Total/NA	Soil	6010D	388116

Metals (Continued)

Analysis Batch: 388536 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114912-6	GP-12 (6-8)	Total/NA	Soil	6010D	388116
240-114912-12	GP-13 (0-1)	Total/NA	Soil	6010D	388116
MB 240-388116/1-A	Method Blank	Total/NA	Solid	6010D	388116
LCS 240-388116/2-A	Lab Control Sample	Total/NA	Solid	6010D	388116
240-114912-1 MS	GP-11 (0-1)	Total/NA	Soil	6010D	388116
240-114912-1 MSD	GP-11 (0-1)	Total/NA	Soil	6010D	388116

General Chemistry

Analysis Batch: 388727

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-114912-1	GP-11 (0-1)	Total/NA	Soil	Moisture	
240-114912-3	GP-11 (6-8)	Total/NA	Soil	Moisture	
240-114912-5	GP-12 (0-1)	Total/NA	Soil	Moisture	
240-114912-6	GP-12 (6-8)	Total/NA	Soil	Moisture	
240-114912-7	GP-12 (8-9.5)	Total/NA	Soil	Moisture	
240-114912-8	GP-12 (4-6)	Total/NA	Soil	Moisture	
240-114912-12	GP-13 (0-1)	Total/NA	Soil	Moisture	
240-114912-12 DU	GP-13 (0-1)	Total/NA	Soil	Moisture	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-11 (0-1)
Lab Sample ID: 240-114912-1
Date Collected: 06/21/19 09:00
Matrix: Soil
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			388116	06/25/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388536	06/27/19 04:34	WKD	TAL CAN
Total/NA	Analysis	Moisture		1	388727	06/27/19 17:01	EHC	TAL CAN

Client Sample ID: GP-11 (5-10)
Lab Sample ID: 240-114912-2
Date Collected: 06/21/19 09:45
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 17:53	SJN	TAL CF

Client Sample ID: GP-11 (6-8)
Lab Sample ID: 240-114912-3
Date Collected: 06/21/19 10:00
Matrix: Soil
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			388063	06/25/19 08:54	LAM	TAL CAN
Total/NA	Analysis	8260B		1	388244	06/26/19 09:31	TJL2	TAL CAN
Total/NA	Analysis	Moisture		1	388727	06/27/19 17:01	EHC	TAL CAN

Client Sample ID: GP-11 (15-17)
Lab Sample ID: 240-114912-4
Date Collected: 06/21/19 10:20
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 17:28	SJN	TAL CF

Client Sample ID: GP-12 (0-1)
Lab Sample ID: 240-114912-5
Date Collected: 06/21/19 10:50
Matrix: Soil
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			388116	06/25/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388536	06/27/19 04:54	WKD	TAL CAN
Total/NA	Analysis	Moisture		1	388727	06/27/19 17:01	EHC	TAL CAN

Client Sample ID: GP-12 (6-8)
Lab Sample ID: 240-114912-6
Date Collected: 06/21/19 11:05
Matrix: Soil
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			388116	06/25/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388536	06/27/19 04:59	WKD	TAL CAN
Total/NA	Analysis	Moisture		1	388727	06/27/19 17:01	EHC	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-12 (8-9.5)
Lab Sample ID: 240-114912-7
Date Collected: 06/21/19 11:20
Matrix: Soil
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			388063	06/25/19 08:54	LAM	TAL CAN
Total/NA	Analysis	8260B		1	388244	06/26/19 09:53	TJL2	TAL CAN
Total/NA	Analysis	Moisture		1	388727	06/27/19 17:01	EHC	TAL CAN

Client Sample ID: GP-12 (4-6)
Lab Sample ID: 240-114912-8
Date Collected: 06/21/19 11:30
Matrix: Soil
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			388063	06/25/19 08:54	LAM	TAL CAN
Total/NA	Analysis	8260B		1	388244	06/26/19 10:15	TJL2	TAL CAN
Total/NA	Analysis	Moisture		1	388727	06/27/19 17:01	EHC	TAL CAN

Client Sample ID: GP-12 (7-10)
Lab Sample ID: 240-114912-9
Date Collected: 06/21/19 11:50
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 17:02	SJN	TAL CF

Client Sample ID: GP-12 (15-17)
Lab Sample ID: 240-114912-10
Date Collected: 06/21/19 12:15
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 16:36	SJN	TAL CF

Client Sample ID: GP-12 (22-24)
Lab Sample ID: 240-114912-11
Date Collected: 06/21/19 12:30
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 16:11	SJN	TAL CF

Client Sample ID: GP-13 (0-1)
Lab Sample ID: 240-114912-12
Date Collected: 06/21/19 13:00
Matrix: Soil
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			388116	06/25/19 14:00	DEE	TAL CAN
Total/NA	Analysis	6010D		1	388536	06/27/19 05:11	WKD	TAL CAN
Total/NA	Analysis	Moisture		1	388727	06/27/19 17:01	EHC	TAL CAN

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Client Sample ID: GP-13 (7-10)
Lab Sample ID: 240-114912-14
Date Collected: 06/21/19 13:45
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 15:45	SJN	TAL CF

Client Sample ID: GP-13 (15-17)
Lab Sample ID: 240-114912-15
Date Collected: 06/21/19 14:25
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 15:19	SJN	TAL CF

Client Sample ID: GP-13 (22-24)
Lab Sample ID: 240-114912-16
Date Collected: 06/21/19 14:45
Matrix: Ground Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 14:27	SJN	TAL CF

Client Sample ID: HCL Trip Blank
Lab Sample ID: 240-114912-17
Date Collected: 06/21/19 00:00
Matrix: Water
Date Received: 06/22/19 09:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244255	06/29/19 14:53	SJN	TAL CF

Laboratory References:

TAL CAN = Eurofins TestAmerica, Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 240-114912-1
SDG: 2606-0016

Laboratory: Eurofins TestAmerica, Canton

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	039-999-348	12-31-19 *

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Soil	Percent Moisture
Moisture		Soil	Percent Solids

Laboratory: Eurofins TestAmerica, Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

2.0/2.1

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring

Client Name: WENCK ASSOCIATES
Client #:
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN, CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number:
Fax:
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature:

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE
State: MN
Report To: SHANE WATERMAN, CHRIS BRATSCH
~~Invoice To~~: KELLY JAWORSKI, BEN KRAMKA
Quote #:
PO#:

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed:
Fax Results: Y N
Email Results: Y N

Matrix: SL - Sludge DW - Drinking Water; GW - Groundwater S - Soil/Solid; WW - Wastewater Specify, Other
Preservation & # of Containers: HNO_3, HCl, NaOH, H_2SO_4, Methanol, None, Other (Specify)
Analyze For: Lead (EPA 6020), VOC Modified (US), Moisture

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other:

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Lead (EPA 6020)	VOC Modified (US)	Moisture							REMARKS
GP-11 (0-1)	6/21	900	G	NA	S						1		X									2001004934
GP-11 (5-10)	6/21	945	G	N	GW		3							X								2001004848
GP-11 (6-8)	6/21	1000	G	NA	S					1	1			X	X							2001004934
GP-11 (15-17)	6/21	1020	G	N	GW		3							X								2001004848
GP-12 (0-1)	6/21	1050	G	NA	S						1		X									2001004935
GP-12 (6-8)	6/21	1105	G	NA	S						1		X									2001004935
GP-12 (8-9.5)	6/21	1120	G	NA	S					1	1			X	X							2001004935
GP-12 (4-6)	6/21	1130	G	NA	S					1	1			X	X							2001004935
GP-12 (7-10)	6/21	1150	G	N	GW		3							X								2001004849
GP-12 (15-17)	6/21	1215	G	N	GW		3							X								2001004849

Special Instructions:

TestAmerica Minneapolis SC
213

LABORATORY COMMENTS:

240-114912 Chain of Custody

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
KELLY JAWORSKI	6/21	1605	Thomas J. Rein	6-21-19	16:05
Thomas J. Rein	6-21	17:00	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By:	6-22-19	9:45am

TAL-0033 (0708)

Page 1 of 2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring

Client Name: Wenck Associates
Client #:
Address: 1802 Wooddale Drive
City/State/Zip Code: Woodbury, MN 55125
Project Manager: Shane Waterman, Chris Bratsch
Email Address: swaterman@wenck.com
Telephone Number: 651-294-4588
Fax:
Sampler Name: (Print Name) Ben Kramka, Kelly Jaworski
Sampler Signature:

Project Name: Water Gremlin
Project #: 26006-0016
Site/Location ID: White Bear Lake
State: MN
Report To: Shane Waterman, Chris Bratsch
Invoice To:
Quote #:
PO#:

TestAmerica Minneapolis SC

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-day
Fax Results: Y (N)
Email Results: (Y) N

Analyze For: 213

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	LEAD (EPA 6020)	VOCs (Modified List)	Moisture	REMARKS
GP-12 (22-24)	6/21	1230	G	N	GW		3							X		200100 4947
GP-13 (0-1)	6/21	1300	G	NA	S						1		X			200100 4936
GP-13 (8-10)	6/21	1330	G	NA	S					1	1			X	X	200100 4936
GP-13 (7-10)	6/21	1345	G	N	GW		3							X	X	200100 4850
GP-13 (15-17)	6/21	1425	G	N	GW		3							X	X	200100 4850
GP-13 (22-24)	6/21	1445	G	N	GW		3							X	X	200100 4850
MeOH Trip Blank														X		
HCl Trip Blank														X		

Special Instructions:

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/21	1605	Thomas B. Reis	6-21-19	16:05
Thomas B. Reis	6-21	17:00	Received By:	Date:	Time:
Relinquished By:	Date:	Time:	Received By: Jenny Miller	6-22-19	9:45am

TAL-0033 (0708)

Page 2 of 2

Eurofins TestAmerica Canton Sample Receipt Form/Narrative
Canton Facility

Login # : 114912

Client Wenck Site Name Water Gremlin

Cooler Received on 6-22-19 Opened on 6-22-19

Cooler unpacked by: Jennifer Miller

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other

Receipt After-hours: Drop-off Date/Time Storage Location

TestAmerica Cooler # TA Mine Foam Box Client Cooler Box Other

Packing material used: Bubble Wrap Foam Plastic Bag None Other

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-8 (CF +0.1 °C) Observed Cooler Temp. 2.0 °C Corrected Cooler Temp. 2.1 °C
   IR GUN #36 (CF +0.6°C) Observed Cooler Temp. ____ °C Corrected Cooler Temp. ____ °C
2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1 Yes No
   -Were the seals on the outside of the cooler(s) signed & dated? Yes No NA
   -Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes No
   -Were tamper/custody seals intact and uncompromised? Yes No NA
3. Shippers' packing slip attached to the cooler(s)? Yes No
4. Did custody papers accompany the sample(s)? Yes No
5. Were the custody papers relinquished & signed in the appropriate place? Yes No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes No
7. Did all bottles arrive in good condition (Unbroken)? Yes No
8. Could all bottle labels be reconciled with the COC? Yes No
9. Were correct bottle(s) used for the test(s) indicated? Yes No
10. Sufficient quantity received to perform indicated analyses? Yes No
11. Are these work share samples? Yes No
    If yes, Questions 12-16 have been checked at the originating laboratory.
12. Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# **HC984738**
13. Were VOAs on the COC? Yes No
14. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this. Yes No NA
15. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # 375 Yes No
16. Was a LL Hg or Me Hg trip blank present? ____ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

17. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES

Samples processed by: NS

Did not receive an MeOH trip blank. 6-22-19

18. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired.

Sample(s) ____ were received in a broken container.

Sample(s) ____ were received with bubble >6 mm in diameter. (Notify PM)

19. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory.

Time preserved: ____ Preservative(s) added/Lot number(s): ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI-NC-099

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Bindert, Zach T	Carrier Tracking No(s):	COC No: 240-105745.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: zach.bindert@testamericainc.com	State of Origin: Minnesota	Page: Page 1 of 1
Company: TestAmerica Laboratories, Inc		Accreditations Required (See note): NELAP - Minnesota		Job #: 240-114912-1
Address: 3019 Venture Way, ,	Due Date Requested: 6/28/2019			
City: Cedar Falls	TAT Requested (days):			
State, Zip: IA, 50613				
Phone: 319-277-2401(Tel) 319-277-2425(Fax)	PO #:			
Email:	WO #:			
Project Name: Water Gremlin	Project #: 31011233			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8260B/5030B (MOD) Volatile Minnesota Sublist	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
GP-11 (5-10) (240-114912-2)	6/21/19	09:45 Central		Water			X	3	
GP-11 (15-17) (240-114912-4)	6/21/19	10:20 Central		Water			X	3	
GP-12 (7-10) (240-114912-9)	6/21/19	11:50 Central		Water			X	3	
GP-12 (15-17) (240-114912-10)	6/21/19	12:15 Central		Water			X	3	
GP-12 (22-24) (240-114912-11)	6/21/19	12:30 Central		Water			X	3	
GP-13 (7-10) (240-114912-14)	6/21/19	13:45 Central		Water			X	3	
GP-13 (15-17) (240-114912-15)	6/21/19	14:25 Central		Water			X	3	
GP-13 (22-24) (240-114912-16)	6/21/19	14:45 Central		Water			X	3	
HCL Trip Blank (240-114912-17)	6/21/19	Central		Water			X	3	

Note: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said complicance to TestAmerica Laboratories, Inc.

Possible Hazard Identification *Unconfirmed*	***Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)*** ☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
				6/26/19 ~~0930~~	TA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 0905	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

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Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Eurofins TA Canton

City/State: CITY North Canton STATE OH

Project#

Receipt Information

Date/Time Received: DATE 6/26/19 TIME ~~0930~~ 0905

Received By: JB

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☑ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☑ Yes ☐ No JB 6/26/19 *If yes:* Cooler # 21 of 21

Cooler Custody Seals Present? ☐ Yes ☑ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☑ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☑ Yes ☐ No *If yes:* Which VOA samples are in cooler? ↓

240-114745-A-48 B-48 C-48 JB 6/26/19

240-114912-A-17 -B-17 -C-17

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M

Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C):

Corrected Temp (°C):

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):	0.7	
Corrected Temp (°C):	0.6	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

240-114912-A-2 was received broken

NO - ICOC's received

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114912-1
SDG Number: 2606-0016

Login Number: 114912
List Number: 2
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 01:14 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 240-114912-1
SDG Number: 2606-0016

Login Number: 114912
List Number: 3
Creator: Bovy, Lorrainna L

List Source: Eurofins TestAmerica, Cedar Falls
List Creation: 06/26/19 01:17 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-158749-1
Laboratory Sample Delivery Group: 2606-0016
Client Project/Site: Water Gremlin Co. Remedial Investigation

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
7/11/2019 9:42:50 AM

Zach Bindert, Project Manager I
(319)277-2401
zach.bindert@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Case Narrative 3
Sample Summary 4
Detection Summary 5
Client Sample Results 7
Definitions 23
Surrogate Summary 24
QC Sample Results 26
QC Association 32
Chronicle 34
Certification Summary 37
Method Summary 38
Chain of Custody 39
Receipt Checklists 42

Job ID: 310-158749-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-158749-1

Comments
No additional comments.

Receipt
The samples were received on 6/26/2019 9:05 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.0º C.

GC/MS VOA
Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-14 (9-14) (310-158749-3), GP-15 (8-13) (310-158749-8), GP-15 (25-27) (310-158749-11) and GP-16 (10-15) (310-158749-15).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-158749-1	GP-14 (0-1)	Soil	06/24/19 10:15	06/26/19 09:05	
310-158749-2	GP-14 (10-12)	Soil	06/24/19 10:40	06/26/19 09:05	
310-158749-3	GP-14 (9-14)	Water	06/24/19 11:50	06/26/19 09:05	
310-158749-4	GP-14 (19-21)	Water	06/24/19 12:10	06/26/19 09:05	
310-158749-5	GP-14 (26-28)	Water	06/24/19 12:30	06/26/19 09:05	
310-158749-6	GP-15 (0-1)	Soil	06/24/19 13:10	06/26/19 09:05	
310-158749-7	GP-15 (2-4)	Soil	06/24/19 13:30	06/26/19 09:05	
310-158749-8	GP-15 (8-13)	Water	06/24/19 13:45	06/26/19 09:05	
310-158749-9	GP-15 (18-20)	Water	06/24/19 14:10	06/26/19 09:05	
310-158749-11	GP-15 (25-27)	Water	06/24/19 15:20	06/26/19 09:05	
310-158749-12	GP-15 (32-34)	Water	06/24/19 15:50	06/26/19 09:05	
310-158749-13	GP-16 (0-1)	Soil	06/24/19 16:20	06/26/19 09:05	
310-158749-14	GP-16 (2-4)	Soil	06/24/19 16:40	06/26/19 09:05	
310-158749-15	GP-16 (10-15)	Water	06/24/19 17:43	06/26/19 09:05	
310-158749-16	HCLTrip Blank	Water	06/24/19 00:00	06/26/19 09:05	
310-158749-17	MEOH Trip Blank	Solid	06/24/19 00:00	06/26/19 09:05	

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-14 (0-1) — Lab Sample ID: 310-158749-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	473	F1 F2	5.54		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-14 (10-12) — Lab Sample ID: 310-158749-2

No Detections.

Client Sample ID: GP-14 (9-14) — Lab Sample ID: 310-158749-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	31.3		10.0		ug/L	10		8260B	Total/NA
Trichloroethene	11.7		10.0		ug/L	10		8260B	Total/NA
Vinyl chloride	20.1		10.0		ug/L	10		8260B	Total/NA

Client Sample ID: GP-14 (19-21) — Lab Sample ID: 310-158749-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	17.3		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-14 (26-28) — Lab Sample ID: 310-158749-5

No Detections.

Client Sample ID: GP-15 (0-1) — Lab Sample ID: 310-158749-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	174		4.00		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-15 (2-4) — Lab Sample ID: 310-158749-7

No Detections.

Client Sample ID: GP-15 (8-13) — Lab Sample ID: 310-158749-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.51		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	2.44		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	4.27		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-15 (18-20) — Lab Sample ID: 310-158749-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	1.59		1.00		ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.75		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	4.03		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	7.24		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-15 (25-27) — Lab Sample ID: 310-158749-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	7.52		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-15 (32-34) — Lab Sample ID: 310-158749-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	8.03		1.00		ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-16 (0-1) — Lab Sample ID: 310-158749-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	719		8.15		mg/Kg	2	☼	6010D	Total/NA

Client Sample ID: GP-16 (2-4) — Lab Sample ID: 310-158749-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Tetrachloroethene	0.269		0.119		mg/Kg	1	☼	8260B	Total/NA
Trichloroethene	0.826		0.119		mg/Kg	1	☼	8260B	Total/NA

Client Sample ID: GP-16 (10-15) — Lab Sample ID: 310-158749-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	3.25		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	1.21		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: HCLTrip Blank — Lab Sample ID: 310-158749-16

No Detections.

Client Sample ID: MEOH Trip Blank — Lab Sample ID: 310-158749-17

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-14 (0-1)

Lab Sample ID: 310-158749-1

Date Collected: 06/24/19 10:15
Matrix: Soil
Date Received: 06/26/19 09:05

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	473	F1 F2	5.54		mg/Kg	☼	06/28/19 09:13	07/10/19 13:32	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	24.6		0.1		%			06/27/19 08:49	1
Percent Solids	75.4		0.1		%			06/27/19 08:49	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-14 (10-12)

Lab Sample ID: 310-158749-2

Date Collected: 06/24/19 10:40
Matrix: Soil
Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
cis-1,2-Dichloroethene	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
1,1-Dichloroethane	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
1,2-Dichloroethane	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
1,1-Dichloroethene	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
Tetrachloroethene	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
trans-1,2-Dichloroethene	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
1,1,1-Trichloroethane	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
Trichloroethene	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1
Vinyl chloride	<0.158		0.158		mg/Kg	☼	06/27/19 06:17	06/28/19 04:30	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*	*06/27/19 06:17*	*06/28/19 04:30*	*1*
Dibromofluoromethane (Surr)	*88*		*80 - 120*	*06/27/19 06:17*	*06/28/19 04:30*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*	*06/27/19 06:17*	*06/28/19 04:30*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**21.9**		0.1		%			06/27/19 08:49	1
Percent Solids	**78.1**		0.1		%			06/27/19 08:49	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-14 (9-14)

Lab Sample ID: 310-158749-3

Date Collected: 06/24/19 11:50

Matrix: Water

Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<40.0		40.0		ug/L			07/01/19 22:54	10
cis-1,2-Dichloroethene	<10.0		10.0		ug/L			07/01/19 22:54	10
1,1-Dichloroethane	**31.3**		10.0		ug/L			07/01/19 22:54	10
1,2-Dichloroethane	<10.0		10.0		ug/L			07/01/19 22:54	10
1,1-Dichloroethene	<20.0		20.0		ug/L			07/01/19 22:54	10
Tetrachloroethene	<10.0		10.0		ug/L			07/01/19 22:54	10
trans-1,2-Dichloroethene	<10.0		10.0		ug/L			07/01/19 22:54	10
1,1,1-Trichloroethane	<10.0		10.0		ug/L			07/01/19 22:54	10
Trichloroethene	**11.7**		10.0		ug/L			07/01/19 22:54	10
Vinyl chloride	**20.1**		10.0		ug/L			07/01/19 22:54	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*07/01/19 22:54*	*10*
Dibromofluoromethane (Surr)	*94*		*80 - 120*		*07/01/19 22:54*	*10*
Toluene-d8 (Surr)	*101*		*80 - 120*		*07/01/19 22:54*	*10*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-14 (19-21)

Lab Sample ID: 310-158749-4

Date Collected: 06/24/19 12:10

Matrix: Water

Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/01/19 23:17	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 23:17	1
1,1-Dichloroethane	**17.3**		1.00		ug/L			07/01/19 23:17	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/01/19 23:17	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/01/19 23:17	1
Tetrachloroethene	<1.00		1.00		ug/L			07/01/19 23:17	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 23:17	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/01/19 23:17	1
Trichloroethene	<1.00		1.00		ug/L			07/01/19 23:17	1
Vinyl chloride	<1.00		1.00		ug/L			07/01/19 23:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*07/01/19 23:17*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*07/01/19 23:17*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*		*07/01/19 23:17*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-14 (26-28)

Lab Sample ID: 310-158749-5

Date Collected: 06/24/19 12:30

Matrix: Water

Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/01/19 23:39	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 23:39	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/01/19 23:39	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/01/19 23:39	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/01/19 23:39	1
Tetrachloroethene	<1.00		1.00		ug/L			07/01/19 23:39	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 23:39	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/01/19 23:39	1
Trichloroethene	<1.00		1.00		ug/L			07/01/19 23:39	1
Vinyl chloride	<1.00		1.00		ug/L			07/01/19 23:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*07/01/19 23:39*	*1*
Dibromofluoromethane (Surr)	*94*		*80 - 120*		*07/01/19 23:39*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*07/01/19 23:39*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-15 (0-1)

Lab Sample ID: 310-158749-6

Date Collected: 06/24/19 13:10
Matrix: Soil
Date Received: 06/26/19 09:05

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	174		4.00		mg/Kg	☼	06/28/19 09:13	07/10/19 13:40	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	8.7		0.1		%			06/27/19 08:49	1
Percent Solids	91.3		0.1		%			06/27/19 08:49	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-15 (2-4)

Lab Sample ID: 310-158749-7

Date Collected: 06/24/19 13:30
Matrix: Soil
Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
cis-1,2-Dichloroethene	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
1,1-Dichloroethane	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
1,2-Dichloroethane	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
1,1-Dichloroethene	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
Tetrachloroethene	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
trans-1,2-Dichloroethene	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
1,1,1-Trichloroethane	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
Trichloroethene	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1
Vinyl chloride	<0.123		0.123		mg/Kg	☼	06/28/19 06:00	06/28/19 10:50	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*	*06/28/19 06:00*	*06/28/19 10:50*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 120*	*06/28/19 06:00*	*06/28/19 10:50*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*	*06/28/19 06:00*	*06/28/19 10:50*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**10.6**		0.1		%			06/27/19 08:49	1
Percent Solids	**89.4**		0.1		%			06/27/19 08:49	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-15 (8-13)

Lab Sample ID: 310-158749-8

Date Collected: 06/24/19 13:45

Matrix: Water

Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/02/19 00:01	1
cis-1,2-Dichloroethene	**1.51**		1.00		ug/L			07/02/19 00:01	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/02/19 00:01	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/02/19 00:01	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/02/19 00:01	1
Tetrachloroethene	<1.00		1.00		ug/L			07/02/19 00:01	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 00:01	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/02/19 00:01	1
Trichloroethene	**2.44**		1.00		ug/L			07/02/19 00:01	1
Vinyl chloride	**4.27**		1.00		ug/L			07/02/19 00:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*07/02/19 00:01*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*07/02/19 00:01*	*1*
Toluene-d8 (Surr)	*92*		*80 - 120*		*07/02/19 00:01*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-15 (18-20)

Lab Sample ID: 310-158749-9

Date Collected: 06/24/19 14:10
Matrix: Water
Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/02/19 00:23	1
cis-1,2-Dichloroethene	**1.59**		1.00		ug/L			07/02/19 00:23	1
1,1-Dichloroethane	**1.75**		1.00		ug/L			07/02/19 00:23	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/02/19 00:23	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/02/19 00:23	1
Tetrachloroethene	<1.00		1.00		ug/L			07/02/19 00:23	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 00:23	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/02/19 00:23	1
Trichloroethene	**4.03**		1.00		ug/L			07/02/19 00:23	1
Vinyl chloride	**7.24**		1.00		ug/L			07/02/19 00:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*07/02/19 00:23*	*1*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*07/02/19 00:23*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*07/02/19 00:23*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*07/02/19 00:23*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*07/02/19 00:23*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*07/02/19 00:23*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-15 (25-27)

Lab Sample ID: 310-158749-11

Date Collected: 06/24/19 15:20
Date Received: 06/26/19 09:05

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/02/19 00:45	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 00:45	1
1,1-Dichloroethane	**7.52**		1.00		ug/L			07/02/19 00:45	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/02/19 00:45	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/02/19 00:45	1
Tetrachloroethene	<1.00		1.00		ug/L			07/02/19 00:45	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 00:45	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/02/19 00:45	1
Trichloroethene	<1.00		1.00		ug/L			07/02/19 00:45	1
Vinyl chloride	<1.00		1.00		ug/L			07/02/19 00:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*07/02/19 00:45*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*07/02/19 00:45*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*07/02/19 00:45*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-15 (32-34)

Lab Sample ID: 310-158749-12

Date Collected: 06/24/19 15:50

Matrix: Water

Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/02/19 01:07	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 01:07	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/02/19 01:07	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/02/19 01:07	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/02/19 01:07	1
Tetrachloroethene	<1.00		1.00		ug/L			07/02/19 01:07	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 01:07	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/02/19 01:07	1
Trichloroethene	**8.03**		1.00		ug/L			07/02/19 01:07	1
Vinyl chloride	<1.00		1.00		ug/L			07/02/19 01:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*07/02/19 01:07*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*07/02/19 01:07*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*07/02/19 01:07*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-16 (0-1)

Lab Sample ID: 310-158749-13

Date Collected: 06/24/19 16:20
Matrix: Soil
Date Received: 06/26/19 09:05

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	719		8.15		mg/Kg	☼	06/28/19 09:13	07/10/19 14:24	2

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	8.0		0.1		%			06/27/19 08:49	1
Percent Solids	92.0		0.1		%			06/27/19 08:49	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-16 (2-4)

Lab Sample ID: 310-158749-14

Date Collected: 06/24/19 16:40
Matrix: Soil
Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
cis-1,2-Dichloroethene	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
1,1-Dichloroethane	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
1,2-Dichloroethane	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
1,1-Dichloroethene	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
Tetrachloroethene	**0.269**		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
trans-1,2-Dichloroethene	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
1,1,1-Trichloroethane	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
Trichloroethene	**0.826**		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1
Vinyl chloride	<0.119		0.119		mg/Kg	☼	06/27/19 06:17	06/28/19 04:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*	*06/27/19 06:17*	*06/28/19 04:54*	*1*
Dibromofluoromethane (Surr)	*92*		*80 - 120*	*06/27/19 06:17*	*06/28/19 04:54*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*	*06/27/19 06:17*	*06/28/19 04:54*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**8.5**		0.1		%			06/27/19 08:49	1
Percent Solids	**91.5**		0.1		%			06/27/19 08:49	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-16 (10-15)

Lab Sample ID: 310-158749-15

Date Collected: 06/24/19 17:43

Matrix: Water

Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/02/19 01:29	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 01:29	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/02/19 01:29	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/02/19 01:29	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/02/19 01:29	1
Tetrachloroethene	<1.00		1.00		ug/L			07/02/19 01:29	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/02/19 01:29	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/02/19 01:29	1
Trichloroethene	**3.25**		1.00		ug/L			07/02/19 01:29	1
Vinyl chloride	**1.21**		1.00		ug/L			07/02/19 01:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*07/02/19 01:29*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 120*		*07/02/19 01:29*	*1*
Toluene-d8 (Surr)	*108*		*80 - 120*		*07/02/19 01:29*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: HCLTrip Blank

Lab Sample ID: 310-158749-16

Date Collected: 06/24/19 00:00
Date Received: 06/26/19 09:05

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/01/19 19:20	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 19:20	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/01/19 19:20	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/01/19 19:20	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/01/19 19:20	1
Tetrachloroethene	<1.00		1.00		ug/L			07/01/19 19:20	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 19:20	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/01/19 19:20	1
Trichloroethene	<1.00		1.00		ug/L			07/01/19 19:20	1
Vinyl chloride	<1.00		1.00		ug/L			07/01/19 19:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*07/01/19 19:20*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*07/01/19 19:20*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*07/01/19 19:20*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: MEOH Trip Blank

Lab Sample ID: 310-158749-17

Date Collected: 06/24/19 00:00
Matrix: Solid
Date Received: 06/26/19 09:05

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
cis-1,2-Dichloroethene	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
1,1-Dichloroethane	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
1,2-Dichloroethane	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
1,1-Dichloroethene	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
Tetrachloroethene	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
trans-1,2-Dichloroethene	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
1,1,1-Trichloroethane	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
Trichloroethene	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1
Vinyl chloride	<0.100		0.100		mg/Kg		06/28/19 06:00	06/28/19 10:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*	*06/28/19 06:00*	*06/28/19 10:25*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 120*	*06/28/19 06:00*	*06/28/19 10:25*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*	*06/28/19 06:00*	*06/28/19 10:25*	*1*

Definitions/Glossary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Qualifiers

Metals

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
310-158749-2	GP-14 (10-12)	93	88	100
310-158749-7	GP-15 (2-4)	96	89	100
310-158749-7 MS	GP-15 (2-4)	92	89	100
310-158749-7 MSD	GP-15 (2-4)	96	91	100
310-158749-14	GP-16 (2-4)	94	92	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
310-158749-17	MEOH Trip Blank	98	87	100
LCS 310-243978/2-A	Lab Control Sample	97	94	99
LCS 310-244136/2-A	Lab Control Sample	98	86	101
MB 310-243978/1-A	Method Blank	93	90	98
MB 310-244136/1-A	Method Blank	92	90	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		BFB	BFB	DBFM	DBFM	TOL	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)	(80-120)	(80-120)	(80-120)
310-158749-3	GP-14 (9-14)	101	101	94	94	101	101
310-158749-4	GP-14 (19-21)	102	102	96	96	105	105
310-158749-5	GP-14 (26-28)	105	105	94	94	96	96
310-158749-8	GP-15 (8-13)	105	105	99	99	92	92
310-158749-9	GP-15 (18-20)	103	103	98	98	103	103
310-158749-9 MS	GP-15 (18-20)	106	106	92	92	97	97
310-158749-9 MSD	GP-15 (18-20)	106	106	90	90	107	107
310-158749-11	GP-15 (25-27)	102	102	96	96	96	96
310-158749-12	GP-15 (32-34)	103	103	102	102	96	96
310-158749-15	GP-16 (10-15)	104	104	96	96	108	108
310-158749-16	HCLTrip Blank	101	101	106	106	96	96
LCS 310-244339/6	Lab Control Sample	98	98	104	104	101	101
LCS 310-244339/7	Lab Control Sample	101	101	106	106	101	101
LCS 310-244351/5	Lab Control Sample	105	105	89	89	109	109
LCS 310-244351/6	Lab Control Sample	105	105	101	101	113	113
MB 310-244339/8	Method Blank	103	103	106	106	100	100
MB 310-244351/7	Method Blank	101	101	96	96	106	106

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-243978/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 244014 — **Prep Batch: 243978**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
cis-1,2-Dichloroethene	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
1,1-Dichloroethane	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
1,2-Dichloroethane	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
1,1-Dichloroethene	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
Tetrachloroethene	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
trans-1,2-Dichloroethene	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
1,1,1-Trichloroethane	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
Trichloroethene	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1
Vinyl chloride	<0.0970		0.0970		mg/Kg		06/27/19 06:17	06/27/19 20:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*	*06/27/19 06:17*	*06/27/19 20:26*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 120*	*06/27/19 06:17*	*06/27/19 20:26*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*	*06/27/19 06:17*	*06/27/19 20:26*	*1*

Lab Sample ID: LCS 310-243978/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 244014 — **Prep Batch: 243978**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	0.973	0.9577		mg/Kg		98	74 - 148
1,1-Dichloroethane	0.973	1.101		mg/Kg		113	74 - 150
1,2-Dichloroethane	0.973	1.129		mg/Kg		116	74 - 148
1,1-Dichloroethene	0.973	1.040		mg/Kg		107	74 - 139
Tetrachloroethene	0.973	1.023		mg/Kg		105	77 - 127
trans-1,2-Dichloroethene	0.973	1.041		mg/Kg		107	76 - 139
1,1,1-Trichloroethane	0.973	0.9757		mg/Kg		100	74 - 144
Trichloroethene	0.973	1.079		mg/Kg		111	75 - 142

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*94*		*80 - 120*
Toluene-d8 (Surr)	*99*		*80 - 120*

Lab Sample ID: MB 310-244136/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 244173 — **Prep Batch: 244136**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
cis-1,2-Dichloroethene	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
1,1-Dichloroethane	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
1,2-Dichloroethane	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
1,1-Dichloroethene	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
Tetrachloroethene	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
trans-1,2-Dichloroethene	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
1,1,1-Trichloroethane	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 310-244136/1-A
Matrix: Solid
Analysis Batch: 244173

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244136

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1
Vinyl chloride	<0.0962		0.0962		mg/Kg		06/28/19 06:00	06/28/19 08:49	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*	*06/28/19 06:00*	*06/28/19 08:49*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 120*	*06/28/19 06:00*	*06/28/19 08:49*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*	*06/28/19 06:00*	*06/28/19 08:49*	*1*

Lab Sample ID: LCS 310-244136/2-A
Matrix: Solid
Analysis Batch: 244173

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244136

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	0.987	0.8958		mg/Kg		91	74 - 148
1,1-Dichloroethane	0.987	1.000		mg/Kg		101	74 - 150
1,2-Dichloroethane	0.987	1.035		mg/Kg		105	74 - 148
1,1-Dichloroethene	0.987	0.9867		mg/Kg		100	74 - 139
Tetrachloroethene	0.987	0.9978		mg/Kg		101	77 - 127
trans-1,2-Dichloroethene	0.987	0.9560		mg/Kg		97	76 - 139
1,1,1-Trichloroethane	0.987	0.8906		mg/Kg		90	74 - 144
Trichloroethene	0.987	0.9886		mg/Kg		100	75 - 142

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*86*		*80 - 120*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: 310-158749-7 MS
Matrix: Soil
Analysis Batch: 244173

Client Sample ID: GP-15 (2-4)
Prep Type: Total/NA
Prep Batch: 244136

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	<0.123		0.745	0.7179		mg/Kg	☼	96	53 - 150
1,1-Dichloroethane	<0.123		0.745	0.8680		mg/Kg	☼	117	54 - 150
1,2-Dichloroethane	<0.123		0.745	0.8878		mg/Kg	☼	119	54 - 150
1,1-Dichloroethene	<0.123		0.745	0.8512		mg/Kg	☼	114	53 - 142
Tetrachloroethene	<0.123		0.745	0.8316		mg/Kg	☼	112	50 - 136
trans-1,2-Dichloroethene	<0.123		0.745	0.7980		mg/Kg	☼	107	55 - 144
1,1,1-Trichloroethane	<0.123		0.745	0.7497		mg/Kg	☼	101	54 - 150
Trichloroethene	<0.123		0.745	0.8422		mg/Kg	☼	108	52 - 150

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*
Dibromofluoromethane (Surr)	*89*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 310-158749-7 MSD — **Client Sample ID: GP-15 (2-4)**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 244173 — **Prep Batch: 244136**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	<0.123		0.797	0.7955		mg/Kg	☼	100	53 - 150	10	21
1,1-Dichloroethane	<0.123		0.797	0.9543		mg/Kg	☼	120	54 - 150	9	19
1,2-Dichloroethane	<0.123		0.797	0.9616		mg/Kg	☼	121	54 - 150	8	20
1,1-Dichloroethene	<0.123		0.797	0.8732		mg/Kg	☼	110	53 - 142	3	24
Tetrachloroethene	<0.123		0.797	0.8671		mg/Kg	☼	109	50 - 136	4	23
trans-1,2-Dichloroethene	<0.123		0.797	0.8563		mg/Kg	☼	107	55 - 144	7	21
1,1,1-Trichloroethane	<0.123		0.797	0.8277		mg/Kg	☼	104	54 - 150	10	20
Trichloroethene	<0.123		0.797	0.9025		mg/Kg	☼	108	52 - 150	7	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*91*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: MB 310-244339/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244339

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/01/19 18:54	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 18:54	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/01/19 18:54	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/01/19 18:54	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/01/19 18:54	1
Tetrachloroethene	<1.00		1.00		ug/L			07/01/19 18:54	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 18:54	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/01/19 18:54	1
Trichloroethene	<1.00		1.00		ug/L			07/01/19 18:54	1
Vinyl chloride	<1.00		1.00		ug/L			07/01/19 18:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*07/01/19 18:54*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*07/01/19 18:54*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*07/01/19 18:54*	*1*

Lab Sample ID: LCS 310-244339/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244339

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	18.71		ug/L		94	77 - 120
1,1-Dichloroethane	20.0	17.45		ug/L		87	75 - 125
1,2-Dichloroethane	20.0	19.83		ug/L		99	75 - 123
1,1-Dichloroethene	20.0	16.57		ug/L		83	75 - 124
Tetrachloroethene	20.0	19.25		ug/L		96	72 - 129
trans-1,2-Dichloroethene	20.0	18.08		ug/L		90	75 - 122
1,1,1-Trichloroethane	20.0	17.76		ug/L		89	76 - 127
Trichloroethene	20.0	18.16		ug/L		91	77 - 123

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	104		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: LCS 310-244339/7 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244339

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	17.38		ug/L		87	69 - 129
Vinyl chloride	20.0	16.55		ug/L		83	67 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	106		80 - 120
Toluene-d8 (Surr)	101		80 - 120

Lab Sample ID: MB 310-244351/7 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244351

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/01/19 18:06	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 18:06	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/01/19 18:06	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/01/19 18:06	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/01/19 18:06	1
Tetrachloroethene	<1.00		1.00		ug/L			07/01/19 18:06	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/01/19 18:06	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/01/19 18:06	1
Trichloroethene	<1.00		1.00		ug/L			07/01/19 18:06	1
Vinyl chloride	<1.00		1.00		ug/L			07/01/19 18:06	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		07/01/19 18:06	1
Dibromofluoromethane (Surr)	96		80 - 120		07/01/19 18:06	1
Toluene-d8 (Surr)	106		80 - 120		07/01/19 18:06	1

Lab Sample ID: LCS 310-244351/5 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	16.99		ug/L		85	77 - 120
1,1-Dichloroethane	20.0	19.55		ug/L		98	75 - 125
1,2-Dichloroethane	20.0	18.58		ug/L		93	75 - 123
1,1-Dichloroethene	20.0	17.80		ug/L		89	75 - 124
Tetrachloroethene	20.0	20.50		ug/L		103	72 - 129
trans-1,2-Dichloroethene	20.0	17.14		ug/L		86	75 - 122
1,1,1-Trichloroethane	20.0	17.71		ug/L		89	76 - 127
Trichloroethene	20.0	18.20		ug/L		91	77 - 123

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	89		80 - 120
Toluene-d8 (Surr)	109		80 - 120

Lab Sample ID: LCS 310-244351/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244351

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	17.68		ug/L		88	69 - 129
Vinyl chloride	20.0	20.06		ug/L		100	67 - 133

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	113		80 - 120

Lab Sample ID: 310-158749-9 MS — **Client Sample ID: GP-15 (18-20)**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244351

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	1.59		20.0	19.18		ug/L		88	46 - 130
1,1-Dichloroethane	1.75		20.0	20.84		ug/L		95	50 - 127
1,2-Dichloroethane	<1.00		20.0	19.07		ug/L		95	55 - 128
1,1-Dichloroethene	<2.00		20.0	18.03		ug/L		90	47 - 124
Tetrachloroethene	<1.00		20.0	19.76		ug/L		99	40 - 129
trans-1,2-Dichloroethene	<1.00		20.0	17.97		ug/L		88	51 - 122
1,1,1-Trichloroethane	<1.00		20.0	17.46		ug/L		87	50 - 127
Trichloroethene	4.03		20.0	21.12		ug/L		85	54 - 123

Surrogate	MS %Recovery	MS Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		80 - 120
Dibromofluoromethane (Surr)	92		80 - 120
Toluene-d8 (Surr)	97		80 - 120

Lab Sample ID: 310-158749-9 MSD — **Client Sample ID: GP-15 (18-20)**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244351

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	1.59		20.0	16.87		ug/L		76	46 - 130	13	22
1,1-Dichloroethane	1.75		20.0	18.48		ug/L		84	50 - 127	12	23
1,2-Dichloroethane	<1.00		20.0	16.69		ug/L		83	55 - 128	13	21
1,1-Dichloroethene	<2.00		20.0	15.23		ug/L		76	47 - 124	17	24
Tetrachloroethene	<1.00		20.0	16.15		ug/L		81	40 - 129	20	21
trans-1,2-Dichloroethene	<1.00		20.0	15.25		ug/L		75	51 - 122	16	23
1,1,1-Trichloroethane	<1.00		20.0	15.21		ug/L		76	50 - 127	14	21
Trichloroethene	4.03		20.0	17.96		ug/L		70	54 - 123	16	20

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 310-158749-9 MSD — **Client Sample ID: GP-15 (18-20)**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244351

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*90*		*80 - 120*
Toluene-d8 (Surr)	*107*		*80 - 120*

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-244190/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 245479 — **Prep Batch: 244190**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<4.44		4.44		mg/Kg		06/28/19 09:13	07/10/19 13:27	1

Lab Sample ID: LCS 310-244190/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 245479 — **Prep Batch: 244190**

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead			156	163.8		mg/Kg		105	80 - 120		

Lab Sample ID: 310-158749-1 MS — **Client Sample ID: GP-14 (0-1)**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 245479 — **Prep Batch: 244190**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lead	473	F1 F2	230	1095	F1	mg/Kg	☼	270	75 - 125		

Lab Sample ID: 310-158749-1 MSD — **Client Sample ID: GP-14 (0-1)**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 245479 — **Prep Batch: 244190**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	473	F1 F2	228	679.8	F2	mg/Kg	☼	91	75 - 125	47	20

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

GC/MS VOA

Prep Batch: 243978

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-2	GP-14 (10-12)	Total/NA	Soil	5035	
310-158749-14	GP-16 (2-4)	Total/NA	Soil	5035	
MB 310-243978/1-A	Method Blank	Total/NA	Solid	5035	
LCS 310-243978/2-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 244014

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-2	GP-14 (10-12)	Total/NA	Soil	8260B	243978
310-158749-14	GP-16 (2-4)	Total/NA	Soil	8260B	243978
MB 310-243978/1-A	Method Blank	Total/NA	Solid	8260B	243978
LCS 310-243978/2-A	Lab Control Sample	Total/NA	Solid	8260B	243978

Prep Batch: 244136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-7	GP-15 (2-4)	Total/NA	Soil	5035	
310-158749-17	MEOH Trip Blank	Total/NA	Solid	5035	
MB 310-244136/1-A	Method Blank	Total/NA	Solid	5035	
LCS 310-244136/2-A	Lab Control Sample	Total/NA	Solid	5035	
310-158749-7 MS	GP-15 (2-4)	Total/NA	Soil	5035	
310-158749-7 MSD	GP-15 (2-4)	Total/NA	Soil	5035	

Analysis Batch: 244173

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-7	GP-15 (2-4)	Total/NA	Soil	8260B	244136
310-158749-17	MEOH Trip Blank	Total/NA	Solid	8260B	244136
MB 310-244136/1-A	Method Blank	Total/NA	Solid	8260B	244136
LCS 310-244136/2-A	Lab Control Sample	Total/NA	Solid	8260B	244136
310-158749-7 MS	GP-15 (2-4)	Total/NA	Soil	8260B	244136
310-158749-7 MSD	GP-15 (2-4)	Total/NA	Soil	8260B	244136

Analysis Batch: 244339

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-16	HCLTrip Blank	Total/NA	Water	8260B	
MB 310-244339/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244339/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244339/7	Lab Control Sample	Total/NA	Water	8260B	

Analysis Batch: 244351

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-3	GP-14 (9-14)	Total/NA	Water	8260B	
310-158749-4	GP-14 (19-21)	Total/NA	Water	8260B	
310-158749-5	GP-14 (26-28)	Total/NA	Water	8260B	
310-158749-8	GP-15 (8-13)	Total/NA	Water	8260B	
310-158749-9	GP-15 (18-20)	Total/NA	Water	8260B	
310-158749-11	GP-15 (25-27)	Total/NA	Water	8260B	
310-158749-12	GP-15 (32-34)	Total/NA	Water	8260B	
310-158749-15	GP-16 (10-15)	Total/NA	Water	8260B	
MB 310-244351/7	Method Blank	Total/NA	Water	8260B	
LCS 310-244351/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244351/6	Lab Control Sample	Total/NA	Water	8260B	
310-158749-9 MS	GP-15 (18-20)	Total/NA	Water	8260B	

GC/MS VOA (Continued)

Analysis Batch: 244351 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-9 MSD	GP-15 (18-20)	Total/NA	Water	8260B	

Analysis Batch: 244352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-9	GP-15 (18-20)	Total/NA	Water	8260B	

Metals

Prep Batch: 244190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-1	GP-14 (0-1)	Total/NA	Soil	3050B	
310-158749-6	GP-15 (0-1)	Total/NA	Soil	3050B	
310-158749-13	GP-16 (0-1)	Total/NA	Soil	3050B	
MB 310-244190/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 310-244190/2-A	Lab Control Sample	Total/NA	Solid	3050B	
310-158749-1 MS	GP-14 (0-1)	Total/NA	Soil	3050B	
310-158749-1 MSD	GP-14 (0-1)	Total/NA	Soil	3050B	

Analysis Batch: 245479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-1	GP-14 (0-1)	Total/NA	Soil	6010D	244190
310-158749-6	GP-15 (0-1)	Total/NA	Soil	6010D	244190
310-158749-13	GP-16 (0-1)	Total/NA	Soil	6010D	244190
MB 310-244190/1-A	Method Blank	Total/NA	Solid	6010D	244190
LCS 310-244190/2-A	Lab Control Sample	Total/NA	Solid	6010D	244190
310-158749-1 MS	GP-14 (0-1)	Total/NA	Soil	6010D	244190
310-158749-1 MSD	GP-14 (0-1)	Total/NA	Soil	6010D	244190

General Chemistry

Analysis Batch: 244027

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158749-1	GP-14 (0-1)	Total/NA	Soil	Moisture	
310-158749-2	GP-14 (10-12)	Total/NA	Soil	Moisture	
310-158749-6	GP-15 (0-1)	Total/NA	Soil	Moisture	
310-158749-7	GP-15 (2-4)	Total/NA	Soil	Moisture	
310-158749-13	GP-16 (0-1)	Total/NA	Soil	Moisture	
310-158749-14	GP-16 (2-4)	Total/NA	Soil	Moisture	
310-158749-7 MS	GP-15 (2-4)	Total/NA	Soil	Moisture	
310-158749-7 MSD	GP-15 (2-4)	Total/NA	Soil	Moisture	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-14 (0-1)
Lab Sample ID: 310-158749-1

Date Collected: 06/24/19 10:15
Matrix: Soil
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			244190	06/28/19 09:13	HED	TAL CF
Total/NA	Analysis	6010D		1	245479	07/10/19 13:32	CTB	TAL CF
Total/NA	Analysis	Moisture		1	244027	06/27/19 08:49	SAS	TAL CF

Client Sample ID: GP-14 (10-12)
Lab Sample ID: 310-158749-2

Date Collected: 06/24/19 10:40
Matrix: Soil
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			243978	06/27/19 06:17	TCH	TAL CF
Total/NA	Analysis	8260B		1	244014	06/28/19 04:30	TCH	TAL CF
Total/NA	Analysis	Moisture		1	244027	06/27/19 08:49	SAS	TAL CF

Client Sample ID: GP-14 (9-14)
Lab Sample ID: 310-158749-3

Date Collected: 06/24/19 11:50
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	244351	07/01/19 22:54	SJN	TAL CF

Client Sample ID: GP-14 (19-21)
Lab Sample ID: 310-158749-4

Date Collected: 06/24/19 12:10
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244351	07/01/19 23:17	SJN	TAL CF

Client Sample ID: GP-14 (26-28)
Lab Sample ID: 310-158749-5

Date Collected: 06/24/19 12:30
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244351	07/01/19 23:39	SJN	TAL CF

Client Sample ID: GP-15 (0-1)
Lab Sample ID: 310-158749-6

Date Collected: 06/24/19 13:10
Matrix: Soil
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			244190	06/28/19 09:13	HED	TAL CF
Total/NA	Analysis	6010D		1	245479	07/10/19 13:40	CTB	TAL CF
Total/NA	Analysis	Moisture		1	244027	06/27/19 08:49	SAS	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-15 (2-4)
Lab Sample ID: 310-158749-7
Date Collected: 06/24/19 13:30
Matrix: Soil
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			244136	06/28/19 06:00	TCH	TAL CF
Total/NA	Analysis	8260B		1	244173	06/28/19 10:50	TCH	TAL CF
Total/NA	Analysis	Moisture		1	244027	06/27/19 08:49	SAS	TAL CF

Client Sample ID: GP-15 (8-13)
Lab Sample ID: 310-158749-8
Date Collected: 06/24/19 13:45
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244351	07/02/19 00:01	SJN	TAL CF

Client Sample ID: GP-15 (18-20)
Lab Sample ID: 310-158749-9
Date Collected: 06/24/19 14:10
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244351	07/02/19 00:23	SJN	TAL CF
Total/NA	Analysis	8260B		1	244352	07/02/19 00:23	SJN	TAL CF

Client Sample ID: GP-15 (25-27)
Lab Sample ID: 310-158749-11
Date Collected: 06/24/19 15:20
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244351	07/02/19 00:45	SJN	TAL CF

Client Sample ID: GP-15 (32-34)
Lab Sample ID: 310-158749-12
Date Collected: 06/24/19 15:50
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244351	07/02/19 01:07	SJN	TAL CF

Client Sample ID: GP-16 (0-1)
Lab Sample ID: 310-158749-13
Date Collected: 06/24/19 16:20
Matrix: Soil
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			244190	06/28/19 09:13	HED	TAL CF
Total/NA	Analysis	6010D		2	245479	07/10/19 14:24	CTB	TAL CF
Total/NA	Analysis	Moisture		1	244027	06/27/19 08:49	SAS	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Client Sample ID: GP-16 (2-4)

Lab Sample ID: 310-158749-14
Date Collected: 06/24/19 16:40
Matrix: Soil
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			243978	06/27/19 06:17	TCH	TAL CF
Total/NA	Analysis	8260B		1	244014	06/28/19 04:54	TCH	TAL CF
Total/NA	Analysis	Moisture		1	244027	06/27/19 08:49	SAS	TAL CF

Client Sample ID: GP-16 (10-15)

Lab Sample ID: 310-158749-15
Date Collected: 06/24/19 17:43
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244351	07/02/19 01:29	SJN	TAL CF

Client Sample ID: HCLTrip Blank

Lab Sample ID: 310-158749-16
Date Collected: 06/24/19 00:00
Matrix: Water
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244339	07/01/19 19:20	SJN	TAL CF

Client Sample ID: MEOH Trip Blank

Lab Sample ID: 310-158749-17
Date Collected: 06/24/19 00:00
Matrix: Solid
Date Received: 06/26/19 09:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			244136	06/28/19 06:00	TCH	TAL CF
Total/NA	Analysis	8260B		1	244173	06/28/19 10:25	TCH	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Laboratory: Eurofins TestAmerica, Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Soil	Percent Moisture
Moisture		Soil	Percent Solids

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158749-1
SDG: 2606-0016

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CF
6010D	Metals (ICP)	SW846	TAL CF
Moisture	Percent Moisture	EPA	TAL CF
3050B	Preparation, Metals	SW846	TAL CF
5030B	Purge and Trap	SW846	TAL CF
5035	Closed System Purge and Trap	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

eurofins | Environment Testing TestAmerica

310-158749 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Nenck

City/State: CITY Woodbury STATE MN | Project: Water Gremlin

Receipt Information

Date/Time Received: DATE 06/26/19 TIME 0905 | Received By: AA

Delivery Type: ☐ UPS ☒ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes ☐ No	*If yes:* Cooler ID:	
Multiple Coolers?	☐ Yes ☒ No	*If yes:* Cooler # _____ of _____	
Cooler Custody Seals Present?	☒ Yes ☐ No	*If yes:* Cooler custody seals intact?	☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes ☒ No	*If yes:* Sample custody seals intact?	☐ Yes ☐ No
Trip Blank Present?	☒ Yes ☐ No	*If yes:* Which VOA samples are in cooler? ↓	

All vials accounted for

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: 1 | Correction Factor (°C): -0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.1 | Corrected Temp (°C): 1.0

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Document: CF-LG-WI-002
Revision: 25
Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C
Bacteria temperature criteria is 0 to 10°C

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: Wenck Associates
Client #: _____
Address: 1802 Wooddale Drive
City/State/Zip Code: Woodbury MN, 55125
Project Manager: Shane Waterman, Chris Bratsch
Email Address: swaterman@wenck.com
Telephone Number: 651-294-4588
Fax: _____
Sampler Name: (Print Name) Benjamin Kramka, Kelly Jaworski
Sampler Signature: Benjamin Kramka, [signature]

Project Name: Water Gremlin
Project #: 2606-0016
Site/Location ID: White Bear Lake
State: MN
Report To: Shane Waterman, Chris Bratsch,
Invoice To: Ben Kramka, Kelly Jaworski
Quote #: _____
PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-day
Fax Results: Y (N)
Email Results: (Y) N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: LEAD (EPA 6020)	VOCs modified list	Moisture	QC Deliverables: ___ None, ___ Level 2 (Batch QC), ___ Level 3, X Level 4, Other: ___ REMARKS
GP-14 (0-1)	6/24	1015	G	NA	S						1		X			2001004937
GP-14 (10-12)	6/24	1040	G	NA	S					1	1			X	X	2001004937
GP-14 (9-14)	6/24	1150	G	N	GW		3							X		2001004851
GP-14 (19-21)	6/24	1210	G	N	GW		3							X		2001004851
GP-14 (26-28)	6/24	1230	G	N	GW		3							X		2001004851
GP-15 (0-1)	6/24	1310	G	N	S						1		X			2001004938
GP-15 (2-4) MS/MSD	6/24	1330	G	N	S					3	1			X	X	2001004938
GP-15 (8-13)	6/24	1345	G	N	GW		3							X		2001004852
MS/MSD GP-15 (18-20)	6/24	1410	G	N	GW		3							X		2001004852
062419-A	6/24												X			Blind Dup

Special Instructions:

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/25	9:00	Barb. Rutter	6/25	9:00
Barb. Rutter	6/25	1700	Received By:	Date:	Time:
Relinquished By:	06/26/19	0905	Received By:	Date:	Time:

TAL-0033 (0708)

Page 1 of 2

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES
Client #: _____
Address: 1620 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN, CHRIS BRATSCH
Email Address: SWATERMAN@WENCK.COM
Telephone Number: 651-294-4588
Fax: _____
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature:

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE
State: MN
Report To: SHANE W., CHRIS B., KELLY J., BEN K.
Invoice To: _____
Quote #: _____
PO#: _____

TAT: ✓ Standard; ___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y N
Email Results: Y N

Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other
Preservation & # of Containers: HNO_3, HCl, NaOH, H_2SO_4, Methanol, None, Other (Specify)
Analyze For: Lead (EPA 1620), VOC (Modified List), Moisture

QC Deliverables: ___ None; ___ Level 2 (Batch QC); ___ Level 3; ___ Level 4; Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Lead (EPA 1620)	VOC (Modified List)	Moisture	REMARKS
GP-15 (25-27)	6/24	1520	G	N	GW		3							X		2001004852
GP-15 (32-34)	6/24	1550	G	N	GW		3							X		2001004852
GP-16 (0-1)	6/24	1620	G	NA	S						1		X			2001004939
GP-16 (2-4)	6/24	1640	G	NA	S					1	1			X	X	2001004939
GP-16 (10-15)	6/24	1745	G	N	GW		3							X		2001004853
~~GP-16 (20-22)~~	~~6/24~~	~~1820~~	~~G~~	~~N~~	~~GW~~		~~3~~							~~X~~		~~2001004853~~
HCL TRIP BLANK	6/24													X		
MEOH TRIP BLANK	6/24													X		

Special Instructions:

LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
KELLY JAWORSKI	6/25	7:00	Brian Butler	6/25	9:00
Brian Butler	6/25	17:00	Received By:	Date:	Time:
Relinquished By:	Date: 6/26/19	Time: 0905	Received By:	Date:	Time:

TAL-0033 (0708)

Page 2 of 2

Page 41 of 42

7/11/2019

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 310-158749-1
SDG Number: 2606-0016

Login Number: 158749
List Number: 1
Creator: Spoerre, Autumn R

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-158924-1
Laboratory Sample Delivery Group: 2606-0016
Client Project/Site: Water Gremlin Co. Remedial Investigation

For:
Wenck Associates, Inc
1802 Wooddale Drive
Suite 100
Woodbury, Minnesota 55125

Attn: Shane Waterman

Authorized for release by:
7/12/2019 4:14:14 PM

Zach Bindert, Project Manager I
(319)277-2401
zach.bindert@testamericainc.com

LINKS

Review your project results through TotalAccess

Have a Question? Ask The Expert

Visit us at: www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Cover Page 1
Table of Contents 2
Case Narrative 3
Sample Summary 4
Detection Summary 5
Client Sample Results 7
Definitions 31
Surrogate Summary 32
QC Sample Results 34
QC Association 38
Chronicle 40
Certification Summary 44
Method Summary 45
Chain of Custody 46
Receipt Checklists 51

Job ID: 310-158924-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-158924-1

Comments
No additional comments.

Receipt
The samples were received on 6/28/2019 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5º C.

GC/MS VOA
Method(s) 8260B: The following sample(s) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible: GP-16 (27-29) (310-158924-2), GP-16 (34-36) (310-158924-3), GP-17 (7-12) (310-158924-7), 062619-A (310-158924-9), GP-18 (10-15) (310-158924-17), 062619-B (310-158924-20), GP-18 (20-22) (310-158924-21) and GP-18 (34-38) (310-158924-22).

Method(s) 8260B: The continuing calibration verification (CCV) analyzed in batch 310-244692 was outside the method criteria for the following analyte: Chloroethane (-22.2 %D). A LCS standard was analyzed with the affected samples and found to be acceptable using CCV criteria.

Method(s) 8260B: The following samples were diluted due to the nature of the sample matrix sediment: GP-16 (27-29) (310-158924-2) and GP-17 (7-12) (310-158924-7). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-158924-1	GP-16 (20-22)	Ground Water	06/26/19 09:30	06/28/19 09:10	
310-158924-2	GP-16 (27-29)	Ground Water	06/26/19 10:00	06/28/19 09:10	
310-158924-3	GP-16 (34-36)	Ground Water	06/26/19 10:20	06/28/19 09:10	
310-158924-4	RINSATE #4	Water	06/26/19 11:00	06/28/19 09:10	
310-158924-5	GP-17 (0-1)	Soil	06/26/19 11:30	06/28/19 09:10	
310-158924-6	GP-17 (8-10)	Soil	06/26/19 12:30	06/28/19 09:10	
310-158924-7	GP-17 (7-12)	Ground Water	06/26/19 13:00	06/28/19 09:10	
310-158924-8	GP-17 (28-30)	Soil	06/26/19 13:30	06/28/19 09:10	
310-158924-9	062619-A	Ground Water	06/26/19 00:00	06/28/19 09:10	
310-158924-10	RINSATE #5	Water	06/26/19 13:45	06/28/19 09:10	
310-158924-11	GP-17 (17-19)	Ground Water	06/26/19 13:40	06/28/19 09:10	
310-158924-12	GP-17 (24-26)	Ground Water	06/26/19 14:00	06/28/19 09:10	
310-158924-13	GP-18 (0-1)	Soil	06/26/19 15:00	06/28/19 09:10	
310-158924-14	GP-18 (6-8)	Soil	06/26/19 15:10	06/28/19 09:10	
310-158924-15	GP-18 (4-6)	Soil	06/26/19 16:00	06/28/19 09:10	
310-158924-16	GP-18 (41-43)	Soil	06/26/19 18:20	06/28/19 09:10	
310-158924-17	GP-18 (10-15)	Ground Water	06/26/19 18:35	06/28/19 09:10	
310-158924-18	RINSATE #6	Water	06/26/19 18:40	06/28/19 09:10	
310-158924-19	RINSATE #7	Water	06/26/19 19:00	06/28/19 09:10	
310-158924-20	062619-B	Ground Water	06/26/19 00:00	06/28/19 09:10	
310-158924-21	GP-18 (20-22)	Ground Water	06/26/19 19:00	06/28/19 09:10	
310-158924-22	GP-18 (34-38)	Ground Water	06/26/19 19:55	06/28/19 09:10	
310-158924-23	TRIP BLANK	Water	06/26/19 00:00	06/28/19 09:10	
310-158924-24	TRIP BLANK	Soil	06/26/19 00:00	06/28/19 09:10	

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-16 (20-22) — Lab Sample ID: 310-158924-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.24		1.00		ug/L	1		8260B	Total/NA
1,1-Dichloroethane	1.28		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	5.45		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	5.53		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-16 (27-29) — Lab Sample ID: 310-158924-2

No Detections.

Client Sample ID: GP-16 (34-36) — Lab Sample ID: 310-158924-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	3.01		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	10.7		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: RINSATE #4 — Lab Sample ID: 310-158924-4

No Detections.

Client Sample ID: GP-17 (0-1) — Lab Sample ID: 310-158924-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	140		4.61		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-17 (8-10) — Lab Sample ID: 310-158924-6

No Detections.

Client Sample ID: GP-17 (7-12) — Lab Sample ID: 310-158924-7

No Detections.

Client Sample ID: GP-17 (28-30) — Lab Sample ID: 310-158924-8

No Detections.

Client Sample ID: 062619-A — Lab Sample ID: 310-158924-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
trans-1,2-Dichloroethene	2.11		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	9.34		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: RINSATE #5 — Lab Sample ID: 310-158924-10

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.00139		0.000500		mg/L	1		6020B	Total/NA

Client Sample ID: GP-17 (17-19) — Lab Sample ID: 310-158924-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	4.32		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	4.40		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-17 (24-26) — Lab Sample ID: 310-158924-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1.06		1.00		ug/L	1		8260B	Total/NA
Trichloroethene	1.08		1.00		ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (0-1) — Lab Sample ID: 310-158924-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	776		4.65		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-18 (6-8) — Lab Sample ID: 310-158924-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	13.8		4.61		mg/Kg	1	☼	6010D	Total/NA

Client Sample ID: GP-18 (4-6) — Lab Sample ID: 310-158924-15

No Detections.

Client Sample ID: GP-18 (41-43) — Lab Sample ID: 310-158924-16

No Detections.

Client Sample ID: GP-18 (10-15) — Lab Sample ID: 310-158924-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1.33		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	11.1		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: RINSATE #6 — Lab Sample ID: 310-158924-18

No Detections.

Client Sample ID: RINSATE #7 — Lab Sample ID: 310-158924-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.00285		0.000500		mg/L	1		6020B	Total/NA

Client Sample ID: 062619-B — Lab Sample ID: 310-158924-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
1,1-Dichloroethane	1.41		1.00		ug/L	1		8260B	Total/NA
Vinyl chloride	12.2		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-18 (20-22) — Lab Sample ID: 310-158924-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Trichloroethene	1.58		1.00		ug/L	1		8260B	Total/NA

Client Sample ID: GP-18 (34-38) — Lab Sample ID: 310-158924-22

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 310-158924-23

No Detections.

Client Sample ID: TRIP BLANK — Lab Sample ID: 310-158924-24

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-16 (20-22)

Lab Sample ID: 310-158924-1

Date Collected: 06/26/19 09:30
Matrix: Ground Water
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 18:37	1
cis-1,2-Dichloroethene	**2.24**		1.00		ug/L			07/03/19 18:37	1
1,1-Dichloroethane	**1.28**		1.00		ug/L			07/03/19 18:37	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 18:37	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 18:37	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 18:37	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 18:37	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 18:37	1
Trichloroethene	**5.45**		1.00		ug/L			07/03/19 18:37	1
Vinyl chloride	**5.53**		1.00		ug/L			07/03/19 18:37	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*07/03/19 18:37*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*07/03/19 18:37*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*07/03/19 18:37*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-16 (27-29)

Lab Sample ID: 310-158924-2

Date Collected: 06/26/19 10:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<40.0		40.0		ug/L			07/04/19 00:09	10
cis-1,2-Dichloroethene	<10.0		10.0		ug/L			07/04/19 00:09	10
1,1-Dichloroethane	<10.0		10.0		ug/L			07/04/19 00:09	10
1,2-Dichloroethane	<10.0		10.0		ug/L			07/04/19 00:09	10
1,1-Dichloroethene	<20.0		20.0		ug/L			07/04/19 00:09	10
Tetrachloroethene	<10.0		10.0		ug/L			07/04/19 00:09	10
trans-1,2-Dichloroethene	<10.0		10.0		ug/L			07/04/19 00:09	10
1,1,1-Trichloroethane	<10.0		10.0		ug/L			07/04/19 00:09	10
Trichloroethene	<10.0		10.0		ug/L			07/04/19 00:09	10
Vinyl chloride	<10.0		10.0		ug/L			07/04/19 00:09	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*07/04/19 00:09*	*10*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*07/04/19 00:09*	*10*
Toluene-d8 (Surr)	*105*		*80 - 120*		*07/04/19 00:09*	*10*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-16 (34-36)

Lab Sample ID: 310-158924-3

Date Collected: 06/26/19 10:20
Matrix: Ground Water
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 18:59	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 18:59	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 18:59	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 18:59	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 18:59	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 18:59	1
trans-1,2-Dichloroethene	**3.01**		1.00		ug/L			07/03/19 18:59	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 18:59	1
Trichloroethene	**10.7**		1.00		ug/L			07/03/19 18:59	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 18:59	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*80 - 120*		*07/03/19 18:59*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*07/03/19 18:59*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*07/03/19 18:59*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: RINSATE #4

Lab Sample ID: 310-158924-4

Date Collected: 06/26/19 11:00
Matrix: Water
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 19:21	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 19:21	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 19:21	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 19:21	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 19:21	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 19:21	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 19:21	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 19:21	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 19:21	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*07/03/19 19:21*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*		*07/03/19 19:21*	*1*
Toluene-d8 (Surr)	*105*		*80 - 120*		*07/03/19 19:21*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-17 (0-1)

Lab Sample ID: 310-158924-5

Date Collected: 06/26/19 11:30
Matrix: Soil
Date Received: 06/28/19 09:10

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	140		4.61		mg/Kg	☼	07/08/19 10:52	07/12/19 12:07	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	8.2		0.1		%			06/28/19 12:32	1
Percent Solids	91.8		0.1		%			06/28/19 12:32	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-17 (8-10)

Lab Sample ID: 310-158924-6

Date Collected: 06/26/19 12:30
Matrix: Soil
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
cis-1,2-Dichloroethene	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
1,1-Dichloroethane	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
1,2-Dichloroethane	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
1,1-Dichloroethene	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
Tetrachloroethene	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
trans-1,2-Dichloroethene	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
1,1,1-Trichloroethane	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
Trichloroethene	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1
Vinyl chloride	<0.148		0.148		mg/Kg	☼	07/08/19 08:18	07/08/19 14:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*	*07/08/19 08:18*	*07/08/19 14:54*	*1*
Dibromofluoromethane (Surr)	*93*		*80 - 120*	*07/08/19 08:18*	*07/08/19 14:54*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*	*07/08/19 08:18*	*07/08/19 14:54*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**19.6**		0.1		%			06/28/19 12:32	1
Percent Solids	**80.4**		0.1		%			06/28/19 12:32	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-17 (7-12)

Lab Sample ID: 310-158924-7

Date Collected: 06/26/19 13:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<40.0		40.0		ug/L			07/03/19 23:47	10
cis-1,2-Dichloroethene	<10.0		10.0		ug/L			07/03/19 23:47	10
1,1-Dichloroethane	<10.0		10.0		ug/L			07/03/19 23:47	10
1,2-Dichloroethane	<10.0		10.0		ug/L			07/03/19 23:47	10
1,1-Dichloroethene	<20.0		20.0		ug/L			07/03/19 23:47	10
Tetrachloroethene	<10.0		10.0		ug/L			07/03/19 23:47	10
trans-1,2-Dichloroethene	<10.0		10.0		ug/L			07/03/19 23:47	10
1,1,1-Trichloroethane	<10.0		10.0		ug/L			07/03/19 23:47	10
Trichloroethene	<10.0		10.0		ug/L			07/03/19 23:47	10
Vinyl chloride	<10.0		10.0		ug/L			07/03/19 23:47	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*80 - 120*		*07/03/19 23:47*	*10*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*07/03/19 23:47*	*10*
Toluene-d8 (Surr)	*104*		*80 - 120*		*07/03/19 23:47*	*10*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-17 (28-30)

Lab Sample ID: 310-158924-8

Date Collected: 06/26/19 13:30
Matrix: Soil
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
cis-1,2-Dichloroethene	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
1,1-Dichloroethane	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
1,2-Dichloroethane	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
1,1-Dichloroethene	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
Tetrachloroethene	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
trans-1,2-Dichloroethene	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
1,1,1-Trichloroethane	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
Trichloroethene	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1
Vinyl chloride	<0.147		0.147		mg/Kg	☼	07/08/19 08:18	07/08/19 15:19	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*	*07/08/19 08:18*	*07/08/19 15:19*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*	*07/08/19 08:18*	*07/08/19 15:19*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*	*07/08/19 08:18*	*07/08/19 15:19*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**18.8**		0.1		%			06/28/19 12:32	1
Percent Solids	**81.2**		0.1		%			06/28/19 12:32	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: 062619-A

Date Collected: 06/26/19 00:00
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-9

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 19:43	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 19:43	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 19:43	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 19:43	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 19:43	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 19:43	1
trans-1,2-Dichloroethene	**2.11**		1.00		ug/L			07/03/19 19:43	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 19:43	1
Trichloroethene	**9.34**		1.00		ug/L			07/03/19 19:43	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 19:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*07/03/19 19:43*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*07/03/19 19:43*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*07/03/19 19:43*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: RINSATE #5

Lab Sample ID: 310-158924-10

Date Collected: 06/26/19 13:45
Date Received: 06/28/19 09:10

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 20:05	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 20:05	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 20:05	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 20:05	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 20:05	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 20:05	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 20:05	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 20:05	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 20:05	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 20:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*07/03/19 20:05*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 120*		*07/03/19 20:05*	*1*
Toluene-d8 (Surr)	*106*		*80 - 120*		*07/03/19 20:05*	*1*

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	**0.00139**		0.000500		mg/L		07/01/19 08:08	07/03/19 14:17	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-17 (17-19)

Lab Sample ID: 310-158924-11

Date Collected: 06/26/19 13:40
Matrix: Ground Water
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 20:27	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 20:27	1
1,1-Dichloroethane	**4.32**		1.00		ug/L			07/03/19 20:27	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 20:27	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 20:27	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 20:27	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 20:27	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 20:27	1
Trichloroethene	**4.40**		1.00		ug/L			07/03/19 20:27	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 20:27	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*80 - 120*		*07/03/19 20:27*	*1*
Dibromofluoromethane (Surr)	*106*		*80 - 120*		*07/03/19 20:27*	*1*
Toluene-d8 (Surr)	*104*		*80 - 120*		*07/03/19 20:27*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-17 (24-26)

Date Collected: 06/26/19 14:00
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-12

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 20:49	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 20:49	1
1,1-Dichloroethane	**1.06**		1.00		ug/L			07/03/19 20:49	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 20:49	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 20:49	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 20:49	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 20:49	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 20:49	1
Trichloroethene	**1.08**		1.00		ug/L			07/03/19 20:49	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 20:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*07/03/19 20:49*	*1*
Dibromofluoromethane (Surr)	*101*		*80 - 120*		*07/03/19 20:49*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*07/03/19 20:49*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (0-1)

Lab Sample ID: 310-158924-13

Date Collected: 06/26/19 15:00
Matrix: Soil
Date Received: 06/28/19 09:10

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	776		4.65		mg/Kg	☼	07/08/19 10:52	07/12/19 12:16	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	17.1		0.1		%			06/28/19 12:32	1
Percent Solids	82.9		0.1		%			06/28/19 12:32	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (6-8)

Date Collected: 06/26/19 15:10
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-14

Matrix: Soil

Method: 6010D - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	13.8		4.61		mg/Kg	☼	07/08/19 10:52	07/12/19 12:17	1

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	16.6		0.1		%			06/28/19 12:32	1
Percent Solids	83.4		0.1		%			06/28/19 12:32	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (4-6)

Date Collected: 06/26/19 16:00
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-15

Matrix: Soil

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
cis-1,2-Dichloroethene	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
1,1-Dichloroethane	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
1,2-Dichloroethane	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
1,1-Dichloroethene	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
Tetrachloroethene	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
trans-1,2-Dichloroethene	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
1,1,1-Trichloroethane	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
Trichloroethene	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1
Vinyl chloride	<0.186		0.186		mg/Kg	☼	07/08/19 08:18	07/08/19 15:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*	*07/08/19 08:18*	*07/08/19 15:43*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*	*07/08/19 08:18*	*07/08/19 15:43*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*	*07/08/19 08:18*	*07/08/19 15:43*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**30.0**		0.1		%			06/28/19 12:32	1
Percent Solids	**70.0**		0.1		%			06/28/19 12:32	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (41-43)

Lab Sample ID: 310-158924-16

Date Collected: 06/26/19 18:20
Matrix: Soil
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
cis-1,2-Dichloroethene	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
1,1-Dichloroethane	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
1,2-Dichloroethane	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
1,1-Dichloroethene	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
Tetrachloroethene	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
trans-1,2-Dichloroethene	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
1,1,1-Trichloroethane	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
Trichloroethene	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1
Vinyl chloride	<0.205		0.205		mg/Kg	☼	07/08/19 08:18	07/08/19 16:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*94*		*80 - 120*	*07/08/19 08:18*	*07/08/19 16:07*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*	*07/08/19 08:18*	*07/08/19 16:07*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*	*07/08/19 08:18*	*07/08/19 16:07*	*1*

General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	**34.6**		0.1		%			06/28/19 12:32	1
Percent Solids	**65.4**		0.1		%			06/28/19 12:32	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (10-15)

Date Collected: 06/26/19 18:35
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-17

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 21:12	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 21:12	1
1,1-Dichloroethane	**1.33**		1.00		ug/L			07/03/19 21:12	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 21:12	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 21:12	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 21:12	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 21:12	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 21:12	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 21:12	1
Vinyl chloride	**11.1**		1.00		ug/L			07/03/19 21:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*07/03/19 21:12*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 120*		*07/03/19 21:12*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*07/03/19 21:12*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: RINSATE #6

Lab Sample ID: 310-158924-18

Date Collected: 06/26/19 18:40
Matrix: Water
Date Received: 06/28/19 09:10

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 21:34	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 21:34	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 21:34	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 21:34	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 21:34	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 21:34	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 21:34	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 21:34	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 21:34	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 21:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*07/03/19 21:34*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 120*		*07/03/19 21:34*	*1*
Toluene-d8 (Surr)	*107*		*80 - 120*		*07/03/19 21:34*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: RINSATE #7

Lab Sample ID: 310-158924-19

Date Collected: 06/26/19 19:00

Matrix: Water

Date Received: 06/28/19 09:10

Method: 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	0.00285		0.000500		mg/L		07/01/19 08:08	07/03/19 14:21	1

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: 062619-B

Date Collected: 06/26/19 00:00
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-20

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 21:56	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 21:56	1
1,1-Dichloroethane	**1.41**		1.00		ug/L			07/03/19 21:56	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 21:56	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 21:56	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 21:56	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 21:56	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 21:56	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 21:56	1
Vinyl chloride	**12.2**		1.00		ug/L			07/03/19 21:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*07/03/19 21:56*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*		*07/03/19 21:56*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*07/03/19 21:56*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (20-22)

Date Collected: 06/26/19 19:00
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-21

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 22:40	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 22:40	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 22:40	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 22:40	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 22:40	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 22:40	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 22:40	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 22:40	1
Trichloroethene	**1.58**		1.00		ug/L			07/03/19 22:40	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 22:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*07/03/19 22:40*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 120*		*07/03/19 22:40*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*07/03/19 22:40*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (34-38)

Date Collected: 06/26/19 19:55
Date Received: 06/28/19 09:10

Lab Sample ID: 310-158924-22

Matrix: Ground Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 22:18	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 22:18	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 22:18	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 22:18	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 22:18	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 22:18	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 22:18	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 22:18	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 22:18	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 22:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*		*07/03/19 22:18*	*1*
Dibromofluoromethane (Surr)	*94*		*80 - 120*		*07/03/19 22:18*	*1*
Toluene-d8 (Surr)	*103*		*80 - 120*		*07/03/19 22:18*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK

Lab Sample ID: 310-158924-23

Date Collected: 06/26/19 00:00
Date Received: 06/28/19 09:10

Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 18:15	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 18:15	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 18:15	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 18:15	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 18:15	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 18:15	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 18:15	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 18:15	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 18:15	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 18:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*07/03/19 18:15*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*07/03/19 18:15*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*07/03/19 18:15*	*1*

Client Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: TRIP BLANK

Lab Sample ID: 310-158924-24

Date Collected: 06/26/19 00:00
Date Received: 06/28/19 09:10

Matrix: Soil

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
cis-1,2-Dichloroethene	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
1,1-Dichloroethane	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
1,2-Dichloroethane	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
1,1-Dichloroethene	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
Tetrachloroethene	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
trans-1,2-Dichloroethene	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
1,1,1-Trichloroethane	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
Trichloroethene	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1
Vinyl chloride	<0.100		0.100		mg/Kg		07/08/19 08:18	07/08/19 16:31	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*	*07/08/19 08:18*	*07/08/19 16:31*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 120*	*07/08/19 08:18*	*07/08/19 16:31*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*	*07/08/19 08:18*	*07/08/19 16:31*	*1*

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Ground Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
310-158924-1	GP-16 (20-22)	101	100	103
310-158924-2	GP-16 (27-29)	104	102	105
310-158924-3	GP-16 (34-36)	107	102	102
310-158924-7	GP-17 (7-12)	108	98	104
310-158924-9	062619-A	103	100	103
310-158924-11	GP-17 (17-19)	107	106	104
310-158924-12	GP-17 (24-26)	100	101	102
310-158924-17	GP-18 (10-15)	100	95	103
310-158924-20	062619-B	98	98	101
310-158924-21	GP-18 (20-22)	105	100	102
310-158924-21 MS	GP-18 (20-22)	105	85	101
310-158924-21 MSD	GP-18 (20-22)	106	92	101
310-158924-22	GP-18 (34-38)	96	94	103

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Soil **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
310-158924-6	GP-17 (8-10)	95	93	99
310-158924-8	GP-17 (28-30)	93	97	99
310-158924-15	GP-18 (4-6)	93	95	99
310-158924-16	GP-18 (41-43)	94	95	100
310-158924-24	TRIP BLANK	93	98	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Solid **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(80-120)	(80-120)
LCS 310-245040/2-A	Lab Control Sample	97	101	100
MB 310-245040/1-A	Method Blank	96	98	99

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Surrogate Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	**Client Sample ID**	**BFB (80-120)**	**DBFM (80-120)**	**TOL (80-120)**
310-158924-4	RINSATE #4	101	95	105
310-158924-10	RINSATE #5	102	97	106
310-158924-18	RINSATE #6	100	99	107
310-158924-23	TRIP BLANK	105	103	97
LCS 310-244692/6	Lab Control Sample	102	86	101
LCS 310-244692/7	Lab Control Sample	106	99	95
MB 310-244692/8	Method Blank	105	91	101

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-244692/8 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244692

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<4.00		4.00		ug/L			07/03/19 17:53	1
cis-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 17:53	1
1,1-Dichloroethane	<1.00		1.00		ug/L			07/03/19 17:53	1
1,2-Dichloroethane	<1.00		1.00		ug/L			07/03/19 17:53	1
1,1-Dichloroethene	<2.00		2.00		ug/L			07/03/19 17:53	1
Tetrachloroethene	<1.00		1.00		ug/L			07/03/19 17:53	1
trans-1,2-Dichloroethene	<1.00		1.00		ug/L			07/03/19 17:53	1
1,1,1-Trichloroethane	<1.00		1.00		ug/L			07/03/19 17:53	1
Trichloroethene	<1.00		1.00		ug/L			07/03/19 17:53	1
Vinyl chloride	<1.00		1.00		ug/L			07/03/19 17:53	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*07/03/19 17:53*	*1*
Dibromofluoromethane (Surr)	*91*		*80 - 120*		*07/03/19 17:53*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*07/03/19 17:53*	*1*

Lab Sample ID: LCS 310-244692/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244692

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	20.0	19.44		ug/L		97	77 - 120
1,1-Dichloroethane	20.0	21.26		ug/L		106	75 - 125
1,2-Dichloroethane	20.0	20.77		ug/L		104	75 - 123
1,1-Dichloroethene	20.0	19.02		ug/L		95	75 - 124
Tetrachloroethene	20.0	21.53		ug/L		108	72 - 129
trans-1,2-Dichloroethene	20.0	18.83		ug/L		94	75 - 122
1,1,1-Trichloroethane	20.0	19.73		ug/L		99	76 - 127
Trichloroethene	20.0	21.00		ug/L		105	77 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*86*		*80 - 120*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: LCS 310-244692/7 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 244692

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloroethane	20.0	16.23		ug/L		81	69 - 129
Vinyl chloride	20.0	19.76		ug/L		99	67 - 133

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*80 - 120*
Toluene-d8 (Surr)	*95*		*80 - 120*

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 310-158924-21 MS — **Client Sample ID: GP-18 (20-22)**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 244692

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	<1.00		20.0	17.11		ug/L		82	46 - 130
1,1-Dichloroethane	<1.00		20.0	18.13		ug/L		87	50 - 127
1,2-Dichloroethane	<1.00		20.0	18.69		ug/L		93	55 - 128
1,1-Dichloroethene	<2.00		20.0	12.96		ug/L		65	47 - 124
Tetrachloroethene	<1.00		20.0	14.79		ug/L		74	40 - 129
trans-1,2-Dichloroethene	<1.00		20.0	14.00		ug/L		70	51 - 122
1,1,1-Trichloroethane	<1.00		20.0	13.73		ug/L		69	50 - 127
Trichloroethene	1.58		20.0	16.18		ug/L		73	54 - 123

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*
Dibromofluoromethane (Surr)	*85*		*80 - 120*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: 310-158924-21 MSD — **Client Sample ID: GP-18 (20-22)**
Matrix: Ground Water — **Prep Type: Total/NA**
Analysis Batch: 244692

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	<1.00		20.0	16.81		ug/L		81	46 - 130	2	22
1,1-Dichloroethane	<1.00		20.0	17.32		ug/L		83	50 - 127	5	23
1,2-Dichloroethane	<1.00		20.0	18.82		ug/L		94	55 - 128	1	21
1,1-Dichloroethene	<2.00		20.0	11.63		ug/L		58	47 - 124	11	24
Tetrachloroethene	<1.00		20.0	14.23		ug/L		71	40 - 129	4	21
trans-1,2-Dichloroethene	<1.00		20.0	13.86		ug/L		69	51 - 122	1	23
1,1,1-Trichloroethane	<1.00		20.0	13.84		ug/L		69	50 - 127	1	21
Trichloroethene	1.58		20.0	16.60		ug/L		75	54 - 123	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*92*		*80 - 120*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: MB 310-245040/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 245068 — **Prep Batch: 245040**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloroethane	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
cis-1,2-Dichloroethene	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
1,1-Dichloroethane	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
1,2-Dichloroethane	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
1,1-Dichloroethene	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
Tetrachloroethene	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
trans-1,2-Dichloroethene	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
1,1,1-Trichloroethane	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
Trichloroethene	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1
Vinyl chloride	<0.0955		0.0955		mg/Kg		07/08/19 08:18	07/08/19 10:28	1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	96		80 - 120	07/08/19 08:18	07/08/19 10:28	1
Dibromofluoromethane (Surr)	98		80 - 120	07/08/19 08:18	07/08/19 10:28	1
Toluene-d8 (Surr)	99		80 - 120	07/08/19 08:18	07/08/19 10:28	1

Lab Sample ID: LCS 310-245040/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 245068 — **Prep Batch: 245040**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	0.927	1.027		mg/Kg		111	74 - 148
1,1-Dichloroethane	0.927	0.9740		mg/Kg		105	74 - 150
1,2-Dichloroethane	0.927	0.9868		mg/Kg		107	74 - 148
1,1-Dichloroethene	0.927	0.9432		mg/Kg		102	74 - 139
Tetrachloroethene	0.927	0.9815		mg/Kg		106	77 - 127
trans-1,2-Dichloroethene	0.927	0.9307		mg/Kg		100	76 - 139
1,1,1-Trichloroethane	0.927	1.023		mg/Kg		110	74 - 144
Trichloroethene	0.927	1.005		mg/Kg		109	75 - 142

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	97		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120
Toluene-d8 (Surr)	100		80 - 120

Method: 6010D - Metals (ICP)

Lab Sample ID: MB 310-245107/1-A — **Client Sample ID: Method Blank**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 245791 — **Prep Batch: 245107**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<4.58		4.58		mg/Kg		07/08/19 10:52	07/12/19 12:04	1

Lab Sample ID: LCS 310-245107/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Solid — **Prep Type: Total/NA**
Analysis Batch: 245791 — **Prep Batch: 245107**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	194	203.0		mg/Kg		105	80 - 120

Lab Sample ID: 310-158924-5 MS — **Client Sample ID: GP-17 (0-1)**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 245791 — **Prep Batch: 245107**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	140		176	289.5		mg/Kg	☼	85	75 - 125

Lab Sample ID: 310-158924-5 MSD — **Client Sample ID: GP-17 (0-1)**
Matrix: Soil — **Prep Type: Total/NA**
Analysis Batch: 245791 — **Prep Batch: 245107**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Lead	140		193	334.2		mg/Kg	☼	101	75 - 125	14	20

QC Sample Results

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-244371/1-A
Matrix: Water
Analysis Batch: 244707

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 244371

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lead	<0.000500		0.000500		mg/L		07/01/19 08:08	07/02/19 13:22	1

Lab Sample ID: LCS 310-244371/2-A
Matrix: Water
Analysis Batch: 244707

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 244371

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	0.0200	0.02317		mg/L		116	80 - 120

Method: Moisture - Percent Moisture

Lab Sample ID: 310-158924-5 DU
Matrix: Soil
Analysis Batch: 244230

Client Sample ID: GP-17 (0-1)
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	8.2		7.7		%		7	20
Percent Solids	91.8		92.3		%		0.6	20

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

GC/MS VOA

Analysis Batch: 244692

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-1	GP-16 (20-22)	Total/NA	Ground Water	8260B	
310-158924-2	GP-16 (27-29)	Total/NA	Ground Water	8260B	
310-158924-3	GP-16 (34-36)	Total/NA	Ground Water	8260B	
310-158924-4	RINSATE #4	Total/NA	Water	8260B	
310-158924-7	GP-17 (7-12)	Total/NA	Ground Water	8260B	
310-158924-9	062619-A	Total/NA	Ground Water	8260B	
310-158924-10	RINSATE #5	Total/NA	Water	8260B	
310-158924-11	GP-17 (17-19)	Total/NA	Ground Water	8260B	
310-158924-12	GP-17 (24-26)	Total/NA	Ground Water	8260B	
310-158924-17	GP-18 (10-15)	Total/NA	Ground Water	8260B	
310-158924-18	RINSATE #6	Total/NA	Water	8260B	
310-158924-20	062619-B	Total/NA	Ground Water	8260B	
310-158924-21	GP-18 (20-22)	Total/NA	Ground Water	8260B	
310-158924-22	GP-18 (34-38)	Total/NA	Ground Water	8260B	
310-158924-23	TRIP BLANK	Total/NA	Water	8260B	
MB 310-244692/8	Method Blank	Total/NA	Water	8260B	
LCS 310-244692/6	Lab Control Sample	Total/NA	Water	8260B	
LCS 310-244692/7	Lab Control Sample	Total/NA	Water	8260B	
310-158924-21 MS	GP-18 (20-22)	Total/NA	Ground Water	8260B	
310-158924-21 MSD	GP-18 (20-22)	Total/NA	Ground Water	8260B	

Prep Batch: 245040

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-6	GP-17 (8-10)	Total/NA	Soil	5035	
310-158924-8	GP-17 (28-30)	Total/NA	Soil	5035	
310-158924-15	GP-18 (4-6)	Total/NA	Soil	5035	
310-158924-16	GP-18 (41-43)	Total/NA	Soil	5035	
310-158924-24	TRIP BLANK	Total/NA	Soil	5035	
MB 310-245040/1-A	Method Blank	Total/NA	Solid	5035	
LCS 310-245040/2-A	Lab Control Sample	Total/NA	Solid	5035	

Analysis Batch: 245068

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-6	GP-17 (8-10)	Total/NA	Soil	8260B	245040
310-158924-8	GP-17 (28-30)	Total/NA	Soil	8260B	245040
310-158924-15	GP-18 (4-6)	Total/NA	Soil	8260B	245040
310-158924-16	GP-18 (41-43)	Total/NA	Soil	8260B	245040
310-158924-24	TRIP BLANK	Total/NA	Soil	8260B	245040
MB 310-245040/1-A	Method Blank	Total/NA	Solid	8260B	245040
LCS 310-245040/2-A	Lab Control Sample	Total/NA	Solid	8260B	245040

Metals

Prep Batch: 244371

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-10	RINSATE #5	Total/NA	Water	3010A	
310-158924-19	RINSATE #7	Total/NA	Water	3010A	
MB 310-244371/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-244371/2-A	Lab Control Sample	Total/NA	Water	3010A	

QC Association Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Metals

Analysis Batch: 244707

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-244371/1-A	Method Blank	Total/NA	Water	6020B	244371
LCS 310-244371/2-A	Lab Control Sample	Total/NA	Water	6020B	244371

Analysis Batch: 245039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-10	RINSATE #5	Total/NA	Water	6020B	244371
310-158924-19	RINSATE #7	Total/NA	Water	6020B	244371

Prep Batch: 245107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-5	GP-17 (0-1)	Total/NA	Soil	3050B	
310-158924-13	GP-18 (0-1)	Total/NA	Soil	3050B	
310-158924-14	GP-18 (6-8)	Total/NA	Soil	3050B	
MB 310-245107/1-A	Method Blank	Total/NA	Solid	3050B	
LCS 310-245107/2-A	Lab Control Sample	Total/NA	Solid	3050B	
310-158924-5 MS	GP-17 (0-1)	Total/NA	Soil	3050B	
310-158924-5 MSD	GP-17 (0-1)	Total/NA	Soil	3050B	

Analysis Batch: 245791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-5	GP-17 (0-1)	Total/NA	Soil	6010D	245107
310-158924-13	GP-18 (0-1)	Total/NA	Soil	6010D	245107
310-158924-14	GP-18 (6-8)	Total/NA	Soil	6010D	245107
MB 310-245107/1-A	Method Blank	Total/NA	Solid	6010D	245107
LCS 310-245107/2-A	Lab Control Sample	Total/NA	Solid	6010D	245107
310-158924-5 MS	GP-17 (0-1)	Total/NA	Soil	6010D	245107
310-158924-5 MSD	GP-17 (0-1)	Total/NA	Soil	6010D	245107

General Chemistry

Analysis Batch: 244230

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-158924-5	GP-17 (0-1)	Total/NA	Soil	Moisture	
310-158924-6	GP-17 (8-10)	Total/NA	Soil	Moisture	
310-158924-8	GP-17 (28-30)	Total/NA	Soil	Moisture	
310-158924-13	GP-18 (0-1)	Total/NA	Soil	Moisture	
310-158924-14	GP-18 (6-8)	Total/NA	Soil	Moisture	
310-158924-15	GP-18 (4-6)	Total/NA	Soil	Moisture	
310-158924-16	GP-18 (41-43)	Total/NA	Soil	Moisture	
310-158924-5 MS	GP-17 (0-1)	Total/NA	Soil	Moisture	
310-158924-5 MSD	GP-17 (0-1)	Total/NA	Soil	Moisture	
310-158924-5 DU	GP-17 (0-1)	Total/NA	Soil	Moisture	

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-16 (20-22)
Lab Sample ID: 310-158924-1
Date Collected: 06/26/19 09:30
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 18:37	SJN	TAL CF

Client Sample ID: GP-16 (27-29)
Lab Sample ID: 310-158924-2
Date Collected: 06/26/19 10:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	244692	07/04/19 00:09	SJN	TAL CF

Client Sample ID: GP-16 (34-36)
Lab Sample ID: 310-158924-3
Date Collected: 06/26/19 10:20
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 18:59	SJN	TAL CF

Client Sample ID: RINSATE #4
Lab Sample ID: 310-158924-4
Date Collected: 06/26/19 11:00
Matrix: Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 19:21	SJN	TAL CF

Client Sample ID: GP-17 (0-1)
Lab Sample ID: 310-158924-5
Date Collected: 06/26/19 11:30
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			245107	07/08/19 10:52	HED	TAL CF
Total/NA	Analysis	6010D		1	245791	07/12/19 12:07	CTB	TAL CF
Total/NA	Analysis	Moisture		1	244230	06/28/19 12:32	SAS	TAL CF

Client Sample ID: GP-17 (8-10)
Lab Sample ID: 310-158924-6
Date Collected: 06/26/19 12:30
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			245040	07/08/19 08:18	TCH	TAL CF
Total/NA	Analysis	8260B		1	245068	07/08/19 14:54	TCH	TAL CF
Total/NA	Analysis	Moisture		1	244230	06/28/19 12:32	SAS	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-17 (7-12)
Lab Sample ID: 310-158924-7
Date Collected: 06/26/19 13:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		10	244692	07/03/19 23:47	SJN	TAL CF

Client Sample ID: GP-17 (28-30)
Lab Sample ID: 310-158924-8
Date Collected: 06/26/19 13:30
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			245040	07/08/19 08:18	TCH	TAL CF
Total/NA	Analysis	8260B		1	245068	07/08/19 15:19	TCH	TAL CF
Total/NA	Analysis	Moisture		1	244230	06/28/19 12:32	SAS	TAL CF

Client Sample ID: 062619-A
Lab Sample ID: 310-158924-9
Date Collected: 06/26/19 00:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 19:43	SJN	TAL CF

Client Sample ID: RINSATE #5
Lab Sample ID: 310-158924-10
Date Collected: 06/26/19 13:45
Matrix: Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 20:05	SJN	TAL CF
Total/NA	Prep	3010A			244371	07/01/19 08:08	HED	TAL CF
Total/NA	Analysis	6020B		1	245039	07/03/19 14:17	SAD	TAL CF

Client Sample ID: GP-17 (17-19)
Lab Sample ID: 310-158924-11
Date Collected: 06/26/19 13:40
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 20:27	SJN	TAL CF

Client Sample ID: GP-17 (24-26)
Lab Sample ID: 310-158924-12
Date Collected: 06/26/19 14:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 20:49	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: GP-18 (0-1)
Lab Sample ID: 310-158924-13
Date Collected: 06/26/19 15:00
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			245107	07/08/19 10:52	HED	TAL CF
Total/NA	Analysis	6010D		1	245791	07/12/19 12:16	CTB	TAL CF
Total/NA	Analysis	Moisture		1	244230	06/28/19 12:32	SAS	TAL CF

Client Sample ID: GP-18 (6-8)
Lab Sample ID: 310-158924-14
Date Collected: 06/26/19 15:10
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3050B			245107	07/08/19 10:52	HED	TAL CF
Total/NA	Analysis	6010D		1	245791	07/12/19 12:17	CTB	TAL CF
Total/NA	Analysis	Moisture		1	244230	06/28/19 12:32	SAS	TAL CF

Client Sample ID: GP-18 (4-6)
Lab Sample ID: 310-158924-15
Date Collected: 06/26/19 16:00
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			245040	07/08/19 08:18	TCH	TAL CF
Total/NA	Analysis	8260B		1	245068	07/08/19 15:43	TCH	TAL CF
Total/NA	Analysis	Moisture		1	244230	06/28/19 12:32	SAS	TAL CF

Client Sample ID: GP-18 (41-43)
Lab Sample ID: 310-158924-16
Date Collected: 06/26/19 18:20
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			245040	07/08/19 08:18	TCH	TAL CF
Total/NA	Analysis	8260B		1	245068	07/08/19 16:07	TCH	TAL CF
Total/NA	Analysis	Moisture		1	244230	06/28/19 12:32	SAS	TAL CF

Client Sample ID: GP-18 (10-15)
Lab Sample ID: 310-158924-17
Date Collected: 06/26/19 18:35
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 21:12	SJN	TAL CF

Client Sample ID: RINSATE #6
Lab Sample ID: 310-158924-18
Date Collected: 06/26/19 18:40
Matrix: Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 21:34	SJN	TAL CF

Lab Chronicle

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Client Sample ID: RINSATE #7
Lab Sample ID: 310-158924-19
Date Collected: 06/26/19 19:00
Matrix: Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			244371	07/01/19 08:08	HED	TAL CF
Total/NA	Analysis	6020B		1	245039	07/03/19 14:21	SAD	TAL CF

Client Sample ID: 062619-B
Lab Sample ID: 310-158924-20
Date Collected: 06/26/19 00:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 21:56	SJN	TAL CF

Client Sample ID: GP-18 (20-22)
Lab Sample ID: 310-158924-21
Date Collected: 06/26/19 19:00
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 22:40	SJN	TAL CF

Client Sample ID: GP-18 (34-38)
Lab Sample ID: 310-158924-22
Date Collected: 06/26/19 19:55
Matrix: Ground Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 22:18	SJN	TAL CF

Client Sample ID: TRIP BLANK
Lab Sample ID: 310-158924-23
Date Collected: 06/26/19 00:00
Matrix: Water
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	244692	07/03/19 18:15	SJN	TAL CF

Client Sample ID: TRIP BLANK
Lab Sample ID: 310-158924-24
Date Collected: 06/26/19 00:00
Matrix: Soil
Date Received: 06/28/19 09:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			245040	07/08/19 08:18	TCH	TAL CF
Total/NA	Analysis	8260B		1	245068	07/08/19 16:31	TCH	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Laboratory: Eurofins TestAmerica, Cedar Falls

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Minnesota	NELAP	5	019-999-319	12-31-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
Moisture		Soil	Percent Moisture
Moisture		Soil	Percent Solids

Method Summary

Client: Wenck Associates, Inc
Project/Site: Water Gremlin Co. Remedial Investigation

Job ID: 310-158924-1
SDG: 2606-0016

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL CF
6010D	Metals (ICP)	SW846	TAL CF
6020B	Metals (ICP/MS)	SW846	TAL CF
Moisture	Percent Moisture	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
3050B	Preparation, Metals	SW846	TAL CF
5030B	Purge and Trap	SW846	TAL CF
5035	Closed System Purge and Trap	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

eurofins | Environment Testing TestAmerica

310-158924 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Wenck Associates

City/State: CITY Woodbury STATE MN | Project: Water Gremin

Receipt Information

Date/Time Received: DATE 06/28/19 TIME 0910 | Received By: AR

Delivery Type: ☐ UPS ☑ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # _____ of _____

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☑ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☒ Yes ☒ No 6.28 LATB *If yes:* Which VOA samples are in cooler? ↓

All vials accounted for

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N | Correction Factor (°C): 0.0

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.5 | Corrected Temp (°C): 0.5

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

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Cedar Falls Division
704 Enterprise Drive
Cedar Falls, IA 50613

Phone 319-277-2401 or 800-750-2401
Fax 319-277-2425

TestAmerica Minneapolis SC
213

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring

Client Name: WENCK ASSOCIATES
Client #:
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN
Email Address: SWATERMAN@WENCK.COM
Telephone Number: 651-294-4588
Fax:
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature: [signature]

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE
State: MN
Report To: SHANE WATERMAN, CHRIS BRAISH
~~Invoice To:~~ KELLY JAWORSKI, BEN KRAMKA
Quote #:
PO#:

TAT: X Standard; ___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y (N)
Email Results: (Y) N

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix (SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other)	HNO3	HCl	NaOH	H2SO4	Methanol	None	Other (Specify)	Lead (EPA 6020)	VOC Modified List	Moisture								QC Deliverables: ___ None, ___ Level 2 (Batch QC), ___ Level 3, ___ Level 4, Other: ___ REMARKS
GP-16 (20-22)	6/26/19	930	G	No	GW		3							X									2001004853
GP-16 (27-29)	6/26	1000	G	No	GW		3							X									2001004853
GP-16 (34-36)	6/26	1020	G	No	GW		3							X									2001004853
RINSATE #4	6/26	1100	G	N	RW		3							X									SP-15 SCREEN
MS/MSD GP-17 (0-1)	6/26	1130	G	N	S						1		X										2001004940
GP-17 (8-10)	6/26	1230	G	NA	S					1	1	27		X	X								2001004940
GP-17 (7-12)	6/26	1300	G	No	GW		3							X									2001004854
GP-17 (25-30)	6/26	1330	G	NA	S					1	1			X	X								2001004940
062619-A	6/26		G	No	GW		3							X									BLIND DUP
RINSATE #5	6/26	1345	G	No	RW	2	3						X	X									MACRO CORE SAMPLE

Special Instructions: RW = RINSATE WATER

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LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/27	1420	[signature]	6-27-19	1420
[signature]	6-27-19	1700	Lindsay Bindert	6-28-19	910
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

TAL-0033 (0708)

Page 1 of 3

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Fax 319-277-2425

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To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES Client #: _____
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN
Email Address: SWATERMAN@WENCK.COM
Telephone Number: 651-294-4588 Fax: _____
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature: [signature] [signature]

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE State: MN
Report To: SHANE WATERMAN, CHRIS BRATSIN
~~Invoice To~~: KELLY JAWORSKI, BEN KRAMKA
Quote #: _____ PO#: _____

TAT: X Standard
___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y (N)
Email Results: (Y) N

Matrix: SL - Sludge, DW - Drinking Water, GW - Groundwater, S - Soil/Solid, WW - Wastewater, Specify, Other
Preservation & # of Containers
Analyze For: LEAD (EPA 6020), VOC Modified List, MOISTURE

QC Deliverables: ___ None; ___ Level 2 (Batch QC); ___ Level 3; ___ Level 4; Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	LEAD (EPA 6020)	VOC Modified List	MOISTURE	REMARKS
GP-17 (17-19)	6/26	1340	G	NO	GW		3							X		2001004854
GP-17 (24-26)	6/26	1400	G	NO	GW		3							X		2001004854
GP-18 (0-1)	6/26	1500	G	NA	S						1		X			2001004941
GP-18 (6-8)	6/26	1510	G	NA	S						1		X			2001004941
GP-18 (4-6)	6/26	1600	G	NA	S					1	1			X	X	2001004941
GP-18 (41-43)	6/26	1820	G	NA	S					1	1			X	X	2001004941
GP-18 (10-15)	6/26	1835	G	N	GW		3							X		2001004855
Rinsate #6	6/26	1840	G	N	RW											SP-15 Sampler
RINSATE #7	6/26	1900	G	N	RW	2	[illegible]						X			Macro-core Sampler
062617-B	6/26	—	G	N	GW		3							X		Blind Dup

Special Instructions: RW = Rinse Water

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LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/27	1420	[signature]	6-27-19	1420
[signature]	6-27-19	1700	Lindsay Bindert	6-28-19	910

TAL-0033 (0708)

Page 2 of 8

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Fax 319-277-2425

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To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

Client Name: WENCK ASSOCIATES Client #: _____
Address: 1802 WOODDALE DRIVE
City/State/Zip Code: WOODBURY MN 55125
Project Manager: SHANE WATERMAN
Email Address: SWATERMAN@WENCK
Telephone Number: 651-294-4588 Fax: _____
Sampler Name: (Print Name) KELLY JAWORSKI / BEN KRAMKA
Sampler Signature: [signature]

Project Name: WATER GREMLIN
Project #: 2606-0016
Site/Location ID: WHITE BEAR LAKE State: MN
Report To: SHANE WATERMAN, CHRIS BRATSCH
~~Invoice To:~~ KELLY JAWORSKI, BEN KRAMKA
Quote #: _____ PO#: _____

TAT
X Standard
___ Rush (surcharges may apply)
Date Needed: 5-DAY
Fax Results: Y N
Email Results: Y N

QC Deliverables
___ None
___ Level 2 (Batch QC)
___ Level 3
___ Level 4
Other: _____

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	Matrix: SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify, Other	Preservation & # of Containers: HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	Analyze For: LEAD (EPA 6020)	VOC Modified (15)	MOISTURE								REMARKS
GP-18 (20-22)	6/26	1900	G	NO	GW		9							X									2001004855
GP-18 (34-38)	6/26	1955	G	NO	GW		3							X									2001004855

Special Instructions: GP-18 (20-22) MS/MSD
GP-18 (34-38)

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LABORATORY COMMENTS:

Relinquished By:	Date:	Time:	Received By:	Date:	Time:
Kelly Jaworski	6/27	1420	[signature]	6-27-19	1420
[signature]	6-27-19	1700	Lindsay Bindert	6-28-19	910

TAL-0033 (0708)

Page 3 of 3

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Preservative Added (mls)	Lot #
RINSATE #5	310-158924-D-10	Plastic 250ml - with Nitric Acid	<2		
RINSATE #5	310-158924-E-10	Plastic 250ml - with Nitric Acid	<2		
RINSATE #7	310-158924-A-19	Plastic 250ml - with Nitric Acid	<2		
RINSATE #7	310-158924-B-19	Plastic 250ml - with Nitric Acid	<2		

Login Sample Receipt Checklist

Client: Wenck Associates, Inc

Job Number: 310-158924-1
SDG Number: 2606-0016

Login Number: 158924
List Number: 1
Creator: Bindert, Lindsay A

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Appendix E

Data Validation Reports and Supporting Documentation

DIANE SHORT & ASSOCIATES, INC.

1978 S. Garrison St. # 114
Lakewood CO 80227
303:271-9642
dsa7cbc@eazyqaqc.com

DATA VALIDATION FORM FOR INORGANICS
METALS BY ICP and ICP/MS SW-846 METHODs 6010D and 6020A

SDGs: 240-114472, 240-114745, 240-114766, 240-114843, 240-114912, 310-158924, 310-158749

PROJECT: Water Gremlin Co. Remedial Investigation - Wenck - MPC Project

LABORATORY: Eurofins TestAmerica, Canton, OH

SAMPLE MATRIX: Water and Solids

SAMPLING DATE: 6/14, 17-21/2019

NO. OF SAMPLES: 49 Sample for lead, 2 field duplicates, and 3 rinsate blank for lead

ANALYSES REQUESTED: SW-846 Method 6010D and 6020B - Lead only

SAMPLE NUMBERS: See Attached List
DATA REVIEWER: Amy Ballow

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: DLS 07/21/2019

Telephone Logs included Yes_____ No X

Contractual Violations Yes_____ No X

Comments:

I. DELIVERABLES

All deliverables were present as specified in the Statement of Work (SOW) or project contract.
Yes__X__No_____
The following are noted for clarification:
Data were submitted for the ICP and ICP/MS analyses by SW-846 Methods 6010D and 6020B for lead only. Data were submitted for the analyses of 49 Sample for lead, 2 field duplicates, and 3 rinsate blank for lead. Hard copy data were not submitted, but the full package was provided as pdf. Results are incorporated into the associated EDD.

This is a validation review and includes review of the raw data. The data were validated with a minimum of 10% validated as EPA raw data review. All SDGs are Level IV.

II. CALIBRATION AND STANDARDIZATION – ICP/MS

A. Initial and Continuing Calibration

1. All initial instrument calibrations were performed as defined in the SOW or project contract. All correlation coefficients for the 3 point curves were > 0.995.

Yes__X__No_____

2. The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were analyzed at the required frequency.

Yes__X__No_____

3. The ICV and CCV standard percent recovery results were within the required control limits of 90.0 – 110.0%.
Yes__X__No_____
For SDG 310-158924: One CCV for lead analyzed on 7-3-19 at 2332 exceeded criteria at 112%. No action is necessary as this standard does not bracket the associated samples.

B. ICP/MS Tune and Calibration

1. Mass calibration and resolution checks for both low and high mass isotopes are within 0.1 amu of the true value.

Yes__X__No_____

2. Mass calibration and resolution checks for both low and high mass isotopes produced a peak width of approximately 0.75 amu at 10% peak height.

Yes__X__No_____

3. Tuning solution was analyzed a minimum of three times, and the relative standard deviation (RSD) of absolute signals for all analytes was less than 5%.

Yes__X__No_____

C. Internal Standardization

1. A minimum of three internal standards were present in all standards and blanks at identical levels.

Yes__X__No_____
As applicable for lead by Method 6020B.

2. The intensity of each internal standard was within the required control limits of 60.0 – 130.0%.

Yes__X__No_____

The laboratory does not provide summary QC forms, but there are recoveries in the raw data.

III. CRDL STANDARDS

The 2 × CRDL standards were analyzed as required in the SOW.

Yes_____No_____N/A___X__

CRDLs were not provided or evaluated for the lead analyses.

IV. BLANKS

The highest blank associated with any particular analyte is used for the qualification process and is the value entered after the "B" blank descriptor.

A. The initial calibration blanks (ICB) and continuing calibration blanks (CCB) were analyzed at the required frequency.

Yes__X__No_____N/A_____

B. The ICB and CCB results were within the required control limits.

Yes__X__No_____N/A_____

Calibration blanks were reviewed for all of the data. There are no detections reported in the CCBs, and a raw data review showed that no results are impacted by calibration blank contamination.

C. All analytes in the Leach Blank were less than the RL or less than 2 × instrument detection limit (MDL), whichever is lower.

Yes_____No_____N/A___X__

Leach blanks were not applicable for these SDGs.

V. PREPARATION OR METHOD BLANKS

A. Preparation Blanks were prepared and analyzed at the required frequency.

Yes__X__No_____

B. All analytes in the Preparation Blank were less than the RL or less than the MDL, whichever is lower.

Yes__X__No_____

Detected results for lead were not reported in the method blanks.

C. Field, trip, decon rinse or other Field Blanks are contained and identified in the package.

Yes__X__No_____N/A_____

For SDG 240-114843: Sample RINSATE #3 (240-114843-17) was identified as a rinsate blank associated with Method 6020B.

For SDG 310-158924: Samples RINSATE #5 (310-158924-10) and RINSATE #7 (310-158924-19) were identified as rinsate blanks associated with Method 6020B.

D. The reported results for the Field Blanks are less than the RL or less than the IDL, whichever is lower.

Yes_____No__X__N/A_____

For SDG 240-114843: Sample RINSATE #3 (240-114843-17) was identified as a rinsate blank associated with Method 6020B. Lead was not reported for sample RINSATE #3 (240-114843-17) and lead is considered to be in control.

For SDG 310-158924: were identified as rinsate blanks associated with Method 6020B. Low level leads were reported for samples RINSATE #5 (310-158924-10) and RINSATE #7 (310-158924-19) at 0.0010 mg/L and 0.003 mg/L, respectively. No action was taken as the associated samples were greater than 10x the blank contamination.

VI. A. ICP INTERFERENCE CHECK SAMPLE

A. The Interference Check Sample (ICS) was analyzed as required in the SOW or project contract. The ICS consists of an A and an AB solution.
Yes__X__No_____N/A_____
The laboratory analyzed interference check samples in each run. A 10% review did not suggest any issues with interference with lead.

B. The ICS percent recovery results were reported for all required ICS analytes and were within the required control limits of 80.0 – 120.0%.
Yes__X__No_____N/A_____

VI. B. INTERELEMENT CORRECTION FACTORS

The Interelement Correction Factors are included and complete for all possible interferent analytes.
Yes__X__No_____N/A_____
Interelement correction factors were provided for Method 6010D, but is not applicable for 6020B (ICPMS).

VII. MATRIX SPIKE

A. A Matrix (pre-digestion) Spike sample was analyzed for each digestion group and/or matrix or as required in the SOW.
Yes__X__No_____
The samples used for MS/MSDs in this set are shown below.

SDG	Method	MS/MSD Parent Sample
240-114745	6010D	GP-8 (0-1) (240-114745-34
240-114843	6020B	SW-1 (240-114843-1)
240-114843	6010D	SED-1 (240-114843-8)
250-114912	6010D	GP-11 (0-1) (250-114912-1)
310-158749	6010D	GP-14 (0-1) (310-158749-1)
310-158924	6010D	GP-17 (0-1) (310-158924-5)

B. The Matrix Spike percent recoveries were within the required control limits of 70.0 – 130.0%.
Yes_____No__X__N/A_____
All MS/MSD recoveries were within criteria, with the following exceptions.

For SDG 240-114912: The MS/MSD recoveries for lead (149%, 143%) for sample GP-11 (0-1) (250-114912-1 by Method 6010D exceeded the QC limits of 70-130%. As a result, the detected result lead in the parent sample was qualified as JMS#, where # is the highest spike recovery outside criteria.

For SDG 310-158749: The MS recovery for lead (270%) for sample GP-14 (0-1) (310-158749-1) by Method 6010D exceeded the QC limits of 70-130%. As a result, the detected result lead in the parent sample was qualified as JMS#, where # is the highest spike recovery outside criteria. This result was also qualified for the MS/MSD RPD.

Lab ID	Client ID	Analyte	Result mg/Kg	Lab Flag	MDL	DSA	EPA
240-114912-1	GP-11 (0-1)	Lead	157	F1	0.274	JMS149	J
310-158749-1	GP-14 (0-1)	Lead	473	F1 F2	1.44	JMS270D47	J+

C. A Post Digestion Spike was prepared and analyzed if required.

Yes__X__No_____N/A_____

Not required, but reported and acceptable for SDG 240-114912.

D. The MS/MSD samples were client samples.

Yes__X__No_____

VIII. DUPLICATES

A. Matrix (pre-digestion) Duplicate samples were analyzed at the required frequency.

Yes__X__No_____

The laboratory prepares and analyzes MS/MSD samples.

B. The Matrix Duplicate (MD) relative percent differences (RPD) were within the required control limits (20% water, 35% soil) or the Reporting Limits (RL) were met if the duplicate values are less than 5 × RL (RL Rule). If either of the duplicate results is less than 5 × RL, the RPD is not used. The QC limit (± RL for water samples, 2 x RL soil) used is the difference between the original and the duplicate results.

Yes_____No__X__

All MS/MSD RPD values were acceptable, with the following exception.

For SDG 310-158749: The MS/MSD RPD for lead in sample GP-14 (0-1) (310-158749-1) exceeded the 20% criteria at 47%. Therefore, the detected result for lead was qualified. As JD#, where # is the RPD recovery outside criteria as listed in the table below. This result was also qualified for an MSD recovery outside criteria.

Lab ID	Client ID	Analyte	Result mg/Kg	Lab Flag	MDL	DSA	EPA
310-158749-1	GP-14 (0-1)	Lead	473	F1 F2	1.44	JMS270D47	J+

IX. LABORATORY CONTROL SAMPLE

A. Laboratory Control Samples (LCS) were analyzed at the required frequency.

Yes__X__No_____

B. The LCS recoveries were within the required control limits of 75.0 – 125.0%.
Yes__X__No_____
All LCS recoveries were within criteria.

X. SERIAL DILUTION

A. Serial Dilutions were analyzed at the required frequency if the analyte concentrations were greater than 50 × IDL.

Yes__X__No_____N/A_____

B. The percent difference (% D) criteria of ± 10.0% were met.
Yes_____No__X__N/A_____
All serial dilutions provided for samples in these SDGs were within control, with the following exception.

For SDG 310-158924: The %D for the serial dilution for sample GP-17 (310-158924-5) exceeded 10% at 12% and the original sample result was greater than 50x the MDL (1.2 x 50 = 60 mg/kg); therefore, the lead result for this sample was qualified as JE#, where # is the percent difference outside criteria.

Lab ID	Client ID	Analyte	Result mg/Kg	Lab Flag	MDL	DSA	EPA
310-158924-5	GP-17 (0-1)	Lead	140		1.2	JE12	J

XI. INSTRUMENT DETECTION LIMITS

A. The Instrument Detection Limits (IDL) met the Quarterly reporting requirements.

Yes__X__No_____N/A_____
This was determined to be acceptable during the contractual process.

B. All sample results met the required detection limits (RL).
Yes__X__No_____N/A_____

XII. PREPARATION AND ANALYSIS LOGS

A. All samples were prepared or analyzed within the required holding times referenced in the SOW (time of sample receipt to preparation/distillation).

Yes__X__No_____

B. All samples were analyzed within the 40 CFR 136 (Clean Water Act) or method recommended holding times (time of sample collection to date of analysis).

Yes__X__No_____
All holding times were met for the lead analyses.

C. Chain of Custody (COC)

1. Chain of Custody (COC) forms were reviewed and all fields were complete, signatures were present and cross outs were clean and initialed.

Yes__X__No_____

For SDG 240-114843: The rinsate (sample 240-114843-17) was not listed on the COC. According to the Sample Receipt form, this rinsate blank was received and log in for metal analyses. Additionally, the Sample Receipt form indicated the plastic bottles labeled "062019" with sample date "6/20" with two lines "062019-A" and "062019-B" was both group under one line "062019-A" on the COC. Only sample "062019-A (sample 240-114843-7) was analyzed for this SDG.

For SDG 310-158749: According to client correspondence, the soil sample 062419-a (310-158749-10) for lead was disregarded and no analyses were performed by the laboratory. This sample was not included in the data package.

Note that field duplicate samples do not include times in order to maintain their "blind" status to the laboratory. Dates and times should be recorded in the project field notebooks. The project manager should have verified the sample tracking as the chain IDs do not correlate to the Client IDs that the laboratory reports.

2. Samples were received at the required temperature and preservation.

Yes__X__No_____

EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C and all samples intact. All coolers and temperatures met this requirement.

XIII. FIELD QC

A. Field QC samples (duplicates, SRMs) were identified.

Yes__X__No_____

The client has identified field duplicate set as listed in the table below and all are within precision limits:

Test America Sample ID	Wenck Sample ID	Test America Sample ID	Corresponding Sample	Sample Medium	Method
240-114843-7	062019-A	240-114843-4	SW-4	Surface Water	6020B
240-114843-16	062019-B	240-114843-11	SED-1	Sediment	6010D

All field duplicate criteria were met for both sets of field duplicate samples.

B. Field duplicates were within the QAPP limit of < 50% RPD for all samples. If values are less than 5 × RL, the water limit is ± RL.

Yes__X__No_____N/A_____

The QAPP limits are met.

XIV. OVERALL ASSESSMENT OF THE CASE

The laboratory has complied with the requested method. Data are fully usable with consideration of the qualifiers that have been applied.

Deliverables

The following are noted for clarification:

Data were submitted for the ICP and ICP/MS analyses by SW-846 Methods 6010D and 6020B for lead only. Data were submitted for the analyses of 41 samples for lead, 2 field duplicates, and 1 rinsate blank. Hard copy data were not submitted, but the full package was provided as pdf. Results are incorporated into the associated EDD.

This is a validation review and includes review of the raw data. The data were validated with a minimum of 10% validated as EPA raw data review. All SDGs are Level IV.

Continuing Calibrations
For SDG 310-158924: One CCV for lead analyzed on 7-3-19 at 2332 exceeded criteria at 112%. No action is necessary as this standard does not bracket the associated samples.

Continuing Calibration and Method Blanks
Calibration blanks were reviewed for all of the data. There are no detections reported in the CCBs, and a raw data review showed that no results are impacted by calibration blank contamination.

Detected results for lead were not reported in the method blanks.

Field Blanks
For SDG 240-114843: Sample RINSATE #3 (240-114843-17) was identified as a rinsate blank associated with Method 6020B. Lead was not reported for this rinsate blank and lead is considered to be in control.

For SDG 310-158924: Samples RINSATE #5 (310-158924-10) and RINSATE #7 (310-158924-19) were identified as rinsate blanks associated with Method 6020B. Low level leads were reported for both these rinsates at 0.0010 mg/L and 0.003 mg/L, respectively. No action was taken as the associated samples were greater than 10x the blank contamination.

Matrix Spikes
The samples used for MS/MSDs in this set are shown below.

SDG	Method	MS/MSD Parent Sample
240-114745	6010D	GP-8 (0-1) (240-114745-34
240-114843	6020B	SW-1 (240-114843-1)
240-114843	6010D	SED-1 (240-114843-8)
250-114912	6010D	GP-11 (0-1) (250-114912-1)
310-158749	6010D	GP-14 (0-1) (310-158749-1)
310-158924	6010D	GP-17 (0-1) (310-158924-5)

All MS/MSD recoveries were within criteria, with the following exceptions.

For SDG 240-114912: The MS/MSD recoveries for lead (149%, 143%) for sample GP-11 (0-1) (250-114912-1 by Method 6010D exceeded the QC limits of 70-130%. As a result, the detected result lead in the parent sample was qualified as JMS#, where # is the highest spike recovery outside criteria.

For SDG 310-158749: The MS recovery for lead (270%) for sample GP-14 (0-1) (310-158749-1) by Method 6010D exceeded the QC limits of 70-130%. As a result, the detected result lead in the parent sample was qualified as JMS#, where # is the highest spike recovery outside criteria. This result was also qualified for the MS/MSD RPD.

Matrix Duplicates
All MS/MSD RPD values were acceptable, with the following exception.
For SDG 310-158749: The MS/MSD RPD for lead in sample GP-14 (0-1) (310-158749-1) exceeded the 35% criteria at 47%. Therefore, the detected result for lead was qualified. As JD#, where # is the RPD recovery outside criteria. This result was also qualified for an MSD recovery outside criteria.

Serial Dilution
All serial dilutions provided for samples in these SDGs were within control, with the following exception. For SDG 310-158924: The %D for the serial dilution for sample GP-17 (310-158924-5) exceeded 10% at 12% and the original sample result was greater than 50x the MDL (1.2 x 50 = 60 mg/kg); therefore, the lead result for this sample was qualified as JE#, where # is the percent difference outside criteria.

Chain of Custody
For SDG 240-114843: The rinsate (sample 240-114843-17) was not listed on the COC. According to the Sample Receipt form, this rinsate blank was received and log in for metal analyses. Additionally, the Sample Receipt form indicated the plastic bottles labeled "062019" with sample date "6/20" with two lines "062019-A" and "062019-B" was both group under one line "062019-A" on the COC. Only sample "062019-A (sample 240-114843-7) was analyzed for this SDG.

For SDG 310-158749: According to client correspondence, the soil sample 062419-a (310-158749-10) for lead was disregarded and no analyses were performed by the laboratory. This sample was not included in the data package.

Note that field duplicate samples do not include times in order to maintain their "blind" status to the laboratory. Dates and times should be recorded in the project field notebooks. The project manager should have verified the sample tracking as the chain IDs do not correlate to the Client IDs that the laboratory reports.

Field Duplicates
The client has identified field duplicate set as listed in the table below and all are within precision limits:

Test America Sample ID	Wenck Sample ID	Test America Sample ID	Corresponding Sample	Sample Medium	Method
240-114843-7	062019-A	240-114843-4	SW-4	Surface Water	6020B
240-114843-16	062019-B	240-114843-11	SED-1	Sediment	6010D

All field duplicate criteria were met for both sets of field duplicate samples.

SUMMARY TABLE OF QUALIFIED DATA

Lab ID	Client ID	Analyte	Result mg/Kg	Lab Flag	MDL	DSA	EPA
240-114912-1	GP-11 (0-1)	Lead	157	F1	0.274	JMS149	J
310-158749-1	GP-14 (0-1)	Lead	473	F1 F2	1.44	JMS270D47	J+
310-158924-5	GP-17 (0-1)	Lead	140		1.2	JE12	J

DIANE SHORT & ASSOCIATES, INC.
1978 S. Garrison St. # 114
Lakewood CO 80227
303:271-9642
dsa7cbc@eazyqaqc.com

DATA VALIDATION FORM FOR ORGANICS

SDGs: 240-114472, 240-114745, 240-114766, 240-114843, 240-114112, 310-158924, 310-158749

PROJECT: Water Gremlin Co. Remedial Investigation - Wenck - MPC Project

LABORATORY: Eurofins TestAmerica, Canton, OH

SAMPLE MATRIX: Water, Groundwater, Solid, Soil

SAMPLING DATE: 6/14, 17-21/2019

NO. OF SAMPLES: 134 Samples for 8260B which includes 6 field duplicates, 13 trip blanks, and 7 rinsate blanks

ANALYSES REQUESTED: SW-846 Method 8260B

SAMPLE NUMBERS: See Attached List

DATA REVIEWER: Amy Ballow

QA REVIEWER: Diane Short and Associates Inc. INITIALS/DATE: DLS 07/23/2019

Telephone Logs included Yes_____ No X

Contractual Violations Yes_____ No X

Comments:

I. DELIVERABLES

All deliverables were present as specified in the QAPP.

Yes__X__No_____

The following are noted for clarification:

This is a validation review for 10 project-specific compounds by SW-846 Method 8260B. Data were submitted for the analyses of 134 samples by 8260B, which includes 6 field duplicate sets, 13 trip blanks, and 4 rinsate blanks. Hard copy data were not submitted, but the full packages were provided as pdf. Results are incorporated into the associated EDD.

This is a validation review and includes review of the raw data. The data were validated with a minimum of 10% validated as EPA raw data review. All SDGs are Level IV.

For SDG 240-114745: The VOA Instrument Performance Check (BFB) Tune Summary for Instrument "Hobbes" analyzed on 6/27/19 for 5 samples (240-114757-12, -15, -16, 17- and -18) was not provided. Additionally, multiple VOA Internal Standard Area and Retention Time Summaries were not originally provided for instruments "Calvin" and "Hobbes". The missing data were requested and received.

II. ANALYTICAL REPORT FORMS

A. The Analytical Report or Data Sheets are present and complete for all requested analyses.

Yes__X__No_____

B. Holding Times

The required holding times were met for all analyses (time of sample receipt to time of analysis- VOA).

Yes_____No__X__

For Method(s) 8260B: All soil and water samples were analyzed within 14 days from the sample collection date. Although all water volatile sample were analyzed within 14 days from the sample collection date, various water samples were improperly preserved and did not met the seven day holding time for unpreserved samples. Refer to the preservation section C.2. of this report for qualification.

C. Chain of Custody (COC)

1. Chain of Custody (COC) forms were reviewed and all fields were complete, signatures were present and cross outs were clean and initialed.

Yes__X__No_____

For SDG 240-114766: Trip blanks (samples 240-114766-14 and -15), were not listed on the COC. According to the Sample Receipt form, these trip blanks were received at log in for volatile analyses.

For SDG 240-114745: The two trip blanks (samples 240-114745-48 and -49) were not listed on the COC. According to the Sample Receipt form, these trip blanks were received at log in for volatile analyses.

For SDG 240-114843: The rinsate blank and two trip blanks (samples 240-114843-17, -18, and -19) were not listed on the COC. According to the Sample Receipt form, these rinsate and trip blanks were received at log in for volatile analyses. Additionally, the Sample Receipt form indicated the plastic bottles labeled "062019" with sample date "6/20" with two lines "062019-A" and "062019-B" were both group under one line "062019-A"on the COC. Only sample "062019-A (sample 240-114843-7) was analyzed for this SDG.

For SDG 240-114912: According to the Sample Receipt form, the methanol (MeOH) trip blank listed on the COC was not received or analyzed. The laboratory did receive the acid (HCl) trip blank for volatile analyses. Additionally, the COC listed a sample "GP-13 (8-10)" (sample 240-114912-13) for volatiles analyses was not analyzed in this SDG. According to the case narrative, this methanol preserved terra core for Method 5035 was received dry and is not usable. The client was contacted and instructed the laboratory to cancel analysis on this sample as they were unable to obtain additional sample volume.

For SDG 310-158924: Trip blanks (samples 2310-158924-23 and -24), were not listed on the COC. No mention of the missing trip blanks on the COC was noted on the Sample Receipt form. These samples were received and log in for volatile analyses.

Note that field duplicate samples do not include times in order to maintain their "blind" status to the laboratory. Dates and times should be recorded in the project field notebooks. The project manager should have verified the sample tracking as the chain IDs do not correlate to the Client IDs that the laboratory reports.

2. Samples were received at the required temperature and preservation.
Yes_____No__X__
Temperature:
EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6º C and all samples intact. All coolers and temperatures met this requirement.

pH:
For Method(s) 8260B: All soil samples were properly preserved with methanol and analyzed within 14 days of the collection date. Water samples were properly preserved to pH < 2 and the applicable preservative was used, with the following exceptions. Preserved water samples must be analyzed within 14 days of the collections date. Improperly preserved water samples must be analyzed within 7 days of the collection dates.

For SDG 240-114472: According to the Case Narrative, the pH of the sample GP-1 (7-11') (240-114472-5) was greater than 2. This sample was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably, benzene, toluene, and ethylbenzene are susceptible to biological degradation if sample is not preserved to a pH of 2. This sample was analyzed 5 days outside the 7 day HT for an unpreserved sample. Therefore, the non-detected results for sample GP-1 (7-11') (240-114472-5) were qualified as estimated with a "UJP" preservation qualifiers with a potential low bias.

For SDG 240-114745: According to the Case Narrative, samples GP-2 (22-24) (240-114745-6), GP-3 (23-25) (240-114745-12), GP-7 (14-16) (240-114745-32), GP-8 (5-7) (240-114745-36), GP-8 (12-14) (240-114745-38), GP-8 (19-21) (240-114745-39), GP-9 (6-8) (240-114745-43), GP-9 (13-15) (240-114745-45), and GP-6 (7-10) (240-114745-24) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 240-114766: According to the Case Narrative, samples GP-10 (10-12) (240-114766-4), GP-10 (17-19) (240-114766-5) and HA-1 (240-114766-7) were collected in properly preserved vials for analysis of VOC). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 240-114843: The COC did not indicate the water samples were properly preserved with HCl. However, the Login Sample Receipt Checklists indicate the sample preservation was verified. Additionally, the Case Narrative did not indicate there was any preservation problems. Therefore, no action was taken.

For SDG 240-114912: According to the Case Narrative, samples GP-11 (5-10) (240-114912-2), GP-11 (15-17) (240-114912-4), GP-12 (7-10) (240-114912-9), GP-12 (15-17) (240-114912-10), GP-12 (22-24) (240-114912-11), GP-13 (7-10) (240-114912-14), GP-13 (15-17) (240-114912-15) and GP-13 (22-24) (240-114912-16) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 310-158749: According to the Case Narrative, samples GP-14 (9-14) (310-158749-3), GP-15 (8-13) (310-158749-8), GP-15 (25-27) (310-158749-11) and GP-16 (10-15) (310-158749-15) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 310-158924: According to the Case Narrative, samples GP-16 (27-29) (310-158924-2), GP-16 (34-36) (310-158924-3), GP-17 (7-12) (310-158924-7), 062619-A (310-158924-9), GP-18 (10-15) (310-158924-17), 062619-B (310-158924-20), GP-18 (20-22) (310-158924-21) and GP-18 (34-38) (310-158924-22) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
240-114472-5	GP-1 (7-11')	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-6	GP-2 (22-24)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-12	GP-3 (23-25)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-24	GP-6 (7-10)	All target compounds for 8260B	varies	varies	varies	UJP, JP	UJ-/J-

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
240-114745-32	GP-7 (14-16)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114745-36	GP-8 (5-7)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114745-38	GP-8 (12-14)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114745-39	GP-8 (19-21)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-43	GP-9 (6-8)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-45	GP-9 (13-15)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114766-4	GP-10 (10-12)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114766-5	GP-10 (17-19)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114766-7	HA-1	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114912-2	GP-11 (5-10)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-4	GP-11 (15-17)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-9	GP-12 (7-10)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-10	GP-12 (15-17)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-11	GP-12 (22-24)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-14	GP-13 (7-10)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-15	GP-13 (15-17)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-16	GP-13 (22-24)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
310-158749-3	GP-14 (9-14)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158749-8	GP-15 (8-13)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158749-11	GP-15 (25-27)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158749-15	GP-16 (10-15)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-2	GP-16 (27-29)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
310-158924-3	GP-16 (34-36)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-7	GP-17 (7-12)	All target compounds for 8260B	varies	varies	varies	UJP	UJ--
310-158924-9	062619-A	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-17	GP-18 (10-15)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-20	062619-B	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-21	GP-18 (20-22)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-22	GP-18 (34-38)	All target compounds for 8260B	varies	varies	varies	UJP	UJ--
240-114745-24	GP-6 (7-10)	All target compounds for 8260B	varies	varies	varies	UJP, UJPMS35, UJPMS28, UJPMS45, JPMS34	UJ-/J-

* All the samples listed above were water samples and were as reported as ug/L.

III. **INSTRUMENT CALIBRATION - GC/MS**

A. Initial Calibration

1. The Relative Response Factor (RRF) and average RRF for all target compounds met the QAPP or method criteria. The current 2015 Validation Guidance requires a Response Factor (RF) of > 0.05 for all compounds. The method allows for lower RF (0.01) for poor responders if the detection limits are appropriately elevated to adjust for instrument sensitivity. The method criteria will be applied.

Yes__X__No_____N/A_____
Client compounds meet the updated criteria for poor responders. The full 8260/ Appendix IX list was submitted but was only reviewed for the 10 target compounds identified by the client.

2. The relative standard deviation (RSD) for all compounds in the standard was less than 30% (with an allowance for up to 40% RSD for the poor responders). Per the method, a correlation coefficient, r, of > 0.99 is also acceptable for compounds not meeting a % RSD of < 20%.

Yes__X__No_____N/A_____

3. The 12 hour system Performance Check was performed as required in SW-846.

Yes__X__No_____N/A_____

B. Continuing Calibration

1. The RRF 50 standard was analyzed at the required frequency, and the QC criteria were met.

Yes__X__No_____N/A_____
Client compounds meet the criteria.

2. The percent difference (% D) criterion of ± 25.0% for each target compound (with an allowance of 40% for the poor responders per the current validation guidance) was met.

Yes_____No__X__N/A_____

All continuing calibration verification (CCV) were within criteria, with the following exceptions.

For SDG 240-114745: Method 8260B: The %D for chloroethane (24.2 %D) in the continuing CCV analyzed on instrument A3UX8 on 6-22-19 (2233) exceeded the 20% CCV criteria. Additionally, the %Ds for chloroethane (20.8%D) and vinyl chloride (27.1%D) in the CCV analyzed on instrument Hobbes on 6-27-19 (1800) were also above the QC CCV criteria. The samples associated with these CCVs were non-detects for chloroethane and vinyl chloride; therefore, no action was taken.

For SDG 310-158924: The CCV analyzed in batch 310-244692 was outside the method criteria for Chloroethane (-22.2 %D). A LCS standard was analyzed with the affected samples and found to be acceptable using CCV criteria. The samples associated with these CCVs were non-detects for chloroethane; therefore, no action was taken.

IV. **GC/MS INSTRUMENT PERFORMANCE CHECK**

The BFB performance check was injected once at the beginning of each 12-hour period, and relative abundance criteria for the ions were met.
Yes__X__No_____N/A_____
All BFB criteria were met for method 8260B.

V. **INTERNAL STANDARDS**

The Internal Standard (IS) area percent (Area %) recoveries were within the required control limits of -50.0 to + 100.0% of the daily calibration standard. The Retention Times were within the required windows.
Yes_____No__X__N/A_____
IS Area % recovery summaries were provided and were within criteria, with several exceptions.

For SDG 310-158749: The internal standard area counts for 1,4-dioxane-d8 were below criteria for one MB and one CCV analyzed on instrument Calvin on 06/25/19. No action is necessary for method blanks and standard analyses as this internal standard is not associated with the target compounds.

For SDG 240-114745: The internal standard area counts for 1,4-dioxane-d8 were below criteria for sample 114745-5 analyzed on instrument Hobbes on 06/26/19. No action is necessary as this internal standard is not associated with the target compounds.

VI. **SURROGATE STANDARDS**

A. Surrogate standard spikes were prepared and analyzed with every sample.

Yes__X__No_____

B. The recovery limits were within the required control limits of 50.0 – 130.0% as defined in the QAPP.

Yes_____No__X__

All surrogate recoveries met criteria, with the following exceptions.

For SDG 240-114766: Method(s) 8260B: Three of four surrogate recoveries were above (high bias) the QC limits for sample HA-4 (240-114766-10). There was insufficient sample to perform a re-extraction; therefore, the data have been reported. As all the volatile results for this sample were non-detects, no action was necessary for the elevated recoveries.

For SDG 240-114843: Method(s) 8260B: Two of four surrogate recoveries exceeded the QC limits for MSD analysis of sample SED-1 MSD. No action is required for QC samples and all surrogate recoveries were within criteria in the parent sample.

VII. **MATRIX SPIKE/MATRIX SPIKE DUPLICATE**

A. Matrix Spike (MS) and Matrix Spike Duplicate (MSD) samples were prepared and analyzed per every 20 samples for every matrix.

Yes__X__No_____

The samples used for MS/MSDs in this set are shown below.

SDG	Method	MS/MSD Parent Sample
240-114745	8260B	GP-4 (4-6) (240-114745-14)
240-114745	8260B	GP-4 (5-7) (240-114745-15)
240-114745	8260B	GP-6 (7-10) (240-114745-24)
240-114843	8260B	SW-1 (240-114843-1)
240-114843	8260B	SED-1 (240-114843-8)
310-158749	8260B	GP-15 (2-4) (310-158749-7)
310-158749	8260B	GP-15 (18-20) (310-158749-9)
310-158924	8260B	GP-18 (20-22) (310-158924-21)

For SDGs 240-114745, 240-114843, and 240-114912: The Case Narratives for these SDGs indicated MS/MSDs were prepared for various volatile batches, but were analyzed in different analytical batches. These MS/MSDs were not addressed in this validation report.

The MS and MSD percent recoveries were within the required control limits of 50.0 – 130.0% as defined in the QAPP.

Yes__X__No_____

Data would be qualified JMS#, where # is the value of the %R. In this case there are no qualifiers required. All MS/MSD recoveries were within the laboratory QC limits with the following exceptions.

For SDG 240-114745: The MS/MSD recoveries for 1,1-dichloroethene (28% and 34%), tetrachloroethene (35%), trans-1,2-dichloroethene (45%), 1,1,1-trichloroethane (35% and 40%), and trichloroethene (34% and 42%) in sample GP-6 (7-10) (240-114745-24) were below the QC limits. Therefore, the parent results were qualified as estimated "UJMS#/JMS#, where # is the percent recovery below criteria. These sample was also qualified due to preservation. It should be noted that the laboratory also incorrectly flagged the parent results for 1,1-dichloroethane, 1,2-dichloroethane, and cis-1,2-dichloroethene with a "F1" flag. No action was taken for these compounds as the percent recoveries for these compounds were within criteria in the MS/MSD analyses.

For SDG 240-114843: The MS and/or MSD recoveries for 2 to 5 compounds for sample SED-1 exceeded criteria. No action is necessary for the elevated recoveries as all sample results in the parent samples were non-detects.

Lab ID	Client ID	Analyte	Result ug/L	Lab Flag	MDL	DSA	EPA
240-114745-24	GP-6 (7-10)	1,1,1-Trichloroethane	<1.00	F1	0.19	UJPMS35	UJ-
240-114745-24	GP-6 (7-10)	1,1-Dichloroethene	<2.00	F1	0.56	UJPMS28	UJ-
240-114745-24	GP-6 (7-10)	Tetrachloroethene	<1.00	F1	0.48	UJPMS35	UJ-
240-114745-24	GP-6 (7-10)	trans-1,2-Dichloroethene	<1.00	F1	0.27	UJPMS45	UJ-
240-114745-24	GP-6 (7-10)	Trichloroethene	5.53	F1	0.43	JPMS34	J-

B. The Matrix Spike Duplicate relative percent differences (RPD) were within the required control limit of less than 30.0% as defined in the QAPP.

Yes_____No__X__

For SDG 240-114843: The RPDs for all 10 volatile compounds in the MS/MSD analyses of sample SED-1 exceeded criteria. Therefore, all parent sample results were qualified as estimated UJRPD#, where the # is the RPD exceeding criteria.

Lab ID	Client ID	Analyte	Result ug/L	Lab Flag	MDL	DSA	EPA	Val_Code
240-114843-8	SED-1	1,1,1-Trichloroethane	<1.57	F2 F1	0.0878	JD66	UJ	MSRPD

Lab ID	Client ID	Analyte	Result ug/L	Lab Flag	MDL	DSA	EPA	Val_Code
240-114843-8	SED-1	1,1-Dichloroethane	<1.57	F2 F1	0.0564	JD75	UJ	MSRPD
240-114843-8	SED-1	1,1-Dichloroethene	<1.57	F2	0.094	JD65	UJ	MSRPD
240-114843-8	SED-1	1,2-Dichloroethane	<1.57	F2 F1	0.0752	JD80	UJ	MSRPD
240-114843-8	SED-1	Chloroethane	<1.57	F2	0.94	JD75	UJ	MSRPD
240-114843-8	SED-1	cis-1,2-Dichloroethene	<1.57	F2 F1	0.0564	JD78	UJ	MSRPD
240-114843-8	SED-1	Tetrachloroethene	<1.57	F2	0.094	JD49	UJ	MSRPD
240-114843-8	SED-1	trans-1,2-Dichloroethene	<1.57	F2 F1	0.094	JD75	UJ	MSRPD
240-114843-8	SED-1	Trichloroethene	<1.57	F2	0.0815	JD70	UJ	MSRPD
240-114843-8	SED-1	Vinyl chloride	<1.57	F2	0.0627	JD54	UJ	MSRPD

VIII. **LABORATORY CONTROL SAMPLE**

A. Laboratory Control Samples (LCS) were prepared and analyzed at the required frequency.

Yes__X__No_____

B. The LCS percent recoveries were within the required control limits of 60.0 – 130.0% (or 40 LCL for poor responders) as defined in the QAPP.

Yes_____No__X__

All LCS recoveries were within the laboratory QC limits but multiple percent recoveries were outside the project QC limits of 60-130%, as listed below.

For SDGs 240-114472, 240-114843, 310-158749, and 310-158924: All LCS recoveries were within the project QC limits of 60-130%.

For SDG 240-114745: The LCS percent recoveries for chloroethane (44%) and vinyl chloride (58%) in LCS 240-387575 were below the QC limits. Therefore, the associated sample results for these compounds were qualified as estimated "UJL#, where # is the percent recovery below criteria.

For SDG 240-114766: The LCS percent recovery for chloroethane (26%) in LCS 240-387766 was below the QC limits. Therefore, the associated sample results for this compound were qualified as estimated "UJL#, where # is the percent recovery below criteria.

For SDG 240-114912: The LCS percent recovery for chloroethane (29%) in LCS 240-388063 was below the QC limits. Therefore, the associated sample results for this compound were qualified as estimated "UJL#, where # is the percent recovery below criteria.

Lab ID	Client ID	Analyte	Result ug/L	Lab Flag	MDL	DSA	EPA
240-114745-14	GP-4 (4-6)	Chloroethane	<0.231		0.139	UJL44	UJ
240-114745-2	GP-2 (5-7)	Chloroethane	<0.171		0.102	UJL44	UJ
240-114745-20	GP-5 (2-4)	Chloroethane	<0.178		0.107	UJL44	UJ
240-114745-23	GP-6 (4-6)	Chloroethane	<0.251		0.151	UJL44	UJ
240-114745-3	GP-2 (22-24)	Chloroethane	<0.207		0.124	UJL44	UJ
240-114745-30	GP-7 (2-4)	Chloroethane	<0.219		0.131	UJL44	UJ
240-114745-31	GP-7 (10-12)	Chloroethane	<0.256		0.154	UJL44	UJ
240-114745-35	GP-8 (6-8)	Chloroethane	<0.256		0.154	UJL44	UJ
240-114745-42	GP-9 (6-8)	Chloroethane	<0.189		0.113	UJL44	UJ
240-114745-8	GP-3 (0-2)	Chloroethane	<0.275		0.165	UJL44	UJ
240-114745-9	GP-3 (26-28)	Chloroethane	<0.273		0.164	UJL44	UJ
240-114745-14	GP-4 (4-6)	Vinyl chloride	<0.231		0.00924	UJL58	UJ
240-114745-2	GP-2 (5-7)	Vinyl chloride	<0.171		0.00683	UJL58	UJ
240-114745-20	GP-5 (2-4)	Vinyl chloride	<0.178		0.00711	UJL58	UJ
240-114745-23	GP-6 (4-6)	Vinyl chloride	<0.251		0.01	UJL58	UJ

Lab ID	Client ID	Analyte	Result ug/L	Lab Flag	MDL	DSA	EPA
240-114745-3	GP-2 (22-24)	Vinyl chloride	<0.207		0.00827	UJL58	UJ
240-114745-30	GP-7 (2-4)	Vinyl chloride	<0.219		0.00875	UJL58	UJ
240-114745-31	GP-7 (10-12)	Vinyl chloride	<0.256		0.0102	UJL58	UJ
240-114745-35	GP-8 (6-8)	Vinyl chloride	<0.256		0.0103	UJL58	UJ
240-114745-42	GP-9 (6-8)	Vinyl chloride	<0.189		0.00754	UJL58	UJ
240-114745-8	GP-3 (0-2)	Vinyl chloride	<0.275		0.011	UJL58	UJ
240-114745-9	GP-3 (26-28)	Vinyl chloride	<0.273		0.0109	UJL58	UJ
240-114766-3	GP-10 (1-3)	Chloroethane	<0.174		0.104	UJL26	UJ
240-114766-6	HA-1 (0-1)	Chloroethane	<1.63		0.978	UJL26	UJ
240-114766-8	HA-2	Chloroethane	<1.78		1.07	UJL26	UJ
240-114766-9	HA-3	Chloroethane	<0.957		0.574	UJL26	UJ
240-114766-10	HA-4	Chloroethane	<1.66		0.998	UJL26	UJ
240-114766-11	HA-5 (0-1)	Chloroethane	<2.28		1.37	UJL26	UJ
240-114766-12	HA-6 (0-0.5)	Chloroethane	<0.301		0.18	UJL26	UJ
240-114766-13	HA-7 (0-0.5)	Chloroethane	<0.236		0.141	UJL26	UJ
240-114766-15	TRIP BLANK Soil	Chloroethane	<0.250		0.15	UJL26	UJ
240-114912-3	GP-11 (6-8)	Chloroethane	<0.153		0.0917	UJL29	UJ

Lab ID	Client ID	Analyte	Result ug/L	Lab Flag	MDL	DSA	EPA
240-114912-8	GP-12 (4-6)	Chloroethane	<0.230		0.138	UJL29	UJ
240-114912-7	GP-12 (8-9.5)	Chloroethane	<0.277		0.166	UJL29	UJ

IX. **BLANKS**

A. Method Blanks were prepared and analyzed at the required frequency.

Yes__X__No_____

B. No blank contamination was found in the Method Blank.

Yes__X__No_____

There are no client compounds reported as detected in the method blanks.

C. If Equipment Rinse Blanks, Trip Blanks, or other Field Blanks were identified, no blank contamination was found.

Yes__X__No_____N/A_____

Contamination was not reported for any of the trip blanks and rinsate blanks.

X. **FIELD QC**

If Field duplicates or Performance Check Compounds were identified, the results were within the guidance limit of < 50% RPD or the % recovery criteria for the project. If values are less than 5 × RL, the water limit is ±4 x RL.

Yes__X__No_____N/A___

The client has identified field duplicate set as listed in the table below and all are within precision limits:

Test America Sample ID	Wenck Sample ID	Test America Sample ID	Corresponding Sample	Sample Medium	Method
240-114745-28	061819-A	240-114745-29	GP-7 (6-9)	Groundwater	8260B
240-114745-47	061819-B	240-114745-46	GP-9 (20-22)	Groundwater	8260B
240-114843-7	062019-A	240-114843-4	SW-4	Surface Water	8260B
240-114843-16	062019-B	240-114843-11	SED-1	Sediment	8260B
310-158924-9	062619-A	GP-16 (34-36)	310-158924-3	Groundwater	8260B
310-158924-20	062619-B	GP-18 (10-15)	310-158924-17	Groundwater	8260B

For SDGs 240-114745 and 240-114843: All volatile sample results for all 4 sets for field duplicate samples were non-detects, therefore, all field duplicate criteria were met.

For SDG 310-158924: All QAPP criteria were met.

XI. **SYSTEM PERFORMANCE**

A. The reconstructed ion chromatograms (RIC), chromatograms, tunes and general system performance were acceptable for all instruments and analytical systems.

Yes__X__No_____N/A_____

For 8260, most of the chromatograms were relatively clean. Full 8260 list of compounds have been reported in the raw data.

B. The suggested EQLs for the sample matrices were met.

Yes__X__No_____N/A_____

XII. **TCL COMPOUNDS**

A. The identification was accurate, and all retention times, library spectra and RIC were evaluated for all detected compounds.

Yes__X__No_____N/A_____

Most of the 8260 chromatograms were relatively clean. A full list of compounds has been reported in the raw data. Over 15% of the spectra have been checked and verified.

B. Quantitation of representative compounds was checked to determine the accuracy of the calculation algorithm for in each internal standard quantitation set.

Yes__X__No_____N/A_____

XIII. **OVERALL ASSESSMENT OF THE CASE**

The laboratory has complied with the requested method. Data are fully usable and no qualifiers are added.

Deliverables

The following are noted for clarification:

This is a validation review for 10 project-specific compounds by SW-846 Method 8260B. Data were submitted for the analyses of 134 samples by 8260B, which includes 6 field duplicate sets, 13 trip blanks, and 4 rinsate blanks. Hard copy data were not submitted, but the full packages were provided as pdf. Results are incorporated into the associated EDD.

This is a validation review and includes review of the raw data. The data were validated with a minimum of 10% validated as EPA raw data review. All SDGs are Level IV.

For SDG 240-114745: The VOA Instrument Performance Check (BFB) Tune Summary for Instrument "Hobbes" analyzed on 6/27/19 for 5 samples (240-114757-12, -15, -16, 17- and -18) was not provided. Additionally, multiple VOA Internal Standard Area and Retention Time Summaries were not provided for instruments "Calvin" and "Hobbes". The missing data were requested and received.

Chain of Custody

For SDG 240-114766: Trip blanks (samples 240-114766-14 and -15), were not listed on the COC. According to the Sample Receipt form, these trip blanks were received at log in for volatile analyses.

For SDG 240-114745: The two trip blanks (samples 240-114745-48 and -49) were not listed on the COC. According to the Sample Receipt form, these trip blanks were received at log in for volatile analyses.

For SDG 240-114843: The rinsate blank and two trip blanks (samples 240-114843-17, -18, and -19) were not listed on the COC. According to the Sample Receipt form, these rinsate and trip blanks were received at log in for volatile analyses. Additionally, the Sample Receipt form indicated the plastic bottles labeled "062019" with sample date "6/20" with two lines "062019-A" and "062019-B" were both group under one line "062019-A"on the COC. Only sample "062019-A (sample 240-114843-7) was analyzed for this SDG.

For SDG 240-114912: According to the Sample Receipt form, the methanol (MeOH) trip blank listed on the COC was not received or analyzed. The laboratory did receive the acid (HCl) trip blank for volatile analyses. Additionally, the COC listed a sample "GP-13 (8-10)" (sample 240-114912-13) for volatiles analyses was not analyzed in this SDG. According to the case narrative, this methanol preserved terra core for Method 5035 was received dry and is not usable. The client was contacted and instructed the laboratory to cancel analysis on this sample as they were unable to obtain additional sample volume.

For SDG 310-158924: Trip blanks (samples 2310-158924-23 and -24), were not listed on the COC. No mention of the missing trip blanks on the COC was noted on the Sample Receipt form. These samples were received and log in for volatile analyses.

Note that field duplicate samples do not include times in order to maintain their "blind" status to the laboratory. Dates and times should be recorded in the project field notebooks. The project manager should have verified the sample tracking as the chain IDs do not correlate to the Client IDs that the laboratory reports.

Holding Times

For Method(s) 8260B: Although all volatile sample were analyzed within 14 days from the sample collection date, various samples were improperly preserved and did not met the seven day holding time for unpreserved samples. Refer to the preservation section C.2. of this report for qualification.

Temperature:
EPA regulations (See Federal Register, March 12, 2007, 40CFR Part 122) require only that the temperature of samples delivered to the laboratory be less than 6° C and all samples intact. All coolers and temperatures met this requirement.

pH:
For Method(s) 8260B: All soil samples were properly preserved with methanol and analyzed within 14 days of the collection date. Water samples were properly preserved to pH < 2 and the applicable preservative was used, with the following exceptions. Preserved water samples must be analyzed within 14 days of the collections date. Improperly preserved water samples must be analyzed within 7 days of the collection dates.

For SDG 240-114472: According to the Case Narrative, the pH of the sample GP-1 (7-11') (240-114472-5) was greater than 2. This sample was analyzed within the normal 14 day holding time; however, experimental evidence suggests that some aromatic compounds in wastewater samples, notably, benzene, toluene, and ethylbenzene are susceptible to biological degradation if sample is not preserved to a pH of 2. This sample was analyzed 5 days outside the 7 day HT for an unpreserved sample. Therefore, the non-detected results for sample GP-1 (7-11') (240-114472-5) were qualified as estimated with a "UJP" preservation qualifiers with a potential low bias.

For SDG 240-114745: According to the Case Narrative, samples GP-2 (22-24) (240-114745-6), GP-3 (23-25) (240-114745-12), GP-7 (14-16) (240-114745-32), GP-8 (5-7) (240-114745-36), GP-8 (12-14) (240-114745-38), GP-8 (19-21) (240-114745-39), GP-9 (6-8) (240-114745-43), GP-9 (13-15) (240-114745-45), and GP-6 (7-10) (240-114745-24) were collected in properly preserved vials for analysis of volatile organic compounds (VOCs). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 240-114766: According to the Case Narrative, samples GP-10 (10-12) (240-114766-4), GP-10 (17-19) (240-114766-5) and HA-1 (240-114766-7) were collected in properly preserved vials for analysis of VOC). However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 240-114843: The COC did not indicate the water samples were properly preserved with HCl. However, the Login Sample Receipt Checklists indicate the sample preservation was verified. Additionally, the Case Narrative did not indicate there was any preservation problems. Therefore, no action was taken.

For SDG 240-114912: According to the Case Narrative, samples GP-11 (5-10) (240-114912-2), GP-11 (15-17) (240-114912-4), GP-12 (7-10) (240-114912-9), GP-12 (15-17) (240-114912-10), GP-12 (22-24) (240-114912-11), GP-13 (7-10) (240-114912-14), GP-13 (15-17) (240-114912-15) and GP-13 (22-24) (240-114912-16) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 310-158749: According to the Case Narrative, samples GP-14 (9-14) (310-158749-3), GP-15 (8-13) (310-158749-8), GP-15 (25-27) (310-158749-11) and GP-16 (10-15) (310-158749-15) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

For SDG 310-158924: According to the Case Narrative, samples GP-16 (27-29) (310-158924-2), GP-16 (34-36) (310-158924-3), GP-17 (7-12) (310-158924-7), 062619-A (310-158924-9), GP-18 (10-15) (310-158924-17), 062619-B (310-158924-20), GP-18 (20-22) (310-158924-21) and GP-18 (34-38) (310-158924-22) were collected in properly preserved vials for analysis of VOCs. However, the pH was outside the required criteria when verified by the laboratory, and corrective action was not possible. Therefore, the detected and non-detected results for these samples were qualified as estimated with a "UJP/JP" preservation qualifiers with a potential low bias.

<u>Continuing Calibration</u>
All continuing calibration verification (CCV) were within criteria, with the following exceptions.

For SDG 240-114745: Method 8260B: The %D for chloroethane (24.2 %D) in the CCV analyzed on instrument A3UX8 on 6-22-19 (2233) exceeded the 20% CCV criteria. Additionally, the %Ds for chloroethane (20.8%D) and vinyl chloride (27.1%D) in the CCV analyzed on instrument Hobbes on 6-27-

19 (1800) were also above the QC CCV criteria. The samples associated with these CCVs were non-detects for chloroethane and vinyl chloride; therefore, no action was taken.

For SDG 310-158924: The CCV analyzed in batch 310-244692 was outside the method criteria for Chloroethane (-22.2 %D). A LCS standard was analyzed with the affected samples and found to be acceptable using CCV criteria. The samples associated with these CCVs were non-detects for chloroethane; therefore, no action was taken.

Internal Standards
IS Area % recovery summaries were provided and were within criteria, with several exceptions.

For SDG 310-158749: The internal standard area counts for 1,4-dioxane-d8 were below criteria for one MB and one CCV analyzed on instrument Calvin on 06/25/19. No action is necessary for method blanks and standard analyses. as this internal standard is not associated with the target compounds.

For SDG 240-114745: The internal standard area counts for 1,4-dioxane-d8 were below criteria for sample 114745-5 analyzed on instrument Hobbes on 06/26/19. No action is necessary as this internal standard is not associated with the target compounds.

Surrogates
All surrogate recoveries met criteria, with the following exceptions.

For SDG 240-114766: Method(s) 8260B: Three of four surrogate recoveries exceeded the QC limits for sample HA-4 (240-114766-10). There was insufficient sample to perform a re-extraction; therefore, the data have been reported. As all the volatile results for this sample were non-detects, no action was necessary for the elevated recoveries.

For SDG 240-114843: Method(s) 8260B: Two of four surrogate recoveries exceeded the QC limits for MSD analysis of sample SED-1 MSD. No action is required for QC samples and all surrogate recoveries were within criteria in the parent sample.

Matrix Spikes and MS Duplicates
The samples used for MS/MSDs in this set are shown below.

SDG	Method	MS/MSD Parent Sample
240-114745	8260B	GP-4 (4-6) (240-114745-14)
240-114745	8260B	GP-4 (5-7) (240-114745-15)
240-114745	8260B	GP-6 (7-10) (240-114745-24)
240-114843	8260B	SW-1 (240-114843-1)
240-114843	8260B	SED-1 (240-114843-8)
310-158749	8260B	GP-15 (2-4) (310-158749-7)
310-158749	8260B	GP-15 (18-20) (310-158749-9)
310-158924	8260B	GP-18 (20-22) (310-158924-21)

For SDGs 240-114745, 240-114843, and 240-114912: The Case Narratives for these SDGs indicated MS/MSDs were prepared for various volatile batches, but were analyzed in different analytical batches. These MS/MSDs were not addressed in this validation report.

Data would be qualified JMS#, where # is the value of the %R. In this case there are no qualifiers required. All MS/MSD recoveries were within the laboratory QC limits with the following exceptions.

For SDG 240-114745: The MS/MSD recoveries were within QAPP limits.

For SDG 240-114745: The MS/MSD recoveries for 1,1-dichloroethene (28% and 34%), tetrachloroethene (35%), trans-1,2-dichloroethene (45%), 1,1,1-trichloroethane (35% and 40%), and trichloroethene (34% and 42%) in sample GP-6 (7-10) (240-114745-24) were below the QC limits. Therefore, the parent results were qualified as estimated "UJMS#/JMS#, where # is the percent recovery below criteria. These sample was also qualified due to preservation. It should be noted that the laboratory also incorrectly flagged the parent results for 1,1-dichloroethane, 1,2-dichloroethane, and cis-1,2-dichloroethene with a "F1" flag. No action was taken for these compounds as the percent recoveries for these compounds were within criteria in the MS/MSD analyses.

For SDG 240-114843: The MS and/or MSD recoveries for 2 to 5 compounds for sample SED-1 exceeded criteria. No action is necessary for the elevated recoveries as all sample results in the parent samples were non-detects.

For SDG 240-114843 and 114745: The RPDs met the QAPP limits.

Laboratory Control Samples

All LCS recoveries were within the laboratory QC limits but multiple percent recoveries were outside the project QC limits of 60-130%, as listed below.

For SDGs 240-114472, 240-114843, 310-158749, and 310-158924: All LCS recoveries were within the project QC limits of 60-130%.

For SDG 240-114745: The LCS percent recoveries for chloroethane (44%) and vinyl chloride (58%) in LCS 240-387575 were below the QC limits. Therefore, the associated sample results for these compounds were qualified as estimated "UJL#, where # is the percent recovery below criteria.

For SDG 240-114766: The LCS percent recovery for chloroethane (26%) in LCS 240-387766 was below the QC limits. Therefore, the associated sample results for this compound were qualified as estimated "UJL#, where # is the percent recovery below criteria.

For SDG 240-114912: The LCS percent recovery for chloroethane (29%) in LCS 240-388063 was below the QC limits. Therefore, the associated sample results for this compound were qualified as estimated "UJL#, where # is the percent recovery below criteria.

Method Blanks

There are no client compounds reported as detected in the method blanks.

Equipment Rinse Blank, Trip Blanks or other Field Blanks

Contamination was not reported for any of the trip blanks and rinsate blanks.

Field Duplicates

The client has identified field duplicate set as listed in the table below and all are within precision limits:

Test America	Wenck	Test America	Corresponding	Sample	Method

Sample ID	Sample ID	Sample ID	Sample	Medium	
240-114745-28	061819-A	240-114745-29	GP-7 (6-9)	Groundwater	8260B
240-114745-47	061819-B	240-114745-46	GP-9 (20-22)	Groundwater	8260B
240-114843-7	062019-A	240-114843-4	SW-4	Surface Water	8260B
240-114843-16	062019-B	240-114843-11	SED-1	Sediment	8260B
310-158924-9	062619-A	GP-16 (34-36)	310-158924-3	Groundwater	8260B
310-158924-20	062619-B	GP-18 (10-15)	310-158924-17	Groundwater	8260B

For SDGs 240-114745 and 240-114843: All volatile sample results for all 4 sets for field duplicate samples were non-detects, therefore, all field duplicate criteria were met.

For SDG 310-158924: All criteria were met.
For SDGs 240-114745 and 240-114843: All volatile sample results for all 4 sets for field duplicate samples were non-detects, therefore, all field duplicate criteria were met.

Compound Identification
Most of the 8260 chromatograms were relatively clean. A full list of compounds has been reported in the raw data. Over 15% of the spectra have been checked and verified.

SUMMARY TABLE OF QUALIFIED DATA

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
240-114472-5	GP-1 (7-11')	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-6	GP-2 (22-24)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-12	GP-3 (23-25)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-24	GP-6 (7-10)	All target compounds for 8260B	varies	varies	varies	UJP, JP	UJ-/J-
240-114745-32	GP-7 (14-16)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114745-36	GP-8 (5-7)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114745-38	GP-8 (12-14)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
240-114745-39	GP-8 (19-21)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-43	GP-9 (6-8)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114745-45	GP-9 (13-15)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114766-4	GP-10 (10-12)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114766-5	GP-10 (17-19)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114766-7	HA-1	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
240-114912-2	GP-11 (5-10)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-4	GP-11 (15-17)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-9	GP-12 (7-10)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-10	GP-12 (15-17)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-11	GP-12 (22-24)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-14	GP-13 (7-10)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-15	GP-13 (15-17)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
240-114912-16	GP-13 (22-24)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158749-3	GP-14 (9-14)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158749-8	GP-15 (8-13)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158749-11	GP-15 (25-27)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
310-158749-15	GP-16 (10-15)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-2	GP-16 (27-29)	All target compounds for 8260B	varies	varies	varies	UJP	UJ-
310-158924-3	GP-16 (34-36)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-7	GP-17 (7-12)	All target compounds for 8260B	varies	varies	varies	UJP	UJ--
310-158924-9	062619-A	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-17	GP-18 (10-15)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-20	062619-B	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-21	GP-18 (20-22)	All target compounds for 8260B	varies	varies	varies	UJP/JP	UJ-/J-
310-158924-22	GP-18 (34-38)	All target compounds for 8260B	varies	varies	varies	UJP	UJ--
240-114745-24	GP-6 (7-10)	1,1,1-Trichloroethane	<1.00	F1	0.19	UJPMS35	UJ-
240-114745-24	GP-6 (7-10)	1,1-Dichloroethene	<2.00	F1	0.56	UJPMS28	UJ-
240-114745-24	GP-6 (7-10)	Tetrachloroethene	<1.00	F1	0.48	UJPMS35	UJ-
240-114745-24	GP-6 (7-10)	trans-1,2-Dichloroethene	<1.00	F1	0.27	UJPMS45	UJ-
240-114745-24	GP-6 (7-10)	Trichloroethene	5.53	F1	0.43	JPMS34	J-
240-114843-8	SED-1	1,1,1-Trichloroethane	<1.57	F2 F1	0.0878	JD66	UJ
240-114843-8	SED-1	1,1-Dichloroethane	<1.57	F2 F1	0.0564	JD75	UJ
240-114843-8	SED-1	1,1-Dichloroethene	<1.57	F2	0.094	JD65	UJ

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
240-114843-8	SED-1	1,2-Dichloroethane	<1.57	F2 F1	0.0752	JD80	UJ
240-114843-8	SED-1	Chloroethane	<1.57	F2	0.94	JD75	UJ
240-114843-8	SED-1	cis-1,2-Dichloroethene	<1.57	F2 F1	0.0564	JD78	UJ
240-114843-8	SED-1	Tetrachloroethene	<1.57	F2	0.094	JD49	UJ
240-114843-8	SED-1	trans-1,2-Dichloroethene	<1.57	F2 F1	0.094	JD75	UJ
240-114843-8	SED-1	Trichloroethene	<1.57	F2	0.0815	JD70	UJ
240-114843-8	SED-1	Vinyl chloride	<1.57	F2	0.0627	JD54	UJ
240-114745-14	GP-4 (4-6)	Chloroethane	<0.231		0.139	UJL44	UJ
240-114745-2	GP-2 (5-7)	Chloroethane	<0.171		0.102	UJL44	UJ
240-114745-20	GP-5 (2-4)	Chloroethane	<0.178		0.107	UJL44	UJ
240-114745-23	GP-6 (4-6)	Chloroethane	<0.251		0.151	UJL44	UJ
240-114745-3	GP-2 (22-24)	Chloroethane	<0.207		0.124	UJL44	UJ
240-114745-30	GP-7 (2-4)	Chloroethane	<0.219		0.131	UJL44	UJ
240-114745-31	GP-7 (10-12)	Chloroethane	<0.256		0.154	UJL44	UJ
240-114745-35	GP-8 (6-8)	Chloroethane	<0.256		0.154	UJL44	UJ
240-114745-42	GP-9 (6-8)	Chloroethane	<0.189		0.113	UJL44	UJ
240-114745-8	GP-3 (0-2)	Chloroethane	<0.275		0.165	UJL44	UJ

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
240-114745-9	GP-3 (26-28)	Chloroethane	<0.273		0.164	UJL44	UJ
240-114745-14	GP-4 (4-6)	Vinyl chloride	<0.231		0.00924	UJL58	UJ
240-114745-2	GP-2 (5-7)	Vinyl chloride	<0.171		0.00683	UJL58	UJ
240-114745-20	GP-5 (2-4)	Vinyl chloride	<0.178		0.00711	UJL58	UJ
240-114745-23	GP-6 (4-6)	Vinyl chloride	<0.251		0.01	UJL58	UJ
240-114745-3	GP-2 (22-24)	Vinyl chloride	<0.207		0.00827	UJL58	UJ
240-114745-30	GP-7 (2-4)	Vinyl chloride	<0.219		0.00875	UJL58	UJ
240-114745-31	GP-7 (10-12)	Vinyl chloride	<0.256		0.0102	UJL58	UJ
240-114745-35	GP-8 (6-8)	Vinyl chloride	<0.256		0.0103	UJL58	UJ
240-114745-42	GP-9 (6-8)	Vinyl chloride	<0.189		0.00754	UJL58	UJ
240-114745-8	GP-3 (0-2)	Vinyl chloride	<0.275		0.011	UJL58	UJ
240-114745-9	GP-3 (26-28)	Vinyl chloride	<0.273		0.0109	UJL58	UJ
240-114766-3	GP-10 (1-3)	Chloroethane	<0.174		0.104	UJL26	UJ
240-114766-6	HA-1 (0-1)	Chloroethane	<1.63		0.978	UJL26	UJ
240-114766-8	HA-2	Chloroethane	<1.78		1.07	UJL26	UJ
240-114766-9	HA-3	Chloroethane	<0.957		0.574	UJL26	UJ
240-114766-10	HA-4	Chloroethane	<1.66		0.998	UJL26	UJ

Lab ID	Client ID	Analyte	Result ug/L *	Lab Flag	MDL	DSA	EPA
240-114766-11	HA-5 (0-1)	Chloroethane	<2.28		1.37	UJL26	UJ
240-114766-12	HA-6 (0-0.5)	Chloroethane	<0.301		0.18	UJL26	UJ
240-114766-13	HA-7 (0-0.5)	Chloroethane	<0.236		0.141	UJL26	UJ
240-114766-15	TRIP BLANK Soil	Chloroethane	<0.250		0.15	UJL26	UJ
240-114912-3	GP-11 (6-8)	Chloroethane	<0.153		0.0917	UJL29	UJ
240-114912-8	GP-12 (4-6)	Chloroethane	<0.230		0.138	UJL29	UJ
240-114912-7	GP-12 (8-9.5)	Chloroethane	<0.277		0.166	UJL29	UJ

Analysis Batch	Analysis Lab	Instrument ID	Column/Detector ID	Basis	Analyte Type	Result Status	TPU	TPU Sigma	Decision Level	Retention Time	Spike Amount	Expected Amount	RER	RER Limit	Lower Brea	Upper Breach Limit	DSA	EPA
310-245479	TestAmerica Cedar Fall	ICP 7300 DV		DRY	Target	PRIMARY											JMS270D47	J+
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				9.145	3.96	3.96						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				4.219	3.96	3.96						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				6.309	3.96	3.96						
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.234								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				4.606								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.545								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.062								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.209								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.222								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.435	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.062								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.203								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.441	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.234							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.545							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.764							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.075							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				2.856							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.215							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.228							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	500	500						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	500	500						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.434	500	500						
310-245479	TestAmerica Cedar Fall	ICP 7300 DV		DRY	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.234								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				2.167								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.776								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.075								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				2.844								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.209								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.228								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244352	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244352	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.434	50	50						
310-244352	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.434	50	50						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY				6.931								
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY				5.134								
310-244173	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				9.146	3.07	3.07						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				4.22	3.07	3.07						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				6.31	3.07	3.07						
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.234							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ

Analysis Batch	Analysis Lab	Instrument ID	Column/Detector ID	Basis	Analyte Type	Result Status	TPU	TPU Sigma	Decision Level	Retention Time	Spike Amount	Expected Amount	RER	RER Limit	Lower Brea	Upper Breach Limit	DSA	EPA
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.77							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.075							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				2.844							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.209							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.228							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.441	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				4.606								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.069								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				2.85								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.209								
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.312	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.228	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.435	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.234							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.777							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.069							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				2.856							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.209							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.228							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.441	50	50						
310-245479	TestAmerica Cedar Fall	ICP 7300 DV		DRY	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.234							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY											UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				3.776							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				7.068							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				2.85							UJP	UJ
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				5.209							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY				1.234							JP	J-
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.312	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.434	50	50						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY				6.93								
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY				5.139								
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				9.145	2.96	2.96						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				4.219	2.96	2.96						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				6.309	2.96	2.96						
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244027	TestAmerica Cedar Fall	NOEQUIP		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				9.489	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				4.38	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				6.611	50	50						
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				9.149	2.5	2.5						
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				4.217	2.5	2.5						
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				6.308	2.5	2.5						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				4.231	0.973							
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				3.327	0.973							
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				2.38	0.973							

Analysis Batch	Analysis Lab	Instrument ID	Column/Detector ID	Basis	Analyte Type	Result Status	TPU	TPU Sigma	Decision Level	Retention Time	Spike Amount	Expected Amount	RER	RER Limit	Lower Brea	Upper Breach Limit	DSA	EPA
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				4.584	0.973							
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				3.806	0.973							
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				6.925	0.973							
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				2.984	0.973							
310-244014	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				5.134	0.973							
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				9.146	2.43	2.43						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				4.22	2.43	2.43						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				6.31	2.43	2.43						
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				4.232	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				3.329	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				2.381	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				4.581	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				3.808	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				6.927	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				2.98	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Spike	PRIMARY				5.136	0.987							
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				9.142	2.47	2.47						
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				4.216	2.47	2.47						
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				6.306	2.47	2.47						
310-245479	TestAmerica Cedar Fall	ICP 7300 DV		DRY	Spike	PRIMARY					156							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				4.386	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				3.374	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				2.289	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				4.764	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				3.917	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				7.251	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				2.984	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				5.374	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				9.489	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				4.38	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				6.611	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				1.625	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Spike	PRIMARY				1.295	20							
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				9.489	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				4.38	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				6.611	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				4.228	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				3.234	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				2.167	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				4.612	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				3.77	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				7.069	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				2.85	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				5.209	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.441	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				1.545	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				1.228	20							
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.435	50	50						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Target	PRIMARY												
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				9.146	2.43	2.43						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				4.22	2.43	2.43						
310-244014	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				6.305	2.43	2.43						
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Target	PRIMARY												
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				9.145	2.41	2.41						
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				4.219	2.41	2.41						
310-244173	TestAmerica Cedar Fall	Curly		WET	Surrogate	PRIMARY				6.309	2.41	2.41						
310-245479	TestAmerica Cedar Fall	ICP 7300 DV		DRY	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Target	PRIMARY												
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				9.489	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				4.38	50	50						
310-244339	TestAmerica Cedar Fall	Calvin		WET	Surrogate	PRIMARY				6.611	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												

Analysis Batch	Analysis Lab	Instrument ID	Column/Detector ID	Basis	Analyte Type	Result Status	TPU	TPU Sigma	Decision Level	Retention Time	Spike Amount	Expected Amount	RER	RER Limit	Lower Brea	Upper Breach Limit	DSA	EPA
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Target	PRIMARY												
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.312	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.441	50	50						
310-245479	TestAmerica Cedar Fall	ICP 7300 DV		DRY	Spike	PRIMARY					230	703						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				4.228	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				3.234	20	21.8						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				2.173	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				4.612	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				3.771	20	21.6						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				7.069	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				2.85	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				5.209	20	24						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.435	50	50						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				4.232	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				3.329	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				2.382	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				4.586	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				3.808	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				6.932	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				2.986	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				5.136	0.745	0.745						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				9.148	3.08	3.08						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				4.221	3.08	3.08						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				6.312	3.08	3.08						
310-245479	TestAmerica Cedar Fall	ICP 7300 DV		DRY	Spike	PRIMARY					228	701						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				4.228	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				3.234	20	21.8						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				2.167	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				4.612	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				3.777	20	21.6						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				7.069	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				2.85	20	20						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Spike	PRIMARY				5.209	20	24						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				9.306	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				4.234	50	50						
310-244351	TestAmerica Cedar Fall	Hobbes		WET	Surrogate	PRIMARY				6.441	50	50						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				4.231	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				3.327	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				2.38	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				4.585	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				3.812	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				6.931	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				2.984	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Spike	PRIMARY				5.134	0.797	0.797						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				9.146	3.05	3.05						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				4.22	3.05	3.05						
310-244173	TestAmerica Cedar Fall	Curly		DRY	Surrogate	PRIMARY				6.31	3.05	3.05						

DIANE SHORT & ASSOCIATES, INC._____

1978 S. Garrison St. # 114
Lakewood CO 80227
303:271-9642
dsa7cbc@eazyqaqc.com

ORGANIC AIR QUALITY REPORT
METHOD TO-15

LAB NO: 200-49156-1, 200-49181-1

PROJECT: Water Gremlin, MN; Wenck Environmental Consulting and Engineering___

LABORATORY: Eurofins TestAmerica, Burlington, VT

SAMPLE MATRIX: Air

SAMPLING DATE (Month/Year): 6/11/2019, 6/12/2019

NUMBER OF SAMPLES: 36 air samples including 3 blind field duplicates

ANALYSES REQUESTED: Summa Canister VOA TO-15

SAMPLE NO.: See Attached List

DATA REVIEWER: John Huntington

QA REVIEWER: Diane Short & Associates, Inc. INITIALS/DATE: ____ DLS ____7/22/2019____

Telephone Logs included Yes____ No __X__

Contractual Violations Yes____ No __X_

The EPA CLP National Functional Guidelines for Organic Data Review, 1999 and 2017 (SOP), EPA Method TO-15 current updates, and the Quality Assurance Plan, MPCA Site Assessment Program (2014) have been used by the reviewer to perform this data validation review. The EPA qualifiers have been expanded to include a descriptor code and value to define QC violations and their values, per the approval of the Project Manager. Per the Scope of Work, the review of these samples includes validation of all QC forms referencing the QC limits in the above documents. For 10% of the data, chromatograms and mass spectra have been reviewed for each type of analysis and comments made on general data/ analytical quality.

DELIVERABLES
All deliverables were present as specified in the Statement of Work (SOW) or in the project contract.
Yes _X __No___

II. ANALYTICAL REPORT FORMS
A. The Analytical Report or Data Sheets are present and complete for all requested analyses.
Yes _X__ No ___

B. Holding Times
The contract holding times were met for all analyses (Time of sample receipt to time of analysis (VOA) or extraction and from extraction to analysis). Contract holding times for TO-15 canisters is 30 days from date of collection.
Yes __X___ No ____

C. Chains of Custody
Chains of Custody were present and were complete with signatures, sign-offs and complete entry of data. Canisters were properly sampled and received.
Yes __X__ No_____

D. Canister Pressure
Canister pressures were measured and recorded for initial vacuum check, initial field vacuum, final field reading, lab initial pressure and final pressure.
Yes __X__ No _____
The pressures were provided on the COC and in the laboratory pressure logs.

All readings met the limits or exceptions were noted and pressure corrected
Yes __X__ No ___

III. INSTRUMENT CALIBRATION

A. Initial Calibration – GC/MS
1. The Relative Response Factors (RRF) and average RRF for all compounds for all analyses met the required criteria.
Yes __X___ No ___

The relative standard deviation (RSD) for the five-point calibration was within the 30% limit.
Yes __X_ No ____

B. Continuing Calibration – GC/MS
1. The RRF standard was analyzed for each analysis at the required frequency and the QC criteria were met
Yes __X__ No____

2. The percent difference (%D) limits were met.
Yes __X__ No ____

IV. GC/MS INSTRUMENT PERFORMANCE CHECK
A. The BFB performance check was injected once at the beginning of each 12-hour period and relative abundance criteria for the ions were met.
Yes ___X__ No_____NA ____

B. The SIM PFTBA tune was performed once a month per the TO-15 criteria and the HP operation manual masses were present.
Yes ___ No ___NA__X__
SIM analysis not requested or conducted.

V. INTERNAL STANDARDS
A. Area Limits
The Internal Standards met the TO-15 upper and lower limits criteria (+/- 40%) and the Retention times were within the required windows.
Yes __X__ No ____

B. Retention Times
The relative retention times of the internal standards and sample compounds met the ± 0.06 RRT units limit.
Yes __X__ No____

VI. SURROGATE
Surrogate spikes were analyzed with every sample.
Yes _____ No __X__
This is not required for Method TO-15.

And met the recovery limits defined in the current contract
Yes ___ No ___NA__X__ ____

VII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE
A. Matrix spike (MS) and matrix spike duplicates (MSD) were analyzed for every analysis performed and for every 20 samples or for every matrix whichever is more frequent.
Yes____ No ____NA ___X__
Spikes are not amenable to canister analysis and are not required. Laboratory duplicates are required. These were present.

B. The MD relative percent differences (RPD) were within the defined contract limits.
Yes __X_ No ____NA _____

VIII. CONTROL SAMPLES
A. Control samples similar to Laboratory Control Samples (LCS) were performed for every set.
Yes __X__ No____

B. And percent recoveries were acceptable at 70 – 130%.
Yes __ X __ No _____

C. And Relative Percent Differences were within lab limits.
Yes ____ No____ NA__X_
Duplicate control checks are not required by the method.

IX. SHIFT CHECKS
Shift checks were performed and were within time limits.
Yes _X__ No____
The BFB tune check is required every 24 hours in Method TO-15.

X. BLANKS
A. Method Blanks were analyzed at the required frequency and for each matrix and analysis.
Yes __X___ No____
This is a nitrogen blank run with each set.

B. The method blank was free of contamination.
Yes __X___ No _____

C. If Field Blanks were identified, they were free of contamination.
Yes _____ No _____ NA ___X__
Field blanks have not been identified.

D. Contamination level was less than 0.03 mg/cubic meter before samples were analyzed per the method.
Yes __X_ No____ NA _____
A representative set of canisters was screened for contamination at the laboratory for each SDG.

XI. FIELD QC
A. If Field duplicates or Performance Check Compounds were identified, they met the RPD or % recovery criteria for the project.
Yes ____ No __X__NA_____
The QAPP defines a 50% RPD requirement for field duplicates. There are three field duplicates blind to the laboratory, as shown in the table below.

Field Duplicate ID	Sample ID
061119-A	SS-2 (GS00690)
061119-B	SS-18 (GS00709)
61219	SS-10 (GS00712)

For the sample pair 061119-A and SS-2 (GS00690), the RPD observed is 61% for trichloroethene. For the sample pair 061119-B and SS-18 (GS00709) the RPD is 90% for trans-1,2-dichloroethene. These results are out of the 50% QAPP limit and are qualified as JFD#, where # is the RPD. As the RPD increases, the precision decreases. All other results are in control.

XII. SYSTEM PERFORMANCE
The RICs, chromatograms, tunes and general system performance were acceptable for all instruments and analytical systems .
Yes _X__ No ____NA_____

XIII. TCL COMPOUNDS
A. The identification is accurate and all retention times, library spectra and reconstructed ion chromatograms (RIC) were evaluated for all detected compounds:
For this project, ten percent of the data are fully review for chromatograms and spectra.
Yes __X_ No____ NA___
The mass spectra were clear and within identification criteria for all the targets reviewed. There was little interference in most of the samples. In SDG 200-49181-1, several samples had non-target peaks present, but either they are fully resolved chromatographically, or the mass spectral ions used for quantitation and identification did not show significant interference.

B. Quantitation was checked to determine the accuracy of calculations for representative compounds in each internal standard set
Yes__X_No ____ NA____

OVERALL ASSESSMENT
Data are considered to be usable for project purposes. No qualifiers are added. A summary of key points follows.

Surrogates:
Surrogates are not required for TO-15.

Field Duplicates
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TCL Compounds
The mass spectra were clear and within identification criteria for all the targets reviewed. There was little interference in most of the samples. In SDG 200-49181-1, several samples had nontarget peaks present, but either they are fully resolved chromatographically, or the mass spectral ions used for quantitation and identification did not show significant interference.

Table of Qualifiers Added

Client Sample	Analyte	Result	Unit	MDL	DSA
061119 B	trans-1,2-Dichloroethene	910	ug/m3	2.9	JFD90
GS00709	trans-1,2-Dichloroethene	2400	ug/m3	8.8	JFD90
061119 A	Trichloroethene	6400	ug/m3	16	JFD61
GS00690	Trichloroethene	3400	ug/m3	16	JFD61

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