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188 Valley Street
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F: 401.751.8613
www.gza.com

April 24, 2019
File No. 03.00034502.01

Ms. Rachel Simpson
Rhode Island Department of Environmental Management
Office of Waste Management
235 Promenade Street
Providence, Rhode Island 02908

Re: *Site Investigation Report*
RFA #19011 Add. Seville Dyeing Co.
Seville Dyeing Co. Property,
117 & 229 First Avenue (Plat 6 / Lots 117, 102, & 118)
Woonsocket, Rhode Island

Dear Ms. Simpson:

GZA GeoEnvironmental, Inc. is pleased to provide this final *Site Investigation Report (SIR)* for the 117 & 229 First Avenue (Plat 6 / Lots 117, 102, & 118), Woonsocket, Rhode Island, Rhode Island Targeted Brownfields Assessment. This report has been prepared to address the applicable requirements of Rule 1.8 of the RIDEM Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases, including the evaluation of remedial alternatives. This report is presented subject to the Limitations presented in Appendix A.

We trust this submittal satisfies your present needs. If you need any additional information, please feel free to contact Richard Carlone at 401-421-4140 or via email at richard.carlone@gza.com.

Very truly yours,

Richard A. Carlone, P.E.
Senior Project Manager

R. Michael Clark
Consultant Reviewer

Edward A. Summerly, P.G.
Principal

Attachment: *SIR*

Cc: Jessica Dominguez, EPA

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TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

1.1 PROJECT AUTHORIZATION

This *Phase II Site Investigation Report/Targeted Brownfield Assessment Report* (SIR) presents the results of an environmental site investigation completed by GZA GeoEnvironmental, Inc. (GZA) for the Rhode Island Department of Environmental Management (RIDEM/Department - Client) at the former Seville Dyeing Co. Property addressed as 117 & 229 First Avenue, in Woonsocket, Rhode Island (the "Site"). Authorization to proceed on this project was granted in accordance with GZA's work order dated September 17, 2018.

This report was prepared in general conformance with ASTM E1903-11 and to address the applicable requirements established in RIDEM's Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations). This report is presented subject to the limitations presented in **Appendix A**.

To assist in your review, a Regulatory Reference Checklist is provided in **Appendix B**. The Checklist references appropriate sections in the *Phase I Environmental Site Assessment* report previously provided to the Department, as well as the required information provided in this SIR. This investigation was funded by the Department's Targeted Brownfields Assessment (TBA) program and has been completed in accordance with the requirements of the TBA program.

A Hazardous Material Release Notification Form is being filed with this report and is provided in **Appendix C**.

1.2 PROJECT BACKGROUND

The Site is an active RIDEM listed remediation Site (RIDEM Case Nos. SR-39-1211A and B). We understand that the Site will be issued a new Case No. as part of this submittal. The Site is also listed as UST-374841, UST-3479 and State-site open SEVA-HWM Seville Associates. Detailed information on historical releases at the Site is provided in GZA's *Phase I Environmental Site Assessment*, dated September 4, 2018.

GZA's Phase I ESA identified three Recognized Environmental Conditions (RECs) and one Controlled Recognized Environmental Condition (CREC) in connection with the property:

- An abandoned, suspected 20,000-gallon No. 6 heating oil underground storage tank (UST) located within a concrete bunker on the western perimeter of the Site.
- The presence of solid waste and areas of soil staining observed in the northern portion of the Site.
- The former mill buildings were utilized for approximately 100 years for textile manufacturing which likely has resulted in impacts to soil and/or groundwater as a result of historic use and/or undocumented releases of oil and/or hazardous materials.
- A series of documented releases and/or other episodes of environmental non-compliance associated with prior activities were identified on the 117 First Avenue parcel. Environmental investigations from the 1990s identified the storage of oil containers, 25 drums of gasoline and sludge, an empty 500-gallon above ground storage tank (former contents unknown), and soil staining. Soil testing indicated elevated levels of TPH and PAHs in soil. This work culminated with the implementation of engineered and institutional controls identified as a CREC consisting of an asphalt cap and an ELUR that was recorded on Lot 117.

Based on the RECs identified above, it was GZA's opinion that additional investigation of soil and groundwater conditions at the Site, including laboratory testing, was warranted at the Site.

1.3 PROJECT OBJECTIVES

Based on the RECs identified at the Site, GZA conducted a supplemental subsurface investigation to further characterize impacts to soil and groundwater and develop appropriate remedial alternatives. To achieve this objective, the following initial tasks were conducted, in accordance with the November 16, 2018 *Site Specific Quality Assurance Project Plan* (*SS-QAPP)*:

1. The drilling of 14 shallow borings to depths ranging between 2 and 20 feet below grade (depending on the subsurface conditions encountered). The subsurface soil samples recovered during drilling were evaluated for the presence of volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), total petroleum hydrocarbons (TPH), and PP-13 metals. Analytical results were compared to the Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC) as identified in Table 1 of the Remediation Regulations; and

2. Groundwater monitoring wells were installed in four of the test borings. Consistent with the requirements for GB groundwater resource areas, groundwater samples from these sampling locations were evaluated for the presence of VOCs identified in Table 1 (GB Groundwater Objectives) of the Remediation Regulations. All four wells were also tested for TPH due to the oil underground storage tank (UST) present on Site.

2.0 BACKGROUND

The following background information was developed from GZA's September 2018 *Phase I Environmental Site Assessment* (ESA). Please refer to this report for additional detailed information.

2.1 SITE LOCATION, DESCRIPTION AND USE

The Site is identified with an address of 117 & 229 First Avenue (Plat 6 / Lots 117, 102, & 118) in Woonsocket, Rhode Island. It is bordered by Fairmount Street to the south, the Blackstone River to the east, a railroad corridor to the north, and First Avenue to the west. A Locus Plan is provided as **Figure 1** and an Exploration Location Plan is provided as **Figure 2**.

The ±5.5-acre Site consists of three parcels with the following characteristics:

- Lot 118, located at 229 First Avenue, covers 4.3 acres and occupies the southern portion of the Site. The majority of this parcel contains remnant building foundations. The former Seville Dyeing Company and previous Enterprise Dye Works mill building footprints are located along the majority of First Avenue (i.e., the southwestern portion of the Site). The northern portion of Lot 118 is unpaved and contains vehicles and solid waste piles.

- Lot 102, located at 0 First Avenue, covers 0.24 acres and occupies the northwestern portion of the Site. The lot is currently vacant and covered with asphalt pavement. It was formerly utilized for parking by Laramee's Transit Inc. and the Woonsocket Machine and Press Company.

- Lot 117, located at 117 First Avenue covers 1.08 acre and occupies the northern portion of the Site. This Lot is currently vacant, covered with asphalt pavement and was formerly utilized for parking by Laramee's Transit Inc.

2.2 ENVIRONMENTAL SETTING

The following subsections provide information regarding the general physiographic and hydrogeologic conditions in the area of the Site.

2.2.1 Regional Physiography

The Site is relatively flat. Based on a review of the U.S. Geological Survey topographic map and online GIS mapping, the northwestern portion of the Site is at an elevation of ±170 feet above mean sea level (MSL). The eastern perimeter is a riverbank that borders the Blackstone River which is located at ±150 feet MSL. The regional topographic gradient near the Site slopes downward to the east towards the adjacent Blackstone River.

2.2.2 Geologic, Hydrogeologic, and Hydrologic Conditions

Based on local topography, the inferred direction of groundwater flow is to the east toward the river. However, the localized direction of groundwater flow near the Site might vary because of underground utilities, subsurface preferential pathways, variations in weather or heterogeneous geological and/or anthropogenic conditions.

Groundwater at the Site is classified as GB by RIDEM. This designation applies to groundwater resources which may not be suitable for human consumption without treatment due to known or presumed degradation. The northeastern portion of the Site is located within an area designated as a Groundwater Reservoir. The Site is located approximately 730 feet east (downgradient) of a GA Groundwater Classification Area.

According to overlay maps maintained by the RIDEM's Office of Water Resources, the Site is located approximately 0.9 miles east (downgradient) of a non-community wellhead protection area. There are no known sources of potable water (i.e., groundwater supply wells) on the properties immediately abutting the Site; abutting properties are connected to public water.

The Blackstone River borders the eastern perimeter of the Site. The Blackstone River has been classified as B1 water by RIDEM which stipulates that these waters are designated for fish and wildlife habitat and primary and secondary contact recreational activities. They shall be suitable for compatible industrial processes and cooling, hydropower, aquaculture uses, navigation, and irrigation and other agricultural uses. These waters shall have good aesthetic value with the caveat that primary contact recreational activities may be impacted due to pathogens from approved wastewater discharges.

The Blackstone River is currently listed by the RIDEM Office of Water Resources on the State of Rhode Island 2016 303(d) List of Impaired Waters, dated March 2018. The 2016 303(d) list identifies water bodies within the state, which may not currently meet Rhode Island Water Quality Standards and for which a Total Maximum Daily Load (TMDL) may be needed. TMDLs are water quality restoration plans that identify water quality goals, necessary pollutant reductions, sources, and implementation plans to achieve the required reductions. RIDEM identifies the segment of the Black Stone River adjacent to the Site as Water Body ID RI0001003R-01A and lists the impairments as cadmium, iron, lead, mercury, PCB, low dissolved oxygen, nutrients, and pathogens.

A review of the *Environmental Resource Map* prepared by RIDEM (http://www.dem.ri.gov/maps/) shows that the Site is located in the Blackstone River – West River to Peters River Drainage Basin. Stormwater at the Site is managed naturally

for the most part and either flows downgradient from west to east directly into the Blackstone River or is sequestered by infiltration through the soils.

Based on a review of Federal Emergency Management Agency (FEMA) Map #44007C0069G dated March 2, 2009, the majority of the Site is located within Zone X. The Zone X designation is for areas with a 0.2% annual chance of flood; areas of 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1-square mile; and areas protected by levees from 1% annual chance of flood. The northeastern portion of the Site is located with an "AE, 0.2% Annual Chance Flood Hazard Zone."

The United States Natural Resources Conservation Service's Soil Survey databases contain information regarding soil characteristics such as water capacity, percent clay, organic material, permeability, thickness of layers, hydrological characteristics, quality of drainage, surface, slope, liquid limit, and the annual frequency of flooding. Soils on-Site are classified as Merrimac-Urban Land Complex, 0 to 8 percent slopes that are well drained.

2.2.3 Environmentally Sensitive Area

According to the overlay maps maintained by RIDEM's Office of Water Resources, the Site is located within a Natural Heritage Area. The Site is also bordered to the east by the Blackstone River which is part of the John H. Chafee Blackstone River Valley National Heritage Corridor, a federally designated national park.

3.0 SUBSURFACE EXPLORATORY PROGRAM

A subsurface exploratory investigation was completed by GZA in November and December 2018. The investigation included 14 Geoprobe® explorations, with four completed as groundwater monitoring wells; field-screening and laboratory analysis of soil samples; collection and laboratory analysis of groundwater samples from the four newly installed groundwater monitoring wells; and a wellhead elevation survey. Findings from the exploration program, including soil sample screening and analysis, are discussed in the subsections below. The findings from the groundwater evaluation are discussed in Section 4.00. Boring and well locations are shown on **Figure 2**, *Exploration Location Plan* and boring/well logs are provided in **Appendix D**.

The subsurface exploration program was executed in accordance with the *SS-QAPP*[1] (*SS-QAPP*) that GZA developed for this project. The *SS-QAPP* address sample collection, analysis and data quality objectives associated with the subsurface exploration program and was approved by EPA and RIDEM prior to implementation. The *SS-QAPP* served as supplements to GZA's November 2018 *Generic QAPP* (RFA 19011) prepared for RIDEM and the EPA (Region 1).

3.1 UTILITY LOCATIONS AND HEALTH AND SAFETY PLAN

Prior to implementing the subsurface exploration program, DigSafe® was contacted by GZA's boring subcontractor to locate underground utilities in the vicinity of the target borings. GZA also developed a Site-specific *Health and Safety Plan* for GZA personnel involved in field activities.

[1] *Site-Specific QAPP* developed by GZA on behalf of RIDEM and signed by EPA on November 19, 2018.

3.2 SOIL BORINGS AND WELL INSTALLATIONS

Between November 27 and November 28, 2018 GZA observed the completion of fourteen borings (B-1 through B-3, B-5 through B-11, MW-3, MW-4, MW-7 and MW-8) by Hoffman Environmental Services of North Kingstown, Rhode Island, using a direct-push/hollow stem auger Geoprobe® rig. Borings were advanced to depths of between 2 and 20 ft bgs.

Four soil borings were completed as groundwater monitoring wells consisting of a 0.010-inch factory slotted nominal 2-inch inside diameter, flush joint, schedule 40 PVC well screen with solid PVC riser. The annular space between the well screen and the borehole was filled with a filter sand pack. The sand pack was carried to a depth of 2-feet above the slotted section of the well screen where a 2-foot thick bentonite seal was placed. Any non-contaminated (based on PID field screening results, described below) drill cuttings were then placed above the bentonite seal to ground surface.

A GZA field engineer was present during the exploration activities to coordinate and document the program, classify soils, prepare boring logs, field-screen soil samples and collect/prepare samples for laboratory testing. Samples were characterized in the field and boring logs maintained for each borehole. Copies of boring logs are provided in **Appendix D**.

As shown on **Figure 2**, four monitoring wells, identified as MW-3, MW-4, MW-7 and MW-8 were completed at the Site by GZA. Well installation details are summarized below:

Well ID	Bottom Depth (feet bgs)	Screen Depth (feet bgs)	Screened Stratum	Location of Well
MW-3	19	9-19	Sand	Adjacent to northeastern property boundary, directly west of Blackstone River
MW-4	17	7-17	Sand	Adjacent to eastern property boundary, directly west of Blackstone River, south of MW-3
MW-7	15	4-14	Sand	East/downgradient of oil UST bunker, east of MW-8
MW-8	20	6-16	Sand	Directly east/downgradient of oil UST bunker

Soil samples were collected continuously as described in GZA's SOP K-2 (refer to GZA's *Generic QAPP*) by pneumatically advancing a 5-foot, 2-inch ID steel split-spoon equipped with a dedicated acetate lining. Samples were recovered from a depth of 0 to 5, 5 to 10, 10 to 15 and 15 to 20 feet/refusal bgs. Soil samples recovered for screening (in accordance with GZA's SOP #4.1.3, included in the *Generic QAPP*) and analysis were transferred to clean, unpreserved 8-ounce glass jars, and in 40 ml methanol-preserved glass vials with septa caps, using a stainless-steel trowel. Select soil samples were submitted for laboratory analysis, as described below. The stainless-steel trowel was washed with an Alconox®/water solution and rinsed with distilled water between each sample. A new acetate liner was employed for each sample.

Field quality control sampling and testing included the collection of an equipment blank sample and blind duplicate.

3.3 OBSERVED SUBSURFACE CONDITIONS

Soil samples recovered during the boring program were observed to generally consist of fine to coarse sand with varying degrees of gravel and silt in all borings. Most of the borings also had traces of asphalt, brick and concrete between 0-10 ft bgs, indicating that the area has been filled. Groundwater was encountered at a depth of 8 to 13 feet bgs. A layer of black, petroleum impacted soil (sheen and petroleum-like odor) was encountered in MW-8 and B-1 between 10-20 ft bgs; these borings are located directly downgradient of the oil UST bunker. Two borings (B-8 and B-9) that were located on the concrete slab in the central portion of the property did not recover soil samples due to refusal on concrete at depths of 2 and 3 feet bgs, respectively. Refer to the boring logs in **Appendix D** for additional subsurface information.

3.4 SOIL SAMPLE FIELD SCREENING

Soil samples recovered during drilling activities were field-screened for total volatile organic compounds (TVOC) using an Ion Science Tiger PID equipped with a 10.6 eV lamp and calibrated with isobutylene in air. Soil samples from each boring were screened in accordance with GZA's SOP #4.1.3 (refer to GZA's *Generic QAPP*). TVOC screening results are provided on the boring logs attached as **Appendix D**.

The TVOC readings were generally low, i.e. below 5 ppm, except in B-1, B-2, B-5, B-10, MW-7 and MW-8 between approximately 7 and 10 feet bgs, where elevated (*i.e*, above 10 ppm) PID screening results were observed.

3.5 INVESTIGATION DERIVED WASTE

Drill cuttings with PID readings above 10 ppm were placed in 55-gallon steel drums for subsequent off-Site disposal, in accordance with the SS-QAPP. The resulting drums are temporarily stored on-Site. All IDWs were transported off-Site by GlobalCycle to the Stericycle Environmental Solutions facility in Providence, RI on February 11, 2019. Copies of the lab results and shipping records for the IDWs are included in **Appendix E** and **Appendix F**, respectively.

All other soil cuttings were used as backfill in each borehole, in accordance with the SS-QAPP, as the soil TVOC screening results were below 5ppm.

3.6 SOIL SAMPLE ANALYSIS

A total of twelve (12) soil samples, one (1) blind duplicate sample, two (2) trip blanks, and one (1) equipment blank were placed in laboratory provided containers, preserved as appropriate, packed in ice chests and transported under chain-of-custody protocol to Premier Laboratory, Inc. in Dayville, Connecticut. Eleven of the samples (B-1/S-2D[2], B-2/S-2, B-3/S-2, B-5/S-2, B-6 (0-5')[3], B-7/S-1, B-10, B-11/S-1, MW-3/S-1, MW-4 (0-2'), MW-7 and MW-8/S-2B) were analyzed for the following parameters:

- Volatile Organic Compounds (VOCs) via EPA Method 8260B;
- Polycyclic Aromatic Hydrocarbons (PAHs) via EPA Method 8270C;
- Priority Pollutant (PP) 13 Metals via EPA Method 6010B;
- Mercury via EPA Method 7470;
- Polychlorinated Biphenyls (PCBs) via EPA Method 8082; and
- Total Petroleum Hydrocarbons (TPH) via EPA Method 8100M.

[2] *Sample results under MW-9 in laboratory certificates.*
[3] *Sample results under MW-6 in laboratory certificates.*

The remaining soil sample (MW-7 [10-15']) was submitted for TPH fingerprint laboratory analysis via EPA Method 8100M.

There were no deviations from the approved SS-QAPP.

3.7 SOIL DATA VALIDATION AND DATA USABILITY

As required by the SS-QAPP, GZA performed a modified Tier I Plus data validation/data usability assessment for the following analytical data report:

- D8K2844 dated December 13, 2018 – analysis of soil samples for VOCs, PAHs, PP-13 Metals, Mercury, TPH, TPH fingerprint and PCBs.

This assessment was completed in accordance with the *Region I, EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses (12/96)* and the requirements identified in GZA's Generic QAPP dated October 2018.

As indicated in the Analytical Data Report attached in **Appendix E**, all soil samples were received intact and under appropriately executed chains-of-custody. Based on review of the QA/QC documentation, we conclude the following:

3.7.1 Preservation

Temperatures recorded on the chains-of-custody indicated that samples were cooled to the proper temperature. All samples were preserved in the manner appropriate for the analytical method.

3.7.2 Holding Times

All samples were prepared and analyzed within the method-specified holding times. Thus, no results require qualification on this basis.

3.7.3 Trip Blanks

Trip blanks were not analyzed for D8K2844.

3.7.4 Equipment Blanks

The soil equipment blank (E-1) was submitted for VOC analysis with the groundwater samples under Report D8L0091. Report D8L0091 indicates that acetone was detected at a low concentration in the equipment blank. Acetone was detected above the laboratory reporting limit in five of the associated samples, including a trip blank and the groundwater equipment blank. Thus, acetone has been qualified as not detected (U) for these samples in accordance with the guidelines.

3.7.5 Method Blanks

No detects were reported above the laboratory detection limits in the laboratory method blanks. Thus, no results require qualification on this basis.

3.7.6 Lab Control Samples

Lab control samples were prepared and analyzed for all data packages and analytes. The LCS analysis for VOCs had one analyte (chloroethane) that exceeded the acceptable QA/QC limits. However, as all sample results for this analyte were non-detect, these results were accepted without qualifications. In all other cases, recovery values were within acceptable ranges for all target analytes. Thus, no results require qualification on this basis.

3.7.7 Surrogate Recoveries

The surrogate recovery results for pyrene were below acceptable limits for sample B-10. A surrogate recovery result for Aroclor-1260 was above acceptable limits and a matrix interference present for sample B11-S1. All other surrogate recovery results were acceptable for all samples. No data required qualification due to surrogate recovery.

3.7.8 Laboratory Fortified Matrix (LFM) and LFM Duplicates

LFM and/or LFM Duplicate analyses were completed for this data package. For metals analysis (EPA Method 6010C), percent recoveries were outside the acceptable QA/QC limits for antimony, chromium, lead, and zinc. The results in the associated sample (B11-S1) were qualified as estimated. For PCB analysis (3550C/8082A) percent recoveries were outside acceptable limits for Aroclor-1016, and the result in the associated sample (B3-S2) was qualified as estimated. For VOC analysis, several analytes had percent recoveries outside QA/QC limits. In the associated sample (B-6[4]) all results were non-detect and several of these results were qualified as estimated UJ while one result (chloroethane) was rejected.

All other percent recovery and relative percent difference values were within acceptable QA/QC limits. Thus, no other results require qualification on this basis.

3.7.9 Laboratory Sample Duplicate

A laboratory sample duplicate was prepared from sample B-11/S-1 and analyzed for metals. The relative percent difference values for the following analytes exceeded the QA/QC limit of 20%: beryllium at 37.5% and silver at 46.4%. The positive results for beryllium and silver have been qualified estimated (J). No other results required qualification on this basis.

3.7.10 Blind Duplicate Recoveries

Blind duplicate soil samples were prepared and analyzed as presented below.

- Report D8K2844 – The sample identified as BD11/28/2018 was prepared for MW-4 at a depth of 0-5 ft bgs and analyzed for VOCs, PCBs, TPH, PAHs, and PP-13 Metals. Ten metals, 10 PAHs, and TPH were detected above the laboratory detection limits in both samples. The RPD values for all were not within the +/-50% acceptance criteria; thus, they have been qualified estimated (J) for this sample.

[4] *Sample results under MW-6 in laboratory certificates.*

3.7.11 Quantitation Limits

The laboratory detection limits exceeded the project-required detection limits for a number of compounds, due to the observed onsite contamination described in Section 3.80. Given the levels of contamination observed, the quantitation limits are acceptable.

3.7.12 Project Narratives

No other deviations are noted in the project narratives.

The above described laboratory results are considered useable as qualified and are sufficient to meet the project data quality objectives.

3.8 SOIL SAMPLE RESULTS

Soil results are compiled in **Table 1** and compared to the applicable Method 1 I/CDEC and GB-Leachability Criteria as outlined in Section 1.8.3 of the Remediation Regulations. Copies of the laboratory analytical reports are attached in **Appendix E**. As shown in **Table 1**, arsenic was detected above the I/C-DEC in eight samples, copper and zinc were detected above the I/C DEC in one sample, TPH was detected above the I/C-DEC and GB Leachability Criteria in three samples and various PAHs were detected above the I/C DEC in 8 samples. The TPH exceedences were located downgradient of the oil UST bunker in areas where visual petroleum impacts were observed. The laboratory identified the TPH sample from MW-7 as "motor oil" and a GZA chemist confirmed that the chromatograph is consistent with lubricating oil. This indicates that the contamination is not from a leak in the No.6 oil UST and is likely from former mill activities. Note that soil exceedences were generally located under concrete, asphalt or in vegetated areas; as such the potential entrainment of contaminants by wind or erosion is minimal.

4.0 GROUNDWATER SAMPLING PROGRAM

On November 30, 2018, groundwater samples were collected from newly installed wells onsite wells MW-3, MW-4, MW-7 and MW-8.

The groundwater sampling program was executed in accordance with the SS-QAPP. Sampling techniques and analytical results are discussed in the subsections below.

4.1 GROUNDWATER SAMPLING TECHNIQUE

Groundwater samples were collected in general accordance with EPA's September 19, 2017 *Low Stress (low flow) Purging and Sampling Procedure* (low flow SOP) and in accordance with revised GZA SOP # 3.1.2 (refer to GZA's *Generic QAPP*). As part of that sampling methodology, well stabilization was evaluated through the measurement of specific water quality parameters recorded during the purging process. A variable speed peristaltic pump was utilized to control the rate of purging and limit the drawdown caused by this operation. To avoid cross contamination, dedicated 3/8-inch-outer-diameter (OD) polyethylene tubing, installed in each of the existing wells, was utilized as the intake and discharge tubing for the pumps. Pharmaceutical grade tubing was employed as the pump head tubing and connected to the intake and discharge tubing by clamps sufficient to prevent the introduction of air into the sample.

Prior to sampling, each well was gauge for light and dense non-aqueous phase liquids (LNAPL and DNAPL); no NAPL was observed. A sheen was noted on groundwater from each well.

During the sampling, field readings were recorded for pH, temperature, specific conductance, dissolved oxygen, oxygen reduction potential and turbidity using a YSI Pro Series multi-meter with a flow-through cell. Field equipment used to perform the testing was calibrated according to the manufacturer's instructions before sampling. Field readings are presented in the field sampling logs, attached as **Appendix G** and are summarized on **Table 2**. Results of field screening parameters were generally within the range expected for groundwater in Rhode Island. Field screening results were not collected from MW-7 due to the well's low yield.

As indicated on the logs, the readings generally stabilized prior to collecting the samples. The samples were collected in hydrochloric acid-preserved 40-ml glass vials with septa caps and sulfuric acid-preserved 1-L amber glass jars, packed in an ice filled cooler, and transported under chain-of-custody protocol to Premier Laboratory, of Dayville, Connecticut, for analysis.

Purge water from the round of well sampling was placed in a 55-gallon steel drum for subsequent off-Site disposal. The resulting drum were temporarily stored on-Site. All IDWs were transported off-Site by GlobalCycle to their facility in Taunton, MA on February 11, 2019. Copies of the lab results and shipping records for the IDWs are included in **Appendix E** and **Appendix F**, respectively.

4.2 GROUNDWATER SAMPLE ANALYSIS

A total of four (4) groundwater samples, one (1) blind duplicate sample, one (1) trip blank and one (1) equipment blank were collected, packed in an ice chest and transported under chain-of-custody protocol to Premier Laboratory, Inc. for VOC and TPH analyses.

4.3 GROUNDWATER DATA VALIDATION AND USEABILITY

As required by the Site-Specific QAPP, GZA performed a modified Tier I Plus data validation/data usability assessment for the following Analytical Data Report:

- D8L0091 dated December 17, 2018 – analysis of groundwater samples for VOCs and TPH.

As indicated in the Analytical Data Report attached in **Appendix E**, water samples were received intact, within the proper temperature range and appropriately preserved.

The results for our data validation are summarized in the following subsections.

4.3.1 Trip Blanks

Report D8L0091 indicates that a trip blank was provided for VOC analysis, with only acetone detected above the laboratory detection limits. Acetone was detected above the laboratory detection limits in five other samples. Thus, these results have been qualified as estimated (J) in accordance with the guidelines.

4.3.2 Equipment Blanks

Acetone was detected at a concentration exceeding the laboratory detection limits in the equipment blank (E-2) associated with Report D8L0091. Acetone was detected above the laboratory reporting limit in five of the associated

samples, including a trip blank and the soil equipment blank. Thus, acetone has been qualified as not detected (U) for these samples.

4.3.3 Method Blanks

No compounds were reported above the laboratory detection limits in the laboratory method blanks. Thus, no results require qualification on this basis.

4.3.4 Lab Control Samples

All percent recovery values were within acceptable ranges. Thus, no results require qualification on this basis.

4.3.5 Surrogate Recovery/Internal Standards

No surrogate recoveries were reported outside acceptable QA/QC ranges. Thus, no results require qualification on this basis.

4.3.6 Blind Duplicate Recoveries

Report D8L0091 -- A blind duplicate groundwater sample was prepared for sample MW-8 and analyzed for VOCs. 11 VOCs were detected above the laboratory detection limits in both samples, with RPD values of less than the +/-30% acceptance criteria. Thus, these results do not require qualification on this basis.

4.3.7 Quantitation Limits

The laboratory detection limits for TPH analysis exceeded the project-required detection limits (PQL 0.001 mg/L, RL 0.100 to 0.400 mg/L) due to the high TPH results in some of the samples.

The laboratory detection limits generally satisfy the project-required detection limits. The laboratory detection limits for 1,2-dibromo-3-chloropropane exceeded the GA Groundwater Objectives. Note that the GA Groundwater Objectives cannot be achieved for these compounds due to the limitations of the current analytical methodologies.

4.3.8 Project Narratives

No other deviations are noted in the project narratives.

The above described laboratory results are considered useable as qualified and are sufficient to meet the project objectives.

4.4 GROUNDWATER SAMPLE RESULTS

Groundwater samples from the newly installed wells were analyzed for VOCs by EPA Method 8260B and TPH by EPA Method 8100. Analytical results are compiled in **Table 3** and compared to the GB Groundwater Objectives. As shown, exceedences of the GB Groundwater Objectives for benzene and ethylbenzene were observed in MW-8; with concentrations of 3.41 mg/L and 14.5 mg/L. TPH was detected at significant levels (6.76 and 2.61 mg/L) in MW-7 and MW-8. RIDEM has not established a GB Groundwater Objective for TPH.

4.5 GROUNDWATER ELEVATION SURVEY

Depth to static groundwater ranged from approximately 8 to 13 feet bgs, based on readings collected on November 30, 2018. Using wellhead elevation survey data collected by GZA on November 27 and 28, 2018; groundwater elevations were found to range from 149 to 157 feet in reference to the North American Vertical Datum of 1988 (NAVD 88). Groundwater elevation measurements are summarized in the below table and shown on Figure 2. Based on the groundwater elevations, groundwater flow is inferred to be easterly, toward the Blackstone River.

Well ID	Well Type	November 30, 2018 Groundwater Elevation (feet)
MW-3	Shallow Overburden	149.0
MW-4	Shallow Overburden	149.3
MW-7	Shallow Overburden	154.8
MW-8	Shallow Overburden	156.6

We note that localized groundwater flow patterns may vary significantly from those shown due to heterogeneous subsurface conditions, the presence of underground utilities, river elevation changes, and variations in rainfall recharge.

4.6 VAPOR INTRUSION SCREENING

Significant levels of VOCs were observed in groundwater in two locations; the Massachusetts GW-2 Groundwater Standards, which are applicable for vapor intrusion (VI), are presented in **Table 3** for comparison only, as Rhode Island has not established vapor intrusion groundwater criteria. As shown, exceedences of the GW-2 standards are present, indicating a potential vapor intrusion risk if buildings are constructed in the future over certain portions of the Site. Vapor intrusion is currently an incomplete exposure pathway, as the property is currently vacant and no buildings remain. Any future onsite buildings should be constructed with a sub-slab depressurization system (SSDS) as described in Section 7.00 to mitigate potential VI exposures.

5.0 CONCEPTUAL SITE MODEL

This section provides a description of the Conceptual Site Model (CSM) that guided our evaluation of the Site. This description of the CSM outlines the Site's environmental setting, the type and nature of contaminants released at the Site, inferred contaminant migration pathways, and the location of human and environmental receptors. The CSM discusses the results of field and laboratory analyses and their implications with regard to the presence and current spatial distribution of contaminants in soil and groundwater. We have assumed that future Site use will be industrial/commercial.

5.1 CURRENT EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

The Site is undeveloped following demolition of the once extensive mill structures in 2011/2012, and is presently vacant. Under the existing conditions and Site use, the receptors of potential concern include only trespassers.

Current conceptual contaminant migration pathways include direct contact human exposure to metals, TPH and various PAHs in contaminated soils to Site trespassers.

5.2 CONCEPTUAL FUTURE EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

In the future, potential receptors could include trespassers, onsite workers and utility/construction workers, depending on future Site use.

Conceptual contaminant migration pathways include direct contact human exposure to metals, TPH and various PAHs in contaminated soils to on-Site workers and visitors/trespassers. Note, we have not included future Site residents, or direct contact with or ingestion of groundwater because we assume that an Industrial/Commercial use limitation will be placed on the property deed and that use of groundwater as a potable supply will also be prohibited.

5.3 CONCLUSION

Metals, TPH and various PAHs were detected at concentrations above the applicable RIDEM regulatory criteria in soil. Certain VOCs were detected at concentrations above the applicable RIDEM regulatory criteria, and TPH was detected at significant levels in groundwater. It is GZA's opinion that the conceptual site model is valid; however, as described in Section 7 below, additional investigation is required to fully characterize environmental conditions at the Site and refine the proposed remedial approach investigation has been conducted.

6.0 SUMMARY AND CONCLUSION

On the behalf of RIDEM, GZA conducted a subsurface investigation at the Site. The objective of the study was to evaluate potential impacts to soil and groundwater from previously identified RECs.

The following summary has been developed from the testing and observations conducted as part of this study:

1. GZA conducted a subsurface investigation at the Site consisting of the completion of 14 soil test borings and the collection of soil samples for field screening and laboratory analysis. The 14 borings (B-1 through B-3, B-5 through B-11, MW-3, MW-4, MW-7 and MW-8) were completed to a depth of 8 to 20 feet bgs. Two of the borings were located directly downgradient of the #6 oil UST bunker. Four borings were completed as shallow overburden groundwater monitoring wells. Soil samples recovered during the boring program were observed to generally consist of fine to coarse sand with varying amounts of gravel and silt in all borings. A majority of the borings also had traces of asphalt, brick and concrete between 0-10 ft bgs, indicating that the area has been filled. Groundwater was encountered at a depth of 8 to 13 feet bgs. A layer of petroleum impacted soil was observed in MW-7 and MW-8 from 10 to 20 feet bgs.

2. Thirteen soil samples, including one blind duplicate, were submitted to the laboratory for testing; twelve samples (including one blind duplicate) were tested for VOCs, PAHs, TPH, PCBs, PP-13 metals. The remaining sample was tested for TPH fingerprint only. I/C-DEC exceedences for metals and certain PAHs were noted in MW-3, MW-4, BD11/28/2018, B-3, B-5, B-6, B-7 and B-11 in samples collected from 0-5 feet and/or 5-10 feet bgs. TPH also exceeded the I/C-DEC and GB-Leachability Criteria in samples from MW-7 (10-15 feet), B-1 (5-10 feet) and B-10 (7.5-9 feet). MW-8 and B-1 are located immediately downgradient of the oil UST bunker.

3. One round of groundwater samples was collected from the four newly installed wells. Results showed exceedences of the GB Groundwater Objective for benzene and ethylbenzene in MW-8; concentrations were 3.41 and 14.5 mg/L, respectively. This well is located downgradient of the oil UST bunker.

4. Groundwater was observed in the monitoring wells at depths ranging from 7 to 13 feet bgs.

5. A VI screening indicates that VI risk may be present if a building were to be constructed onsite in the future; currently the VI pathway is incomplete, as no buildings are located at the Site.

This investigation identified TPH, benzene and ethylbenzene in soil and groundwater above the GB-Leachability Criteria and/or I/C-DEC.

It is GZA's opinion that additional investigation is required to fully characterize environmental conditions at the Site and refine the proposed remedial.

7.0 EVALUATION OF REMEDIAL ALTERNATIVES

To address the requirements of Section 1.8.4 of the Remediation Regulations, GZA has evaluated four conceptual remedial alternatives for the Site and has provided preliminary estimated costs for their implementation. In developing these remedial alternatives, we have taken into consideration the following:

- Planned future use of the Site will be industrial/commercial and accordingly, the I/C DEC are applicable to the Site. Note that Site could also be redeveloped for residential use if appropriate remediation and engineered controls were implemented;
- Redevelopment plans for the Site are currently unknown; and
- Groundwater at the Site is designated a GB resource area.

Cost estimates for each alternative are summarized below, and presented in the attached spreadsheet provided in **Appendix H**. The cost estimates include *in-situ* groundwater treatment, groundwater monitoring, institutional controls and fencing as described in the alternatives provided below.

Alternative #1 - No Action Alternative: This alternative results in no institutional controls or active remedial measures. Soils at the Site exceed the I/C DEC for metals, TPH and VOCs, and groundwater at the Site exceeds the GB Groundwater Objective for certain VOCs. Based on these exceedences, this alternative would not bring the Site into compliance with the applicable regulations.

The cost associated with implementation of this alternative is $0.

Alternative #2 – Institutional Controls: Under this alternative, an Environmental Land Use Restriction (ELUR)[5] could be placed on the property, prohibiting future groundwater use, requiring buildings constructed onsite to include a sub-slab depressurization system and limiting land use to industrial/commercial activities. However, this alternative would not address

[5] Please not that an ELUR was filed on November 15, 1999 for 117 First Avenue (Plat 6/Lot 117). A new ELUR, consistent with the Department's current version will be recorded on the property. .

VOC/TPH concentrations in groundwater, the presence of NAPL in soil (and potentially in groundwater) or direct exposure to soils exceeding the I/C DEC.

Our opinion of the probable cost of Alternative #2 is $9,000 in today's dollars.

Alternative #3 – *Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring*: This remedial approach includes the remedial actions described in Alternative 2 (Institutional Controls consisting of an ELUR[6]), along with removal of the oil UST, *in-situ* treatment of on-Site soil, long-term groundwater monitoring and Site perimeter fence installation. Based on our current understanding of Site conditions, these additional remedial elements would consist of the following:

1. The extent of TPH impacts to soil and groundwater have not been fully delineated and will need to be further evaluated as part of a limited design phase investigation (LDI), including completion of a remedial system pilot test. In addition, four borings and one monitoring well installation proposed in the SS-QAPP on the northwestern portion of the Site were not completed as part of this investigation, and would be completed as part of the LDI;

2. Though the UST does not appear to have leaked, it will be emptied and cleaned to prevent any future leaks. The tank can be left in place and removed as part of Site redevleopment;

3. Insitu soil treatment using a biovent system to remediate observed TPH impacts. Bioventing enhances the natural biological breakdown of the petroleum product in the soil above the groundwater table by drawing atmospheric air that is rich in oxygen to the native bacteria in the soil. By maintaining an oxygen rich aerobic environment in the subsurface, the bacterial degradation of the petroleum is accelerated. As a contingency, if dissolved constituents remain a concern once observed soil impacts above the water table are addressed, we propose to inject air at rates of less than a few standard cubic feet per minute (scfm) into sparge wells which will be drilled when the biovent system is installed. Air will be injected at intervals judged sufficient to maintain aerobic biodegradation and/or to physically air strip the petroleum constituents from the groundwater, with the soil vapor being captured within the biovent wells. During the limited design investigation described above, a biovent pilot test will be conducted to evaluate Site specific design parameters for a full system;

4. The Site is fenced except for a small area along Fairmount Street (approximately 60 feet). The fence will be extended to encompass the Site perimeter (except along the Blackstone River which forms a natural barrier to trespassing) and will function as an engineered control to restrict Site access. The Site will then be capped as part of Site redevelopment (note that Site redevelopment plans are unknown at this time). Any future buildings should be constructed with a passive SSDS, capable of being modified to an active SSDS system if needed, due to the vapor intrusion risk present at the Site; and

5. A long-term monitoring program, including monthly monitoring of the bio-vent/bio-sparge system and monitoring of five monitoring wells (assumes 2 years of quarterly monitoring and 3 years of semi-annual monitoring) will be implemented.

Our opinion of the probable cost for implementing Alternative #3 is $223,850 (including a 10% contingency) without long-term monitoring and $440,000 (including a 10% contingency) with long-term monitoring/maintenance for five years, expressed in today's dollars. These remedial cost estimates are subject to the Remedial Cost Estimate Limitations in **Appendix A**.

[6] Please not that an ELUR was filed on November 15, 1999 for 117 First Avenue (Plat 6/Lot 117). If an ELUR is to be placed on the entire property, the new ELUR will have to be recorded over the previous ELUR.

Alternative #4 – *Site Capping (as part of Site redevelopment), Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring:* This remedial approach includes the remedial actions described in Alternative #3 along with Site capping as part of Site redevelopment. We understand that three Site reuse options are being considered by the City:

1. Solar array – site capping would be a geotextile warning barrier and 6-inches of crushed stone (or a RIDEM approve equal);
2. Recreation field – site capping would consist of a geotextile warning barrier and 1-foot of clean top soil; and
3. Industrial redevelopment – we have assumed that the proposed building/parking lot will be roughly the same footprint as the former building/parking lot and the remainder of the Site will be capped with a geotextile and 1-foot of clean soil.

Our opinion of the probable cost for implementing Alternative #4 (including all components of Alternative #3) are:

1. Solar array – $612,000 (including a 10% contingency) without long-term monitoring and $828,000 (including a 10% contingency) with long-term monitoring/maintenance for five years, expressed in today's dollars;
2. Recreation field – $810,000 (including a 10% contingency) without long-term monitoring and $1,025,000 (including a 10% contingency) with long-term monitoring/maintenance for five years, expressed in today's dollars; and
3. Industrial redevelopment – $1,048,000 (including a 10% contingency) without long-term monitoring and $1,264,000 (including a 10% contingency) with long-term monitoring/maintenance for five years, expressed in today's dollars

This opinion of probable cost only includes the costs associated with the engineered controls beyond what would be required for typical Site redevelopment, i.e., these costs do not include demolition of the existing slab/parking lot, regrading, utilities, permitting/engineering and any other costs associated with Site construction. The industrial redevleopment probable costs do not include construction of a new building slab and construction of a new parking lot. Subslab depressurization systems (SSDS) are included under the recreation field (assumed to be a 1,000 square foot building) and the industrial redevleopment (assumed to be an approximately 92,000 square foot building) scenarios. An offsite disposal allowance of 1,000 cubic yards of impacted soil is included under each scenario.

8.0 RECOMMENDED REMEDIAL ALTERNATIVE

Alternative #3, limited design investigation, oil UST removal, insitu soil treatment, site fencing, long-term groundwater monitoring and recording of an ELUR is the recommended remedial alterative for the Site. When the Site is redeveloped, Alternative #4 should be implemented. Alterative #3 can be implemented prior to Site redevleopment (in preparation for Alternative #4), as all components of Alternative #3 are included in Alternative #4. In proposing this alternative, it is GZA's opinion that this Alternative is consistent with the proposed reuse of the Site, and mitigates current and future risks from identified onsite contamination and off-Site mitigation. An Analysis of Brownfields Cleanup Alternatives is included in Appendix I.

9.0 CERTIFICATION

To address Rule 1.8.5 of the Remediation Regulations, the following statements of certification are provided.

GZA GeoEnvironmental, Inc. certifies to the best of its knowledge, that this Site Investigation Report is complete and accurate.

Edward A. Summerly, P.G.
District Office Manager / Principal
GZA GeoEnvironmental, Inc.

The City of Woonsocket, certifies, to the best of its knowledge, that this Site Investigation Report is a complete and accurate representation of the Site and the release and contains all known facts surrounding the release. The City of Woonsocket also certifies that by signing this document, it is not agreeing to remediate the Site and is not assuming any financial responsibility for the remediation of the Site.

Steven Lima
Director of Planning
City of Woonsocket

TABLES

TABLE 1
SUMMARY SOIL SAMPLING RESULTS
Former Seville Dyeing Co. Site
Woonsocket, Rhode Island
November 2018

PARAMETERS	UNITS	RIDEM DIRECT EXPOSURE CRITERIA	RIDEM GB	MW-3/S-1		MW-4		MW-4 (BD)		MW-7	MW-8/S-2B		B-1[5]/S-2D		B-2/S-2		B-3/S-2		B-5/S-2		B-6[6]		B-7/S-1		B-10		B-11/S-1	
		Industrial/ Commercial	Leachibility Criteria	11/27/2018		11/28/2018		11/28/2018		11/28/2018	11/27/2018		11/27/2018		11/27/2018		11/27/2018		11/27/2018		11/28/2018		11/27/2018		11/27/2018		11/27/2018	
				0-5 feet		0-5 feet		0-5 feet		10-15 feet	0-5 feet		5-10 feet		5-10 feet		5-10 feet		5-10 feet		0-5 feet		0-5 feet		7.5-9 feet		0-5 feet	
Metals																												
Antimony	mg/kg	820	-	0.500	U	0.500	U	0.500	U	NT	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U	0.500	U
Arsenic	mg/kg	7.0	-	**14.7**		**45.2**		**17.3**	J	NT	**5.89**		**5.61**		**10.1**		**8.03**		**7.97**		**8.89**		**10.6**		**0.721**		**6.60**	
Beryllium	mg/kg	1.3	-	**0.857**		0.0552	U	0.0560	U	NT	**0.0867**		0.0532	U	0.0614	U	**0.0922**		**0.108**		**0.210**		**0.102**		0.120	U	**0.254**	J
Cadmium	mg/kg	1,000	-	**0.822**		**2.06**		**1.04**	J	NT	0.108	U	0.106	U	**0.603**		**0.328**		**0.399**		**0.228**		**0.479**		0.239	U	**0.215**	
Chromium	mg/kg	10,000	-	**57.6**		**74.8**		**35.7**	J	NT	**5.85**		**11.4**		**33.9**		**17.9**		**14.4**		**27.9**		**19.9**		**12.6**		**50.6**	J
Copper	mg/kg	10,000	-	**176**		**1630**		**418**	J	NT	**4.92**		**3.55**		**42.8**		**45.4**		**54.9**		**27.9**		**55.5**		**35,800**		**31.1**	
Lead	mg/kg	500	-	**33.9**		**63.3**		**36.7**	J	NT	**2.61**		**2.04**		**20.9**		**9.90**		**21.2**		**318**		**30.0**		**15.9**		**47.6**	J
Nickel	mg/kg	10,000	-	**47.5**		**118**		**40.1**	J	NT	**5.58**		**4.93**		**25.0**		**9.40**		**15.7**		**12.4**		**21.6**		**41.7**		**10.6**	
Selenium	mg/kg	10,000	-	0.292	U	0.276	U	0.280	U	NT	0.269	U	0.266	U	0.307	U	0.292	U	0.286	U	0.280	U	0.279	U	0.598	U	0.284	U
Silver	mg/kg	10,000	-	**0.158**		**1.59**		**0.402**	J	NT	0.108	U	0.106	U	**0.137**		0.117	U	0.114	U	**0.241**		**0.344**		**3.72**		**4.12**	J
Thallium	mg/kg	140	-	0.292	U	**0.914**		**0.456**	J	NT	0.269	U	0.266	U	**0.611**		**0.543**		**0.594**		0.280	U	0.279	U	0.598	U	0.284	U
Zinc	mg/kg	6,000	-	**138**		**39.2**		**88.0**	J	NT	**13.7**		**7.38**		**36.9**		**19.8**		**34.4**		**98.1**		**79.5**		**10,800**		**69.7**	J
Mercury	mg/kg	610	-	**0.251**		**0.616**		**0.0452**	J	NT	0.036	U	0.0351	U	**0.0984**		0.0386	U	**0.197**		**0.0716**		0.0368	U	0.0789	U	**0.347**	
Polychlorinated Biphenyls																												
Aroclor-1016	mg/kg	10	10	0.0117	U	0.0112	U	0.0110	U	NT	0.0107	U	0.212	U	0.0122	U	0.0116	UJ	0.0114	U	0.0112	U	0.0112	U	0.0239	U	0.0114	U
Aroclor-1221	mg/kg	10	10	0.0117	U	0.0112	U	0.0110	U	NT	0.0107	U	0.212	U	0.0122	U	0.0116	U	0.0114	U	0.0112	U	0.0112	U	0.0239	U	0.0114	U
Aroclor-1232	mg/kg	10	10	0.0117	U	0.0112	U	0.0110	U	NT	0.0107	U	0.212	U	0.0122	U	0.0116	U	0.0114	U	0.0112	U	0.0112	U	0.0239	U	0.0114	U
Aroclor-1242	mg/kg	10	10	0.0117	U	0.0112	U	0.0110	U	NT	0.0107	U	0.212	U	0.0122	U	0.0116	U	0.0114	U	0.0112	U	0.0112	U	0.0239	U	0.0114	U
Aroclor-1248	mg/kg	10	10	0.0117	U	0.0112	U	0.0110	U	NT	0.0107	U	0.212	U	0.0122	U	0.0116	U	0.0114	U	0.0112	U	0.0112	U	0.0239	U	0.0114	U
Aroclor-1254	mg/kg	10	10	0.0117	U	0.0112	U	0.0110	U	NT	0.0107	U	0.212	U	0.0122	U	0.0116	U	0.0114	U	0.0112	U	0.0112	U	0.0239	U	0.0114	U
Aroclor-1260	mg/kg	10	10	0.0117	U	0.0112	U	0.0110	U	NT	0.0107	U	0.212	U	0.0122	U	0.0116	U	0.0114	U	0.0112	U	0.0112	U	0.0239	U	0.0114	U
Total Petroleum Hydrocarbons																												
Total Petroleum Hydrocarbons	mg/kg	2,500	2,500	**518**		**184**		**417**	J	**4,020**	**170**		**10,800**		**41.2**		**35.8**		**241**		**1,430**		**271**		**3,670**		**425**	U
Semi-Volatile Organic Compounds																												
Acenaphthene	mg/kg	10,000	-	0.385	U	0.364	U	0.369	U	NT	0.354	U	**2.280**		0.0809	U	0.0769	U	0.377	U	**1.620**		0.368	U	0.394	U	**0.617**	
Acenaphthylene	mg/kg	10,000	-	0.385	U	0.364	U	0.369	U	NT	0.354	U	0.701	U	0.0809	U	0.0769	U	0.377	U	0.369	U	0.368	U	0.394	U	0.375	U
Anthracene	mg/kg	10,000	-	0.385	U	0.364	U	0.369	U	NT	0.354	U	**1.127**		0.0809	U	0.0769	U	**0.415**		**2.500**		0.368	U	0.394	U	**1.640**	
Benzo(a)anthracene	mg/kg	7.8	-	**5.770**		**0.710**		**1.320**	J	NT	0.354	U	**2.040**		**0.106**		**0.123**		**1.280**		**5.130**		**2.000**		0.394	U	**3.670**	
Benzo(a)pyrene	mg/kg	0.8	-	**6.350**		**1.280**		**2.580**	J	NT	0.354	U	0.701	U	**0.0932**		**0.124**		**1.540**		**5.090**		**2.080**		0.394	U	**3.600**	
Benzo(b)fluoranthene	mg/kg	7.8	-	**12.300**		**1.560**		**3.310**	J	NT	0.354	U	0.701	U	**0.137**		**0.150**		**1.880**		**5.820**		**4.060**		0.394	U	**4.660**	
Benzo(g,h,i)perylene	mg/kg	10,000	-	**4.960**		**0.500**		**1.070**	J	NT	0.354	U	0.701	U	0.0809	U	0.0769	U	**0.781**		**1.530**		**1.520**		0.394	U	**1.460**	
Benzo(k)fluoranthene	mg/kg	78	-	**4.110**		**0.640**		**1.170**	J	NT	0.354	U	0.701	U	0.0809	U	0.0769	U	**0.712**		**2.840**		**1.430**		0.394	U	**1.520**	
Chrysene	mg/kg	780	-	**7.800**		**0.897**		**1.470**		NT	0.354	U	**5.350**		**0.104**		**0.119**		**1.320**		**4.740**		**2.680**		0.394	U	**3.230**	
Dibenzo(a,h)anthracene	mg/kg	0.8	-	**1.320**		0.364	U	0.369	U	NT	0.354	U	0.701	U	0.0809	U	0.0769	U	0.377	U	**0.522**		**0.632**		0.394	U	**0.401**	
Fluoranthene	mg/kg	10,000	-	**8.050**		**1.180**		**1.790**		NT	0.354	U	0.701	U	**0.182**		**0.176**		**2.850**		**9.980**		**2.090**		0.394	U	**7.260**	
Fluorene	mg/kg	10,000	-	0.385	U	0.364	U	0.369	U	NT	0.354	U	**3.110**		0.0809	U	0.0769	U	0.377	U	**1.690**		0.368	U	0.394	U	**0.681**	
Indeno(1,2,3-cd)pyrene	mg/kg	7.8	-	**5.030**		**0.555**		**1.150**	J	NT	0.354	U	0.701	U	0.0809	U	0.0769	U	**0.838**		**1.880**		**1.160**		0.394	U	**1.610**	
2-Methylnaphthalene	mg/kg	10,000	-	0.385	U	0.364	U	0.369	U	NT	0.354	U	0.701	U	0.0809	U	0.0769	U	0.377	U	0.369	U	0.368	U	**4.200**		0.375	U
Naphthalene	mg/kg	10,000	-	0.385	U	0.364	U	0.369	U	NT	0.354	U	0.701	U	0.0809	U	0.0769	U	0.377	U	0.369	U	0.368	U	**1.010**		0.375	U
Phenanthrene	mg/kg	10,000	-	**1.820**		0.364	U	**0.533**		NT	0.354	U	**11.200**		0.0809	U	0.0769	U	**2.030**		**11.700**		0.368	U	0.394	U	**6.580**	
Pyrene	mg/kg	10,000	-	**8.160**		**1.140**		**1.730**		NT	0.354	U	**6.640**		**0.168**		**0.178**		**2.910**		**9.220**		**2.010**		0.394	U	**6.860**	

TABLE 1
SUMMARY SOIL SAMPLING RESULTS
Former Seville Dyeing Co. Site
Woonsocket, Rhode Island
November 2018

PARAMETERS	UNITS	RIDEM DIRECT EXPOSURE CRITERIA	RIDEM GB	MW-3/S-1		MW-4		MW-4 (BD)		MW-7	MW-8/S-2B		B-1[5]/S-2D		B-2/S-2		B-3/S-2		B-5/S-2		B-6[6]		B-7/S-1		B-10		B-11/S-1	
				11/27/2018		11/28/2018		11/28/2018		11/28/2018	11/27/2018		11/27/2018		11/27/2018		11/27/2018		11/27/2018		11/28/2018		11/27/2018		11/27/2018		11/27/2018	
		Industrial/ Commercial	Leachibility Criteria	0-5 feet		0-5 feet		0-5 feet		10-15 feet	0-5 feet		5-10 feet		5-10 feet		5-10 feet		5-10 feet		0-5 feet		0-5 feet		7.5-9 feet		0-5 feet	
Volatile Organic Compounds																												
sec-Butylbenzene	mg/kg	-	-	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	**0.324**		0.0107	U	0.0128	U	0.0128	U	0.0122	U	0.0124	U	**0.0805**		10.7	U
n-Butylbenzene	mg/kg	-	-	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	**0.357**		0.0107	U	0.0128	U	0.0128	U	0.0122	U	0.0124	U	0.0125	U	10.7	U
1,2-Dichlorobenzene	mg/kg	-	-	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	0.0103	U	0.0107	U	0.0128	U	0.0128	U	0.0122	U	0.0124	U	**0.0301**		10.7	U
Isopropylbenzene	mg/kg	10,000	-	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	**0.126**		0.0107	U	0.0128	U	0.0128	U	0.0122	U	0.0124	U	**0.0762**		10.7	U
4-Isopropyltoluene	mg/kg	-	-	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	0.0103	U	0.0107	U	0.0128	U	0.0128	U	0.0122	U	0.0124	U	**0.0710**		10.7	U
Naphthalene	mg/kg	-	-	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	0.0103	U	**0.0116**		0.0128	U	0.0128	U	0.0122	U	**0.0138**		**0.182**		10.7	U
n-Propylbenzene	mg/kg	-	-	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	**0.212**		0.0107	U	0.0128	U	0.0128	U	0.0122	U	0.0124	U	**0.151**		10.7	U
Toluene	mg/kg	10,000	54	0.010	U	0.00885	U	0.0131	U	NT	0.0109	U	0.0103	U	0.0107	U	0.0128	U	0.0128	U	0.0122	U	0.0124	U	**0.184**		10.7	U
1,3,5-Trimethylbenzene	mg/kg	-	-	0.021	U	0.0177	U	0.0261	U	NT	0.0218	U	0.0206	U	0.0215	U	0.0257	U	0.0255	U	0.0244	U	0.0247	U	**0.281**		21.4	U
1,2,4-Trimethylbenzene	mg/kg	-	-	0.021	U	0.0177	U	0.0261	U	NT	0.0218	U	**0.0449**		0.0215	U	0.0257	U	0.0255	U	0.0244	U	0.0247	U	**0.967**		21.4	U
m,p-Xylene	mg/kg	-	-	0.010	U	0.0177	U	0.0131	U	NT	0.0218	U	0.0206	U	0.0215	U	0.0257	U	0.0255	U	0.0122	U	0.0247	U	**0.307**		21.4	U
o-Xylene	mg/kg	-	-	0.021	U	0.00885	U	0.0261	U	NT	0.0109	U	**0.015**		0.0107	U	0.0128	U	0.0128	U	0.0244	U	0.0124	U	**0.191**		10.7	U
Remaining VOCs				ND		ND		ND		U	U		U		U		U		U		U		U		U	

Notes:
1: For the complete list of target analytes refer to the attached laboratory certificates of analysis.
2. Bold values indicate the constituent was detected above the laboratory reporting limit. Orange highlight indicates an exceedence of RIDEM's GB Leachability Criteria. Yellow highlight indicates an exceedance of RIDEM's I/C DEC Criteria.
3. "U" indicates that the parameter is not detected.
4. "NT" indicates that the parameter was not tested.
5. Sample results under MW-9 in laboratory certificates.
6. Sample results under MW-6 in laboratory certificates.

TABLE 2
SUMMARY OF GROUNDWATER SAMPLING PARAMETERS
Former Seville Dyeing Co. Site
Woonsocket, Rhode Island
November 2018

PARAMETERS	UNITS	MW-3	MW-4	MW-7	MW-8
		11/30/2018	11/30/2018	11/30/2018	11/30/2018
		Result	Result	Result	Result
pH	SU	6.5	6.8	NM	6.5
Temperature	(oC)	14.2	14.3	NM	13.1
Specific Conductivity	mS/cm	0.503	0.421	NM	0.703
Dissolved Oxygen	mg/L	3.6	3.3	NM	1.4
Oxidation Reduction Potential	mV	75.7	140.5	NM	-312.9
Turbidity	NTU	3.9	1.4	NM	36.6
Depth to water	feet	12.50	9.01	12.75	7.95

Notes
1. The above readings, with the exception of depth to water, were collected using a YSI Pro Series multi-meter with a flow-through cell and represent readings collected immediately prior to well sampling, i.e. were collected when well purging was complete. Depth to water readings shown are initial readings, i.e. were collected before well purging began.

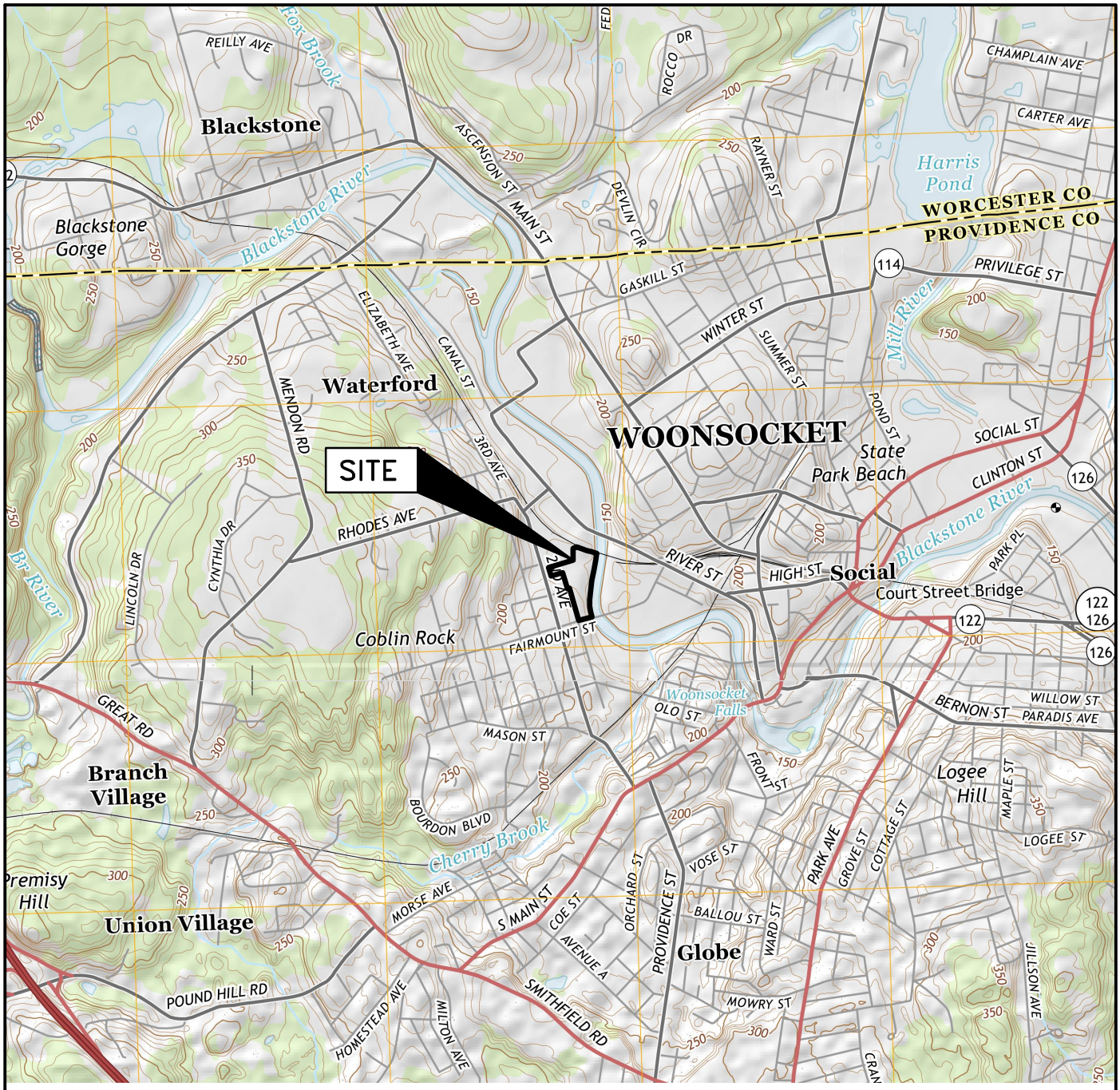
2. NM = Not Measured.

TABLE 3
SUMMARY GROUNDWATER SAMPLING RESULTS
Former Seville Dyeing Co. Site
Woonsocket, Rhode Island
November 2018

PARAMETERS	UNITS	RIDEM GB GROUNDWATER QUALITY STANDARD	MASSACHUSETTS GW-2 STANDARDS	MW-3		MW-4		MW-7		MW-8		MW-8 BD (BD11302018)		Trip Blank		E-1[6]		E-2[7]	
				11/30/2018		11/30/2018		11/30/2018		11/30/2018		11/30/2018		11/30/2018		11/30/2018		11/30/2018	
Volatile Organic Compounds																			
Acetone	mg/L	-	50	5.00	U	5.00	U	**13.3**	U	**13.0**	U	**14.8**	U	**6.73**	U	**9.50**		**10.70**	
Benzene	mg/L	0.14	1	1.00	U	1.00	U	1.00	U	**3.41**		**3.22**		1.00	U	1.00	U	1.00	U
sec-Butylbenzene	mg/L	-	-	1.00	U	1.00	U	**2.63**		**1.24**		**1.18**		1.00	U	1.00	U	1.00	U
4-Chlorotoluene	mg/L	-	10	1.00	U	1.00	U	**14.3**		1.00	U	1.00	U	1.00	U	1.00	U	1.00	U
Ethylbenzene	mg/L	1.6	5	1.00	U	1.00	U	1.00	U	**14.5**		**14.3**		1.00	U	1.00	U	1.00	U
Isopropylbenzene	mg/L	-	100	1.00	U	1.00	U	**1.87**		**2.74**		**2.55**		1.00	U	1.00	U	1.00	U
Naphthalene	mg/L	-	0.7	1.00	U	1.00	U	**8.84**		**72.8**		**70.2**		1.00	U	1.00	U	1.00	U
n-Propylbenzene	mg/L	-	1	1.00	U	1.00	U	**1.39**		**3.14**		**3.19**		1.00	U	1.00	U	1.00	U
Toluene	mg/L	1.7	40	1.00	U	1.00	U	1.00	U	**1.06**		**1.20**		1.00	U	1.00	U	1.00	U
1,2,4-Trimethylbenzene	mg/L	-	100	1.00	U	1.00	U	1.00	U	**2.59**		**2.48**		1.00	U	1.00	U	1.00	U
m,p-Xylene	mg/L	-	-	1.00	U	1.00	U	1.00	U	**3.30**		**3.03**		1.00	U	1.00	U	1.00	U
o-Xylene	mg/L	-	-	1.00	U	1.00	U	1.00	U	**2.48**		**2.23**		1.00	U	1.00	U	1.00	U
Remaining VOCs	mg/L			ND		ND		ND		ND		ND		ND		ND		ND	
Total Petroleum Hydrocarbons																			
Total Petroleum Hydrocarbons	mg/L	-	5	0.100	U	0.100	U	**6.76**		**2.61**		**3.64**		NT		NT		NT	

Notes:
1: For the complete list of target analytes refer to the attached laboratory certificates of analysis.
2. Bold values indicate the constituent was detected above the laboratory reporting limit. Yellow highlight indicates an exceedance of RIDEM's GB Groundwater Quality Criteria.
3. "U" indicates that the parameter is not detected.
4. "ND" indicates that the parameter is not detected.
5. "NT" indicates that the parameters was not tested.
6. E-1 is the soil sample equipment blank.
7. E-2 is the GW sample equipment blank.

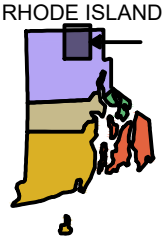
FIGURES



0 1000' 2000' 4000'

SCALE IN FEET

RHODE ISLAND



QUADRANGLE LOCATION

SOURCE:

BASE MAP FROM THE FOLLOWING USGS QUADRANGLE MAP:
WOONSOCKET, RHODE ISLAND (2015)

DIGITAL TOPOGRAPHIC MAPS PROVIDED BY USGSSTORE.GOV.

CONTOUR ELEVATIONS REFERENCE NAVD 88,
CONTOURS ARE SHOWN IN FEET AT 10' INTERVALS

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PHASE I ENVIRONMENTAL SITE ASSESSMENT
PLAT 6 - LOT 102, 117, 118
WOONSOCKET, RHODE ISLAND 02895

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
RIDEM

LOCUS MAP

PROJ MGR: RAC	REVIEWED BY: RAC	CHECKED BY: MEA	FIGURE 1
DESIGNED BY: -	DRAWN BY: GRB	SCALE: AS NOTED	
DATE: SEPTEMBER 2018	PROJECT NO. 34502.01	REVISION NO. 0	SHEET NO. 1 OF 3

© 2018 – GZA GeoEnvironmental, Inc. GZA–J:\ENV\34502.00\FIGURES\CAD\DWGS\34502_LOCUS MAP_FIG–1.DWG LOCUS JUNE 12, 2014 GARY BASTIEN

REFERENCE NOTES:

1. BASE MAP DEVELOPED FROM A GOOGLE PROFESSIONAL ELECTRONIC IMAGE FILE. DIGITAL AERIAL ORTHOPHOTOGRAPHY WAS PUBLISHED ON APRIL 2018.
2. THE LOCATION OF THE EXPLORATIONS WERE APPROXIMATELY DETERMINED USING A LEICA ZENO 20 HANDHELD & AS-12 ANTENNA (MAST MOUNTED) WITH RTK CORRECTION ACCURAY OF 1 CM HORIZONTAL & 2 CM VERTICAL BY GZA PERSONNEL DURING A SITE VISIT ON NOVEMBER 11, 2018.
3. EXPLORATIONS PERFORMED BY HOFFMAN ENVIRONMENTAL SERVICES FROM NOVEMBER 27-28, 2018, AND OBSERVED BY GZA PERSONNEL.

LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- EASEMENT LINE
- SEWER LINE
- SEWER FORCE MAIN
- DRAINAGE LINE
- B-1 BORING
- MW-3 MONITORING WELL

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0 50' 100' 200'
SCALE IN FEET

NO.	ISSUE/DESCRIPTION	BY	DATE

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PHASE II ENVIRONMENTAL SITE ASSESSMENT
PLAT 6 - LOT 102, 117, 118
WOONSOCKET, RHODE ISLAND 02895

EXPLORATION LOCATION PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: RIDEM	
PROJ MGR: RAC	REVIEWED BY: EAS	CHECKED BY: MEA	FIGURE 2
DESIGNED BY: RAC	DRAWN BY: GRB	SCALE: AS NOTED	
DATE: JANUARY, 2019	PROJECT NO. 34502.00	REVISION NO. 0	SHEET NO. 2 OF 2

© 2018 – GZA GeoEnvironmental, Inc. GZA–J:\ENV\34502.00\FIGURES\CAD\DWGS\34502_SITE EXP LOC PLAN_FIG–2.DWG SITE PLAN JANUARY 14, 2019 GARY BASTIEN

APPENDIX A

LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Proposal for Services and/or Report and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a local, state or federal agency.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. Water level readings have been made, as described in this Report, in and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.

COMPLIANCE WITH CODES AND REGULATIONS

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations and compliance with codes and regulations by other parties is beyond our control.

SCREENING AND ANALYTICAL TESTING

8. GZA collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.

9. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.

10. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

INTERPRETATION OF DATA

11. Our opinions are based on available information as described in the Report, and on our professional judgment. Additional observations made over time, and/or space, may not support the opinions provided in the Report.

ADDITIONAL INFORMATION

12. In the event that the Client or others authorized to use this report obtain additional information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

13. GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

REMEDIAL COST OPINION LIMITATIONS

Use of Report

1. GeoEnvironmental, Inc. (GZA) prepared this Report on behalf of, and for the exclusive use of our Client at the stated time for the stated purpose(s) and location(s) identified in the Report. Use of this Report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

Standard of Care

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work.

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services at the same time, under similar conditions, and at the same or a similar property. No warranty, expressed or implied, is made.

Basis of Opinion of Cost

4. GZA's opinion of cost is based on limited data which may not be sufficient to identify each and every condition existing at the site which may constitute noncompliance with applicable governmental statutes, rules, and regulations or constitute a release of oil or hazardous materials and/or may require remediation.

5. The costs on which the preliminary opinion of cost is based are limited to those conditions which were described in the Report.

6. Observations described in the Report were made under the conditions stated therein. Where access to portions of a structure or site was unavailable or limited, GZA renders no opinion as to the condition of those portions of the site or structure.

7. The conclusions presented in the Report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services or the time and budgetary constraints imposed by the Client.

Cost Assumptions

8. While the preliminary opinion of cost represents our professional judgment in this matter, actual conditions encountered during remediation may result in higher or lower costs.

9. The preliminary opinion of cost includes only those cost items identified, and should not be

assumed to include other costs such as legal, administrative, permitting or others. The preliminary opinion of cost also does not include any costs with respect to third-party claims, fines, penalties, or other charges which may be assessed against any responsible party because of either the existence of present conditions or the future existence or discovery of any such conditions.

10. The Report contains approximate cost opinions for purposes of evaluating alternative remedial programs. These estimates involve approximate quantity evaluations. Actual quantities and unit costs may vary. A preliminary cost opinion of this nature is likely to vary substantially from Contractors' Bid Prices and is not to be considered the equivalent of nor as reliable as Contractors' Bid Prices. Prices for similar work undertaken in the future will be subject to variations in market pricing, which are not within GZA's control. Detailed quantity and cost estimating should be performed by professional, experienced cost estimators to determine actual cost.

Reliance on Information provided by Others

11. In preparing the Report, GZA may have relied on certain information provided by the Client, state and local officials, and other parties referenced therein available to GZA at the time of the evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.

Codes and Regulations

12. GZA used reasonable care in identifying and interpreting codes and regulations which are relevant to the costs estimated. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

13. Governmental agencies' interpretations, requirements, and enforcement policies vary from region to region, district office to district office, from state to state, and between federal and state agencies. In addition, statutes, rules, standards, and regulations may be legislatively changed and inter-agency and intra-agency policies may be changed from present practices. GZA has used its experience and judgment in making assumptions as to how anticipated changes in regulatory policies may affect remediation costs.

Additional Services

14. It is recommended that GZA be retained to provide engineering services during any final design, construction and/or implementation of any remedial measures recommended in this report. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

APPENDIX B

SIR CHECKLIST

Appendix B

Regulatory Reference Matrix

Phase II Environmental Site Assessment

Site Investigation Report

Former Seville Dyeing Co. Property, 117 & 229 First Avenue - Woonsocket, Rhode Island

Regulation	Report Section/Page
1.8.3 A.1 SIR Objectives	SIR - Section 1.30, Page 5
1.8.3 A.2 Notification Of Release and short-term response information	Not applicable - Site previously listed with RIDEM and EPA
1.8.3 A.3 Documentation of any past incidents or releases	Phase I ESA - Section 5.00, page 8 SIR - Section 1.20, page 4
1.8.3 A.4 Prior property owners, operators, sequencing of property transfers and time periods of occupancy	Phase I ESA - Section 4.00, page 5
1.8.3 A.5 Previous information that characterizes the contaminated site and all information that led to the discovery of the site.	Phase I ESA - Section 5.00, page 8 SIR – Section 1.20, page 4
1.8.3 A.6 Current Site uses and zoning and brief description of operations, processes employed, waste generated, hazardous materials handled, and any residential activities	Phase I ESA - Section 2.20, page 3 SIR – Section 1.20, page 4
1.8.3 A.7 Locus Plan	SIR - Figure 1
1.8.3 A.8 Site Plan (to scale)	SIR - Figure 2
1.8.3 A.9 General characterization of the surrounding area	Phase I ESA - Section 3.00, page 4 SIR – 2.20, page 6
1.8.3 A. 10 Surface and Groundwater Classification (at or near site)	Phase I ESA - Section 3.00, page 4 SIR – Section 2.2.2, page 6
1.8.3 A.11 Description of contamination from release (all criteria)	SIR - Section 3.8, page 11 & Section 4.4, page 14 Tables 1 through 3
1.8.3 A.12 Concentration gradients of hazardous substances throughout the site for each media impacted by the release.	Not applicable
1.8.3 A.13 Methodology/results of investigations conducted to determine background concentrations (if applicable).	Not applicable
1.8.3 A.14 Listing and evaluation of the site specific hydrogeological properties that influence the migration of hazardous substances at and away from the site. (all criteria)	SIR - Section 2.2.2, page 6 & Section 4.50, page 14

1.8.3 A.15 Characterization of the topography and surface water and run-off flow patterns, including the flooding potential.	SIR – Section 2.2.2, page 6
1.8.3 A.16 Volatilization potential - any and all potential impacts to on-site structures.	SIR - Section 3.8, page 11 & Section 4.6, page 15
1.8.3 A.17 The potential for entrainment of hazardous substances by wind or erosion actions.	SIR - Section 3.8, page 11
1.8.3 A.18 Detailed protocols for all fate and transport models.	Not applicable
1.8.3 A.19 List of all samples taken, the location of all samples, testing parameters and analytical methods.	SIR - Sections 3.20, 3.60, 4.0 & 4.20, pages 7, 9, 12 and 12 Tables 1 through 3, Figure 2
1.8.3 A.20 Construction plans and development procedures for all monitoring wells.	SIR - Section 3.20, page 7 & Section 4.10, page 12 Appendix D
1.8.3 A.21Procedures for the handling, storage and disposal of IDW.	SIR - Section 3.50, page 9 & 4.10, page 12 Appendix F
1.8.3 A.22 QA/QC evaluation summary report for sample handling and analytical procedures (chain-of-custody and sample preservation techniques).	SIR - Section 3.70, page 9 & Section 4.30, page 13
1.8.3 A.23 Detailed explanation of how the Public Involvement requirements were met.	Prepared to submit once SIR is approved by RIDEM
1.8.3 A.24 Any other site-specific factor, that the Director believes, is necessary to make an accurate decision as to the appropriate remedial action to be taken at the site.	Not applicable
1.8.4 Development of Remedial Alternatives	SIR - Section 7.00, page 16
1.8.5 Certification	SIR Section 9.00, page 18
1.8.6 Progess Reports	Not applicable
1.8.7 Public Involvement & Notice	Prepared to submit once SIR is approved by RIDEM

APPENDIX C

HAZARDOUS MATERIAL RELEASE NOTIFICATION FORM

Appendix C

DIVISION OF SITE REMEDIATION
HAZARDOUS MATERIAL RELEASE NOTIFICATION FORM

THIS FORM IS NOT TO BE USED TO REPORT AN IMMINENT HAZARD

1. Notifier Information

Name: City of Woonsocket
Address: 169 Main Street, Woonsocket Rhode Island Island 02895

Phone: (401) 762-6400

Status: __ Owner __ Operator __ Secured Creditor X Voluntary

2. Property Information

Name of Site:
Site Address: 117 & 229 First Avenue, Woonsocket, Rhode Island 02895

Plat/Lot Numbers: Plat 6/ Lots 117, 102 & 118

Site Contact Person: City of Woonsocket - Steven Lima

Site Contact Phone: (401) 762-9231

Site Land Usage Type: __ Residential X Industrial/Commercial

Location of Release: See attached SIR

(attach site sketch as necessary)

3. Release Information

Date of Discovery: November 2018
Source : Former Site activites
Release Media: Soil/GW

Hazardous Materials and Concentrations: Metals, TPH and PAHs in soil.
Benzene and ethylbenzene in GW. Refer to attached SIR.
(attach certificates of analysis as necessary)

Extent of Contamination: See attached SIR

4. Resource Information

Site Land Usage: X Industrial/Commercial __ Residential

Adjacent Land Usage: X Industrial/Commercial X Residential

Site Groundwater Class: __ GA/GAA X GB

Adjacent Groundwater Class: __ GA/GAA __ GB
(if different than site groundwater classification within 500 feet)

Nearest Surface Water or Wetland:

X Less Than 500 Feet __ Greater Than 500 Feet

Potential for adverse impact Y Yes/No

5. Potentially Responsible Parties

Name: Seville Associates
Address: 30 Woodward Avenue, Narragansett, Rhode Island 02882

Status: __ Owner __ Operator X Other: Previous Site owner

Name: Seville Dyeing Company

Address: P.O. Box 1209, Woonsocket, Rhode Island 02895

Status: __ Owner __ Operator X Other: Previous Site owner

6. Measures Taken or Proposed to be Taken in Response to Release

See attached SIR

7. Other Significant Remarks About Release (Will a background determination be made?)

N/A

Signature: Date 5/6/19

Title: Director of Planning

APPENDIX D

BORING LOGS

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-01
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 10
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
11/27/18	11:00		9	

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
		S-1	0.3-5.3	60	30			Top 3": Brown, TOPSOIL, wet		0.1	0.5	TOPSOIL		No Equipment Installed
								S-1: 3": Light gray, fine to coarse SAND, some Gravel, trace Silt		0.1	1	CONCRETE		
								2": Dark gray, fine to coarse SAND, little Gravel, trace Silt		0.1				
								8": Yellow/orange, fine to coarse SAND, some Gravel, trace Silt	1	0.1				
5		S-2	5.0-10.0	60	29			9": Light gray, fine to coarse SAND, little Gravel, trace Silt				FILL		
								S-2: Top 3": Yellow/orange, fine to coarse SAND, some Gravel, trace Silt		0.2				
								9": Light gray, medium to coarse SAND and GRAVEL, trace Silt		0.2				
								8": Gray/black/orange, coarse SAND, little Gravel, trace Silt	2	0.2				
10								Bottom 9": Black, coarse SAND, little Gravel, trace Silt, petroleum-like odor, sheen, wet	3					
									4	56.5	10			
								End of exploration at 10 feet.						
15														
20														
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - Groundwater observed at ±9' bgs.
3 - End of exploration at ±10' bgs.
4 - Product present on drilling equipment between 9-10 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-01

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:41 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-02
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 10
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not	Encountered			

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
								Top 4" ASPHALT			0.5	ASPHALT		No Equipment Installed
		S-1	1.0-6.0	60	24			S-1: Black/dark brown, fine to coarse SAND, some Gravel, trace Silt, trace Brick, trace Concrete	1	0.3				
5		S-2	5.0-10.0	60	20			S-2: Black/dark brown, fine to coarse SAND, some Gravel, trace Silt, trace Brick, trace Concrete (petroleum-like odor)		32.1		FILL		
10									2		10			
								End of exploration at 10 feet.						
15														
20														
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - End of exploration at ±10' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-02

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:41 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-03
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 10
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not Encountered				

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
0		S-1	0.3-5.3	60	26			Top 6": Light gray, SAND, trace Gravel, trace Silt S-1: Black/dark brown, fine to coarse SAND, some Gravel, trace Silt, trace Brick	1	1.8	0.5	SAND		No Equipment Installed
5		S-2	5.0-10.0	60	32			S-2: Black/dark brown, fine to coarse SAND, some Gravel, trace Silt, trace Brick		0.6		FILL		
10								End of exploration at 10 feet.	2		10			
15														
20														
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - End of exploration at ±10' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-03

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:42 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-05
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 10
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not	Encountered			

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
		S-1	0.3-5.3	60	25			Top 3": Light gray, fine to coarse SAND, trace fine Gravel, trace Silt S-1: Black, coarse SAND, some Gravel, trace Brick, trace Silt	1	3.5	0.5	SAND		No Equipment Installed
5		S-2	5.0-10.0	60	28			S-2: Black, coarse SAND, some Gravel, trace Brick, trace Silt		18.8		FILL		
10								End of exploration at 10 feet.	2		10			
15														
20														
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - End of exploration at ±10' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-05

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:43 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-06
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Jackie Kaehler
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 8
Date Start - Finish: 11/28/2018 - 11/28/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not	Encountered			

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
		S-1	0.0-5.0	60	25.2			S-1: 0-4.5': Brown, fine to medium SAND, little Gravel, trace Silt, trace Brick, trace Concrete 4.5-5': CONCRETE	1	0.2		FILL		No Equipment Installed
5		S-2	5.0-10.0	60	0			S-2: CONCRETE			5	CONCRETE		
								End of exploration at 8 feet.	2		8			
10														
15														
20														
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - End of exploration at ±8' bgs. due to refusal on concrete.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-06

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:43 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-07
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 10
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not	Encountered			

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
								Top4": ASPHALT Next 4": Gray SAND	1		0.5	ASPHALT		No Equipment Installed
		S-1	2.0-7.0	60	25			S-1: Black/dark brown, fine to coarse SAND, some Gravel, trace Silt, trace Brick		4.9	1	SAND		
5		S-2	5.0-10.0	60	18			S-2: Black/dark brown, fine to coarse SAND, some Gravel, trace Silt, trace Brick		2.0		FILL		
10									2		10			
								End of exploration at 10 feet.						
15														
20														
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - End of exploration at ±10' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-07

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:44 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-10
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 9
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not	Encountered			

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
									1	53.6		CONCRETE		No Equipment Installed
									2		2			
									3			VOID		
5														
		S-1	7.5		8			S-1: Gray, fine to medium SAND, sheen, petroleum-like odor, wet	4 5 6		7.5			
											9	SAND		
10								End of exploration at 9 feet.						
15														
20														
25														
30														

REMARKS

1 - Refusal for ±1.5' on concrete.
2 - Void for ±6' (1.5'-7.5' bgs.)
3 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
4 - Drilled for ±1.5' (7.5-9' bgs.)
5 - Refusal at ±9' bgs on concrete.
6 - End of exploration at ±9' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-10

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:45 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: B-11
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 10
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not	Encountered			

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
		S-1	0.0-5.0	60	21			S-1: Dark brown/black, fine to coarse SAND, little fine Gravel, trace Brick, trace Concrete, trace Silt	1	0.2				No Equipment Installed
5		S-2	5.0-10.0	60	19			S-2: Top 7": Black, coarse SAND and fine GRAVEL, trace Silt, trace Brick Middle 6": Dark brown, fine to medium SAND, some Silt, trace Gravel, trace Organics Bottom 6": Yellow/orange, fine to medium SAND, little Silt, trace Organics		0.0 0.3 0.1		FILL		
10									2		10			
								End of exploration at 10 feet.						
15														
20														
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - End of exploration at ±10' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: B-11

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:45 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: MW-03
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 20
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

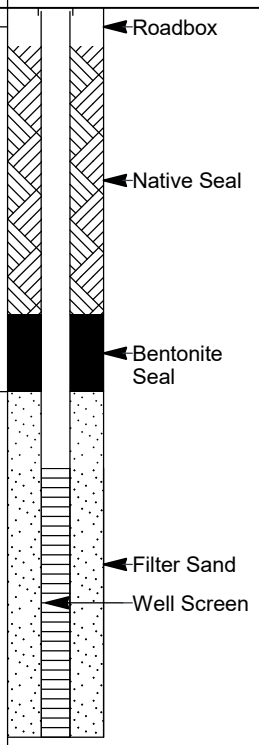
Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
11/27/18	16:30		12	

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.3-5.3	60	24			Top 2": Brown TOPSOIL S-1: Dark brown/black, fine to coarse Sand, some Gravel, trace Silt, trace Asphalt, trace Brick, trace Concrete	1	0.6	0.5	TOPSOIL	
5		S-2	5.0-10.0	60	15			S-2: Dark brown/black, fine to coarse Sand, some Gravel, trace Silt, trace Asphalt, trace Brick, trace Concrete		0.5		FILL	
10		S-3	10.0-15.0	60	60			S-3: Dark brown, fine SAND, trace Silt, wet	2	0.3	10		
15		S-4	15.0-20.0	60	60			S-4: Dark brown, fine SAND, trace Silt, wet		0.4		SAND	
20									3 4		20		
								End of exploration at 20 feet.					
25													
30													



REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - Groundwater encountered at ±12' bgs.
3 - Observation well installed (2" PVC) installed ±19' bgs. screened 19'-12' bgs.
4 - Bottom of boring at ±19' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: MW-03

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:46 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: MW-04
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Jackie Kaehler
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 17
Date Start - Finish: 11/28/2018 - 11/28/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
11/28/18	15:30		10	

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
		S-1	0.6-5.6	60	21.6			0-0.6': ASPHALT S-1: 0.6-2.7': Dark brown, fine to coarse SAND, little fine Gravel, trace Silt 2.7-5': Dark brown, fine to medium SAND, little Silt	1	0.9			
5		S-2	5.0-10.0	60	16.8			S-2: 5'-7.2': Dark brown, fine to coarse SAND, trace fine Gravel, trace Silt 7.2'-8.9': Light tan, fine to coarse SAND, trace Gravel, trace Silt 8.9'-10': Dark brown, fine SAND, some Silt		0.5			
10		S-3	10.0-15.0	60	19.2			S-3: Dark brown, fine SAND, some Silt	2 3			SAND	
15									4		17		
20								End of exploration at 17 feet.					
25													
30													

Equipment Installed: Roadbox; Native Seal; Bentonite Seal; Filter Sand; Well Screen

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - Groundwater observed at ±10' bgs.
3 - Observation well installed (2" PVC) installed ±19' bgs. screened 19'-12' bgs.
4 - End of exploration at ±17' bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: MW-04

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:47 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: MW-07
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Jackie Kaehler
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 15
Date Start - Finish: 11/28/2018 - 11/28/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
11/28/18	12:45		8	

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)
0		S-1	0.0-5.0	60	34			S-1: 0-2.4': Dark brown, fine to coarse SAND, trace Silt, trace Organics 2.4'-5': Black, fine to coarse SAND, trace Brick, trace Wood, trace Concrete, trace Ash	1	0.1			
5		S-2	5.0-10.0	60	16.8			S-2: Black, fine to coarse SAND, trace Brick, trace Wood, trace Ash, trace Debris	2 3	0.2		FILL	
10		S-3	10.0-15.0	60	31.2			S-3: Dark gray, fine to coarse SAND, little fine to medium Gravel, trace Silt, petroleum-like odor, sheen	4 5	23.1	10 15	SAND	
15								End of exploration at 15 feet.					
20													
25													
30													

Equipment Installed: Roadbox; Native Seal; Bentonite Seal; Filter Sand; Well Screen

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - Groundwater observed at ±8' bgs.
3 - Observation well installed (2" PVC) installed ±14' bgs. screened 14'-4'.
4 - End of exploration at ±15' bgs.
5 - Product present on drilling equipment between 10-15 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: MW-07

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:48 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: MW-08
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 20
Date Start - Finish: 11/28/2018 - 11/28/2018

H. Datum:
V. Datum:

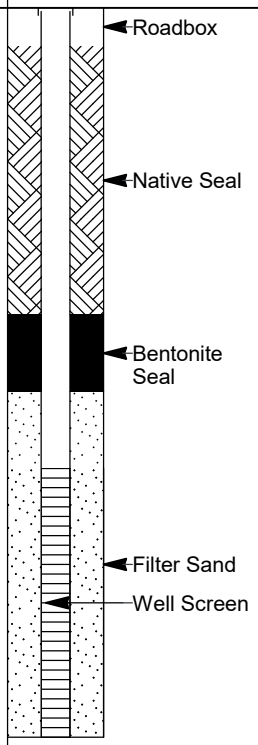
Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
Not Measured				

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
5								See MW-08R for Soil Description	1					Roadbox
10									2					Native Seal
15									3					Bentonite Seal
20									4					Filter Sand
25								End of exploration at 20 feet.	5		20			Well Screen
30														



REMARKS

1 - Direct push to ±16' bgs.
2 - Augered to ±20' bgs.
3 - Observation well installed (2" PVC) installed ±16' bgs. screened 16'-6'.
4 - End of exploration at ±20' bgs.
5 - No soil samples collected-see MW-8R for soil descriptions.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: MW-08

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:49 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

RIDEM
Seville Dyeing Company
117 & 229 First Avenue
Woonsocket, Rhode Island

EXPLORATION NO.: MW-08R
SHEET: 1 of 1
PROJECT NO: 34502.01
REVIEWED BY: RAC

Logged By: Rowan Hayes
Drilling Co.: Hoffman Environmental Services
Foreman: Sal

Type of Rig: Geoprobe
Rig Model: 6712 DT
Drilling Method: Direct Push/HSA

Boring Location: See Plan
Ground Surface Elev. (ft.):
Final Boring Depth (ft.): 20
Date Start - Finish: 11/27/2018 - 11/27/2018

H. Datum:
V. Datum:

Hammer Type: N/A
Hammer Weight (lb.): N/A
Hammer Fall (in.): N/A
Auger or Casing O.D./I.D Dia (in.): 3 3/4"/2"

Sampler Type: Acetate Sleeve
Sampler O.D. (in.): 2"
Sampler Length (in.): N/A
Rock Core Size: N/A

Groundwater Depth (ft.)

Date	Time	Stab. Time	Water	Casing
11/27/18	12:30		9	

Depth (ft)	Casing Blows/ (Core Rate)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Sample Blows (RQD)	Sample SPT Value	Sample Description Modified Burmister	Remark	Field Test Data	Stratum Depth (ft.)	Stratum Description	Stratum Elev. (ft.)	Equipment Installed
		S-1	0.3-5.3	60	20			Top 5": Light gray, ROCK/CONCRETE	1	0.6	0.5	CONCRETE		No Equipment Installed
								S-1: Gray, fine to coarse SAND, little Gravel, trace Silt		0.2				
								Middle 7": Light brown, fine to coarse SAND, some Gravel, trace Silt		0.7				
5								Bottom 5": Dark brown/gray, fine to	2					
		S-2	5.0-10.0	60	22			coarse SAND, little Silt, trace Gravel		0.6		FILL		
								S-2: Top 5": Dark brown/gray, fine to coarse SAND, little Silt, trace Gravel		0.7				
								Middle 13": Light gray/brown, fine to coarse SAND, little Gravel, trace Silt						
10								Bottom 4": Black, coarse SAND, little		10.1	10			
		S-3	10.0-15.0	60	38			Gravel trace Silt, sheen, petroleum-like odor, wet		1.7				
								S-3: Top 10": Gray/black/orange, coarse SAND, little Gravel, trace Silt		23.0				
								Middle 6": Black, coarse SAND, little Gravel, trace Silt, Sheen,		25.2				
15								petroleum-like odor, wet		30.5				
		S-4	15.0-20.0	60	46			Next 10": Black, coarse SAND, little Gravel, trace Silt, Sheen, petroleum-like odor, wet, crushed white stone		7.3		SAND		
								Bottom 12": Light gray, clayey SILT, trace Gravel		3.8				
20								S-4: Top 29": Black/gray/white, coarse SAND and GRAVEL, petroleum-like odor Sheen, wet	3 4		20			
								Bottom 17": Gray, Clayey SILT, wet						
								End of exploration at 20 feet.						
25														
30														

REMARKS

1 - The headspace of soil samples was screened for Total Volatile Organic Compounds (TVOCs) using an Ion Science Tiger LT photoionization detector equipped with a 10.6 cV lamp. ND indicates non-detected reading below the instrument's detection limit of approximately 0.1 ppm.
2 - Groundwater observed at ±9' bgs.
3 - End of exploration at ±20' bgs.
4 - Product present on drilling equipment between 10-20 feet bgs.

See Log Key for exploration of sample description and identification procedures. Stratification lines represent approximate boundaries between soil and bedrock types. Actual transitions may be gradual. Water level readings have been made at the times and under the conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the times the measurements were made.

Exploration No.: MW-08R

GZA TEMPLATE TEST BORING W/ EQUIP.; 1/25/2019; 3:25:50 PM

APPENDIX E

LABORATORY CERTIFICATES

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8L0903

GZA GeoEnvironmental, Inc.

Rick Carlone
188 Valley St., Suite 300
Providence, RI 02909

Project Name: Seville Dye

Project / PO Number: N/A
Received: 12/10/2018
Reported: 12/21/2018

Analytical Testing Parameters

Client Sample ID: Soil Drum
Sample Matrix: Soil/Sediment
Lab Sample ID: D8L0903-01
Collected By: Customer
Collection Date: 12/07/2018 14:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5035A/EPA 8260C							
Acetone	<5.59	5.59	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Acrylonitrile	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Benzene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Bromobenzene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Bromochloromethane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Bromodichloromethane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Bromoform	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Bromomethane	**1.22**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
2-Butanone (MEK)	<5.59	5.59	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
sec-Butylbenzene	**3.76**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
tert-Butylbenzene	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
n-Butylbenzene	**4.52**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Carbon disulfide	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Chlorobenzene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Chloroform	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Chloromethane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
2-Chlorotoluene	**1.17**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Dibromochloromethane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB

Client Sample ID: Soil Drum
Sample Matrix: Soil/Sediment
Lab Sample ID: D8L0903-01
Collected By: Customer
Collection Date: 12/07/2018 14:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
2,2-Dichloropropane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Diethyl ether	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,4-Dioxane	<22.4	22.4	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Ethylbenzene	**4.14**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
2-Hexanone (MBK)	<5.59	5.59	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Isopropylbenzene (Cumene)	**2.08**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	**1.68**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
4-Methyl-2-pentanone (MIBK)	<5.59	5.59	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Naphthalene	**65.4**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
n-Propylbenzene	**3.67**	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Styrene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1,1,2-Tetrachloroethane	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Toluene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2,4-Trichlorobenzene	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2,3-Trichlorobenzene	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1,1-Trichloroethane	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1,2-Trichloroethane	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2,3-Trichloropropane	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,3,5-Trimethylbenzene	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
1,2,4-Trimethylbenzene	**2.53**	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
m,p-Xylene	<1.12	1.12	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
o-Xylene	<1.00	1.00	ug/L	Y1	12/20/18 0900	12/20/18 1309	MRB
Surrogate: 4-Bromofluorobenzene	110	Limit: 70-130	% Rec		12/20/18 0900	12/20/18 1309	MRB
Surrogate: 1,2-Dichloroethane-d4	103	Limit: 70-130	% Rec		12/20/18 0900	12/20/18 1309	MRB
Surrogate: Toluene-d8	99.4	Limit: 70-130	% Rec		12/20/18 0900	12/20/18 1309	MRB

Client Sample ID:	GW Drum		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0903-02	**Collection Date:**	12/07/2018 14:05

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 C-2011							
Total Dissolved Solids (TDS)	**401**	25.0	mg/L		12/11/18 2115	12/13/18 1805	ELB
Method: SM2540 D-2011							
Total Suspended Solids (TSS)	**65.6**	5.00	mg/L		12/11/18 1607	12/13/18 1630	ELB

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3510C/EPA 8270D							
Acenaphthene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Acenaphthylene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Aniline	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Anthracene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Azobenzene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Benzo[a]anthracene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Benzo[a]pyrene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Benzo[b]fluoranthene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Benzo[g,h,i]perylene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Benzoic acid	<23.8	23.8	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Benzo[k]fluoranthene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Benzyl alcohol	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Biphenyl	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
4-Bromophenyl phenyl ether	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Butyl benzyl phthalate	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Carbazole	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
4-Chloro-3-methylphenol	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
4-Chloroaniline	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
bis(2-Chloroethoxy)methane	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
bis(2-Chloroethyl) ether	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
2-Chloronaphthalene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
2-Chlorophenol	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
4-Chlorophenyl phenylether	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Chrysene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Dibenz(a,h) anthracene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Dibenzofuran	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Di-n-butyl phthalate	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
1,4-Dichlorobenzene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
1,3-Dichlorobenzene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
1,2-Dichlorobenzene	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
3,3-Dichlorobenzidine	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
2,6-Dichlorophenol	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
2,4-Dichlorophenol	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
Diethyl phthalate	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT
2,4-Dimethylphenol	<4.76	4.76	ug/L	**Y1**	12/11/18 1430	12/12/18 2253	CDT

CERTIFICATE OF ANALYSIS

D8L0903

Client Sample ID:	GW Drum		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0903-02	**Collection Date:**	12/07/2018 14:05

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Dimethyl phthalate	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2,4-Dinitrophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2,6-Dinitrotoluene (2,6-DNT)	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2,4-Dinitrotoluene (2,4-DNT)	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Di-n-octyl phthalate	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
bis(2-Ethylhexyl)phthalate	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Fluoranthene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Fluorene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Hexachlorobenzene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Hexachlorobutadiene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Hexachlorocyclopentadiene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Hexachloroethane	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Indeno(1,2,3-cd) pyrene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Isophorone	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2-Methyl-4,6-dinitrophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2-Methylnaphthalene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2-Methylphenol (o-Cresol)	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
3+4 Methylphenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Naphthalene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
4-Nitroaniline	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
3-Nitroaniline	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2-Nitroaniline	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Nitrobenzene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
4-Nitrophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2-Nitrophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
n-Nitrosodimethylamine	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
n-Nitrosodiphenylamine	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
n-Nitrosodi-n-propylamine	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2,2'-Oxybis(1-Chloropropane)	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Pentachlorophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Phenanthrene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Phenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Pyrene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Pyridine	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2,3,4,6-Tetrachlorophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
1,2,4-Trichlorobenzene	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2,4,6-Trichlorophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
2,4,5-Trichlorophenol	<4.76	4.76	ug/L	Y1	12/11/18 1430	12/12/18 2253	CDT
Surrogate: 2-Fluorobiphenyl	61.7	Limit: 10-83	% Rec		12/11/18 1430	12/12/18 2253	CDT
Surrogate: 2-Fluorophenol	23.5	Limit: 10-43	% Rec		12/11/18 1430	12/12/18 2253	CDT
Surrogate: Nitrobenzene-d5	45.4	Limit: 10-82	% Rec		12/11/18 1430	12/12/18 2253	CDT
Surrogate: Phenol-d6	14.8	Limit: 10-28	% Rec		12/11/18 1430	12/12/18 2253	CDT
Surrogate: p-Terphenyl-d14	83.9	Limit: 13-106	% Rec		12/11/18 1430	12/12/18 2253	CDT
Surrogate: 2,4,6-Tribromophenol	91.1	Limit: 19-110	% Rec		12/11/18 1430	12/12/18 2253	CDT

Client Sample ID:	GW Drum		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0903-02	**Collection Date:**	12/07/2018 14:05

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	**24.2**	5.00	ug/L	**Y1**		12/20/18 1244	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Benzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/20/18 1244	MRB
sec-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
2-Chlorotoluene	**2.30**	1.00	ug/L	**Y1**		12/20/18 1244	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
2,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/20/18 1244	MRB

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CERTIFICATE OF ANALYSIS

D8L0903

Client Sample ID:	GW Drum		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0903-02	**Collection Date:**	12/07/2018 14:05

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Diethyl ether	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,4-Dioxane	<20.0	20.0	ug/L	Y1		12/20/18 1244	MRB
Ethylbenzene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/20/18 1244	MRB
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/20/18 1244	MRB
Naphthalene	**16.8**	1.00	ug/L	Y1		12/20/18 1244	MRB
n-Propylbenzene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Toluene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
m,p-Xylene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
o-Xylene	<1.00	1.00	ug/L	Y1		12/20/18 1244	MRB
Surrogate: 4-Bromofluorobenzene	108	Limit: 70-130	% Rec			12/20/18 1244	MRB
Surrogate: 1,2-Dichloroethane-d4	99.5	Limit: 70-130	% Rec			12/20/18 1244	MRB
Surrogate: Toluene-d8	98.9	Limit: 70-130	% Rec			12/20/18 1244	MRB

Definitions

RL: Reporting Limit

Y1: Accreditation is not offered by the accrediting body for this analyte.

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville

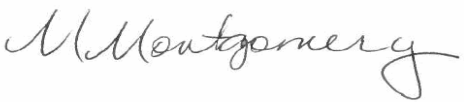
LAO00346 Rhode Island Department of Health

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:



Melisa L. Montgomery
QA Officer
Reported: 12/21/2018 15:03

Microbac

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

D8L0903
GZA

CHAIN OF CUSTODY

Field	Entry
Turn Time	(5-Day) circled; Rush
Regulatory State	RI
Is this project for any of the following?:	○ CT RCP ○ MA MCP ○ RGP
Reporting Limits	
Electonic Deliverables	☒ Limit Checker; ☒ Standard Excel; ☒ Other (Please Specify →) PDF
Company Name	GZA GeoEnvironmental
Contact Person	Richard Carone
City	Providence
State	RI
Telephone Number	
FAX Number	
Project #	34802.01
Project Name	Sayville Dye
Address	188 Valley St, Suite 300
Zip Code	02909
PO #	
Email Address	richard.carone@gza.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	VOC	VOC	SVOC	TSS	TDS
	12/7/18	1400	Grab	Soil	Soil Drum	X				
	12/7/18	1405	Grab	GW	GW Drum		X	X	X	X

Code	Options	VOC	VOC	SVOC	TSS	TDS
Container Type:	AC-Air Cassette, AG-Amber Glass, B-BOD Bottle, C-Cubitainer, G - Glass, O-Other, P-Poly, S-Sterile, V-Vial	V	V	AG	P	P
Container Volume:	1-100 mL, 2-2.5 gal, 3-250 mL, 4-300 mL, 5-500 mL, 6-1L, 7-VOA, 8-2 oz, 9-4 oz, 10-8 oz, 11-Other*	7	7	6	6	6
Preservation Code:	1-Non Preserved, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-Methanol, 7-Na2S2O3, 8-ZnAce, NaOH, 9-NH4Cl, 10-DI H2O, 11-Other*	6	2	1	1	1
Number of Containers per Sample:		2	3	2	1	1

Laboratory Use Only

Cooler Present: ______

Seals Intact: ______

Cooler Temperature: 4.5 °C

Sampled by : Ronan Hayes

Comments: Please specify "Other" preservative and containers types in this space

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
[signature] 12/10/18 0900	[signature] 12/10/18 10:05	[signature] 12/10/18 14:50	[signature] 12/10/18 1450
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

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Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8L1538

GZA GeoEnvironmental, Inc.

Rick Carlone
188 Valley St., Suite 300
Providence, RI 02909

Project Name: Seville Dye

Project / PO Number: N/A
Received: 12/14/2018
Reported: 12/19/2018

Analytical Testing Parameters

Client Sample ID: Soil DMM
Sample Matrix: Soil/Sediment
Lab Sample ID: D8L1538-01
Collected By: Customer
Collection Date: 12/14/2018 8:40

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: Wet Chem - S/SM2540 G-1997							
Percent Solids	**89.4**		% by Weight	**Y1**	12/14/18 2052	12/15/18 1315	DJM

Definitions

Y1: Accreditation is not offered by the accrediting body for this analyte.

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville
LAO00346 Rhode Island Department of Health

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:

Ronald L. Warila
Director
Reported: 12/19/2018 15:41

D8L1538
GZA

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8UP

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab #

Turn Time	(5-Day) Rush
Regulatory State	RI
Is this project for any of the following?:	○CT RCP ○MA MCP ○RGP
Reporting Limits	
Electonic Deliverables	[X] Limit Checker [X] Other (Please Specify →) PDF [X] (Standard Excel)

Company Name	GZA GeoEnvironmental
Contact Person	Richard Cavone
City	Providence
State	RI
Zip Code	02909
PO #	
Project #	34802.01
Project Name	Seville Dye
Address	188 Valley St, Suite 300
Telephone Number	
FAX Number	
Email Address	richard.cavone@gza.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis: % Solids
	12/14/18	0840	Grab	Soil	Soil Drum	X

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial	AG
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*	9
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*	1
Number of Containers per Sample:	1

Laboratory Use Only

Cooler Present: ______

Seals Intact: ______

Cooler Temperature: ______ °C

Sampled by : Rowan Havel

Comments: Please specify "Other" preservative and containers types in this space

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
[signature] 12/14/18 0935	[signature] 12-14-18 1130	[signature] 12-14-18 1435	[signature] 12-14-18 1458
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

2.8°C

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8L0091

Project Description

Seville Dye

For:

Rick Carlone

GZA GeoEnvironmental, Inc.

188 Valley St., Suite 300

Providence, RI 02909

Melisa L. Montgomery
QA Officer

Tuesday, January 8, 2019

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc. - Dayville. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8L0091

Revised Report: Per client, QC added

GZA GeoEnvironmental, Inc.

Rick Carlone
188 Valley St., Suite 300
Providence, RI 02909

Project Name: Seville Dye

Project / PO Number: N/A
Received: 12/03/2018
Reported: 01/08/2019

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-3	D8L0091-01	Groundwater	Grab		11/30/18 12:07	12/03/18 16:30
MW-4	D8L0091-02	Groundwater	Grab		11/30/18 11:37	12/03/18 16:30
MW-7	D8L0091-03	Groundwater	Grab		11/30/18 12:30	12/03/18 16:30
MW-8	D8L0091-04	Groundwater	Grab		11/30/18 10:30	12/03/18 16:30
BD11302018	D8L0091-05	Groundwater	Grab		11/30/18 08:00	12/03/18 16:30
Trip Blank	D8L0091-06	Aqueous	Trip Blank		11/30/18 08:00	12/03/18 16:30
E-1	D8L0091-07	Groundwater	Grab		11/30/18 08:00	12/03/18 16:30
E-2	D8L0091-08	Groundwater	Grab		11/30/18 08:00	12/03/18 16:30

Analytical Testing Parameters

Client Sample ID:	MW-3		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-01	**Collection Date:**	11/30/2018 12:07

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3510C/EPA 8100M							
C9-C36 TPH	<0.100	0.100	mg/L	**Y1**	12/04/18 1400	12/04/18 1734	CDT
Surrogate: 1-Chlorooctadecane	49.7	Limit: 25-125	% Rec		12/04/18 1400	12/04/18 1734	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<5.00	5.00	ug/L	**Y1**		12/11/18 1753	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Benzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 1753	MRB
sec-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1753	MRB

CERTIFICATE OF ANALYSIS

D8L0091

Client Sample ID:	MW-3		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-01	**Collection Date:**	11/30/2018 12:07

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,3-Dichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
2,2-Dichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Diethyl ether	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,4-Dioxane	<20.0	20.0	ug/L	Y1		12/11/18 1753	MRB
Ethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 1753	MRB
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 1753	MRB
Naphthalene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
n-Propylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Toluene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
m,p-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
o-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 1753	MRB
Surrogate: 4-Bromofluorobenzene	101	Limit: 70-130	% Rec			12/11/18 1753	MRB
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 70-130	% Rec			12/11/18 1753	MRB
Surrogate: Toluene-d8	98.7	Limit: 70-130	% Rec			12/11/18 1753	MRB

Client Sample ID:	MW-4		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-02	**Collection Date:**	11/30/2018 11:37

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3510C/EPA 8100M							
C9-C36 TPH	<0.100	0.100	mg/L	**Y1**	12/04/18 1400	12/04/18 1801	CDT
Surrogate: 1-Chlorooctadecane	55.5	Limit: 25-125	% Rec		12/04/18 1400	12/04/18 1801	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<5.00	5.00	ug/L	**Y1**		12/11/18 1819	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Benzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 1819	MRB
sec-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1819	MRB

CERTIFICATE OF ANALYSIS

D8L0091

Client Sample ID:	MW-4		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-02	**Collection Date:**	11/30/2018 11:37

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
2,2-Dichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Diethyl ether	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,4-Dioxane	<20.0	20.0	ug/L	Y1		12/11/18 1819	MRB
Ethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 1819	MRB
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 1819	MRB
Naphthalene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
n-Propylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Toluene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
m,p-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
o-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 1819	MRB
Surrogate: 4-Bromofluorobenzene	101	Limit: 70-130	% Rec			12/11/18 1819	MRB
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 70-130	% Rec			12/11/18 1819	MRB
Surrogate: Toluene-d8	96.3	Limit: 70-130	% Rec			12/11/18 1819	MRB

Client Sample ID:	MW-7		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-03	**Collection Date:**	11/30/2018 12:30

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3510C/EPA 8100M							
C9-C36 TPH	**6.76**	0.400	mg/L	**Y1**	12/04/18 1400	12/05/18 1202	CDT
Surrogate: 1-Chlorooctadecane	55.6	Limit: 25-125	% Rec		12/04/18 1400	12/04/18 2006	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	**13.3**	5.00	ug/L	**Y1**		12/11/18 1845	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Benzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 1845	MRB
sec-Butylbenzene	**2.63**	1.00	ug/L	**Y1**		12/11/18 1845	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
4-Chlorotoluene	**14.3**	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1845	MRB

Client Sample ID: MW-7
Sample Matrix: Groundwater
Lab Sample ID: D8L0091-03
Collected By: Customer
Collection Date: 11/30/2018 12:30

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
2,2-Dichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Diethyl ether	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,4-Dioxane	<20.0	20.0	ug/L	Y1		12/11/18 1845	MRB
Ethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 1845	MRB
Isopropylbenzene (Cumene)	**1.87**	1.00	ug/L	Y1		12/11/18 1845	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 1845	MRB
Naphthalene	**8.84**	1.00	ug/L	Y1		12/14/18 1615	MRB
n-Propylbenzene	**1.39**	1.00	ug/L	Y1		12/11/18 1845	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Toluene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
m,p-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
o-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 1845	MRB
Surrogate: 4-Bromofluorobenzene	103	Limit: 70-130	% Rec			12/14/18 1615	MRB
Surrogate: 4-Bromofluorobenzene	106	Limit: 70-130	% Rec			12/11/18 1845	MRB
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec			12/14/18 1615	MRB
Surrogate: 1,2-Dichloroethane-d4	95.6	Limit: 70-130	% Rec			12/11/18 1845	MRB
Surrogate: Toluene-d8	98.3	Limit: 70-130	% Rec			12/14/18 1615	MRB
Surrogate: Toluene-d8	96.8	Limit: 70-130	% Rec			12/11/18 1845	MRB

Client Sample ID:	MW-8		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-04	**Collection Date:**	11/30/2018 10:30

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3510C/EPA 8100M							
C9-C36 TPH	**2.61**	0.100	mg/L	**Y1**	12/04/18 1400	12/04/18 1826	CDT
Surrogate: 1-Chlorooctadecane	66.0	Limit: 25-125	% Rec		12/04/18 1400	12/04/18 1826	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	**13.0**	5.00	ug/L	**Y1**		12/11/18 1910	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Benzene	**3.41**	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 1910	MRB
sec-Butylbenzene	**1.24**	1.00	ug/L	**Y1**		12/11/18 1910	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1910	MRB

CERTIFICATE OF ANALYSIS

D8L0091

Client Sample ID: MW-8
Sample Matrix: Groundwater
Lab Sample ID: D8L0091-04
Collected By: Customer
Collection Date: 11/30/2018 10:30

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
2,2-Dichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Diethyl ether	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,4-Dioxane	<20.0	20.0	ug/L	Y1		12/11/18 1910	MRB
Ethylbenzene	**14.5**	1.00	ug/L	Y1		12/11/18 1910	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 1910	MRB
Isopropylbenzene (Cumene)	**2.74**	1.00	ug/L	Y1		12/11/18 1910	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 1910	MRB
Naphthalene	**72.8**	1.00	ug/L	Y1		12/14/18 1641	MRB
n-Propylbenzene	**3.14**	1.00	ug/L	Y1		12/11/18 1910	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Toluene	**1.06**	1.00	ug/L	Y1		12/11/18 1910	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
1,2,4-Trimethylbenzene	**2.59**	1.00	ug/L	Y1		12/11/18 1910	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 1910	MRB
m,p-Xylene	**3.30**	1.00	ug/L	Y1		12/11/18 1910	MRB
o-Xylene	**2.48**	1.00	ug/L	Y1		12/11/18 1910	MRB
Surrogate: 4-Bromofluorobenzene	105	Limit: 70-130	% Rec			12/14/18 1641	MRB
Surrogate: 4-Bromofluorobenzene	105	Limit: 70-130	% Rec			12/11/18 1910	MRB
Surrogate: 1,2-Dichloroethane-d4	98.6	Limit: 70-130	% Rec			12/11/18 1910	MRB
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec			12/14/18 1641	MRB
Surrogate: Toluene-d8	98.1	Limit: 70-130	% Rec			12/11/18 1910	MRB
Surrogate: Toluene-d8	96.8	Limit: 70-130	% Rec			12/14/18 1641	MRB

Client Sample ID:	BD11302018		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-05	**Collection Date:**	11/30/2018 8:00

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3510C/EPA 8100M							
C9-C36 TPH	**3.64**	0.200	mg/L	**Y1**	12/04/18 1400	12/05/18 1136	CDT
Surrogate: 1-Chlorooctadecane	69.6	Limit: 25-125	% Rec		12/04/18 1400	12/04/18 1852	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	**14.8**	5.00	ug/L	**Y1**		12/11/18 1936	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Benzene	**3.22**	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 1936	MRB
sec-Butylbenzene	**1.18**	1.00	ug/L	**Y1**		12/11/18 1936	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 1936	MRB

Client Sample ID:	BD11302018		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-05	**Collection Date:**	11/30/2018 8:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
2,2-Dichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Diethyl ether	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,4-Dioxane	<20.0	20.0	ug/L	Y1		12/11/18 1936	MRB
Ethylbenzene	**14.3**	1.00	ug/L	Y1		12/11/18 1936	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 1936	MRB
Isopropylbenzene (Cumene)	**2.55**	1.00	ug/L	Y1		12/11/18 1936	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 1936	MRB
Naphthalene	**70.2**	1.00	ug/L	Y1		12/14/18 1707	MRB
n-Propylbenzene	**3.19**	1.00	ug/L	Y1		12/11/18 1936	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Toluene	**1.20**	1.00	ug/L	Y1		12/11/18 1936	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
1,2,4-Trimethylbenzene	**2.48**	1.00	ug/L	Y1		12/11/18 1936	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 1936	MRB
m,p-Xylene	**3.03**	1.00	ug/L	Y1		12/11/18 1936	MRB
o-Xylene	**2.23**	1.00	ug/L	Y1		12/11/18 1936	MRB
Surrogate: 4-Bromofluorobenzene	104	Limit: 70-130	% Rec			12/14/18 1707	MRB
Surrogate: 4-Bromofluorobenzene	105	Limit: 70-130	% Rec			12/11/18 1936	MRB
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 70-130	% Rec			12/14/18 1707	MRB
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 70-130	% Rec			12/11/18 1936	MRB
Surrogate: Toluene-d8	96.0	Limit: 70-130	% Rec			12/14/18 1707	MRB
Surrogate: Toluene-d8	95.8	Limit: 70-130	% Rec			12/11/18 1936	MRB

Client Sample ID:	Trip Blank		
Sample Matrix:	Aqueous	**Collected By:**	Customer
Lab Sample ID:	D8L0091-06	**Collection Date:**	11/30/2018 8:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	**6.73**	5.00	ug/L	**Y1**		12/11/18 2002	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Benzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 2002	MRB
sec-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
2,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
Diethyl ether	<1.00	1.00	ug/L	**Y1**		12/11/18 2002	MRB
1,4-Dioxane	<20.0	20.0	ug/L	**Y1**		12/11/18 2002	MRB

Client Sample ID:	Trip Blank		
Sample Matrix:	Aqueous	**Collected By:**	Customer
Lab Sample ID:	D8L0091-06	**Collection Date:**	11/30/2018 8:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Ethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 2002	MRB
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 2002	MRB
Naphthalene	<1.00	1.00	ug/L	Y1		12/14/18 1513	MRB
n-Propylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Toluene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
m,p-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
o-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 2002	MRB
Surrogate: 4-Bromofluorobenzene	104	Limit: 70-130	% Rec			12/14/18 1513	MRB
Surrogate: 4-Bromofluorobenzene	104	Limit: 70-130	% Rec			12/11/18 2002	MRB
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec			12/14/18 1513	MRB
Surrogate: 1,2-Dichloroethane-d4	99.2	Limit: 70-130	% Rec			12/11/18 2002	MRB
Surrogate: Toluene-d8	99.3	Limit: 70-130	% Rec			12/14/18 1513	MRB
Surrogate: Toluene-d8	99.6	Limit: 70-130	% Rec			12/11/18 2002	MRB

Client Sample ID:	E-1		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-07	**Collection Date:**	11/30/2018 8:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	**9.50**	5.00	ug/L	**Y1**		12/11/18 2028	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Benzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 2028	MRB
sec-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
2,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
Diethyl ether	<1.00	1.00	ug/L	**Y1**		12/11/18 2028	MRB
1,4-Dioxane	<20.0	20.0	ug/L	**Y1**		12/11/18 2028	MRB

Client Sample ID: E-1
Sample Matrix: Groundwater
Lab Sample ID: D8L0091-07
Collected By: Customer
Collection Date: 11/30/2018 8:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Ethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 2028	MRB
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 2028	MRB
Naphthalene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
n-Propylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Toluene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
m,p-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
o-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 2028	MRB
Surrogate: 4-Bromofluorobenzene	106	Limit: 70-130	% Rec			12/11/18 2028	MRB
Surrogate: 1,2-Dichloroethane-d4	99.2	Limit: 70-130	% Rec			12/11/18 2028	MRB
Surrogate: Toluene-d8	98.3	Limit: 70-130	% Rec			12/11/18 2028	MRB

Client Sample ID:	E-2		
Sample Matrix:	Groundwater	**Collected By:**	Customer
Lab Sample ID:	D8L0091-08	**Collection Date:**	11/30/2018 8:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	**10.7**	5.00	ug/L	**Y1**		12/11/18 2054	MRB
Acrylonitrile	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Benzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Bromobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Bromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Bromodichloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Bromoform	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Bromomethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
2-Butanone (MEK)	<5.00	5.00	ug/L	**Y1**		12/11/18 2054	MRB
sec-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
tert-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
n-Butylbenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Carbon disulfide	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Carbon tetrachloride	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Chlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Chloroethane (Ethyl chloride)	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Chloroform	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Chloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
2-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
4-Chlorotoluene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Dibromochloromethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Dibromomethane (Methylene bromide)	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
trans-1,4-Dichloro-2-butene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,4-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,3-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,2-Dichlorobenzene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Dichlorodifluoromethane (Freon-12)	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,2-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,1-Dichloroethane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
trans-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,1-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
cis-1,2-Dichloroethene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,3-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
2,2-Dichloropropane	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
trans-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
cis-1,3-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,1-Dichloropropene	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
Diethyl ether	<1.00	1.00	ug/L	**Y1**		12/11/18 2054	MRB
1,4-Dioxane	<20.0	20.0	ug/L	**Y1**		12/11/18 2054	MRB

Client Sample ID: E-2
Sample Matrix: Groundwater
Lab Sample ID: D8L0091-08
Collected By: Customer
Collection Date: 11/30/2018 8:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Ethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Hexachlorobutadiene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
2-Hexanone (MBK)	<5.00	5.00	ug/L	Y1		12/11/18 2054	MRB
Isopropylbenzene (Cumene)	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Methyl tert-butyl ether (MTBE)	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Methylene chloride (Dichloromethane)	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
4-Methyl-2-pentanone (MIBK)	<5.00	5.00	ug/L	Y1		12/11/18 2054	MRB
Naphthalene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
n-Propylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Styrene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,1,1,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,1,2,2-Tetrachloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Tetrachloroethene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Tetrahydrofuran (THF)	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Toluene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,2,4-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,2,3-Trichlorobenzene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,1,1-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,1,2-Trichloroethane	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Trichloroethene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Trichlorofluoromethane (Freon 11)	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,2,3-Trichloropropane	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,3,5-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
1,2,4-Trimethylbenzene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Vinyl chloride	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
m,p-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
o-Xylene	<1.00	1.00	ug/L	Y1		12/11/18 2054	MRB
Surrogate: 4-Bromofluorobenzene	104	Limit: 70-130	% Rec			12/11/18 2054	MRB
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 70-130	% Rec			12/11/18 2054	MRB
Surrogate: Toluene-d8	97.4	Limit: 70-130	% Rec			12/11/18 2054	MRB

Batch Quality Control Summary: Microbac Laboratories, Inc. - Dayville

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80154 - 3510C W Sep Funnel - EPA 8100M										
Blank (DL80154-BLK1)			Prepared & Analyzed: 12/04/2018							
C9-C36 TPH	ND	0.100	mg/L							
Surrogate: 1-Chlorooctadecane	*0.0616*		mg/L	*0.100*		*61.6*	*25-125*			
LCS (DL80154-BS1)			Prepared & Analyzed: 12/04/2018							
C9-C36 TPH	0.792	0.100	mg/L	1.40		56.6	30-130			
Surrogate: 1-Chlorooctadecane	*0.0651*		mg/L	*0.100*		*65.1*	*25-125*			
Matrix Spike (DL80154-MS1)	**Source: D8L0091-01**		Prepared & Analyzed: 12/04/2018							
C9-C36 TPH	0.779	0.100	mg/L	1.40	0.0552	51.7	25-125			
Surrogate: 1-Chlorooctadecane	*0.0613*		mg/L	*0.100*		*61.3*	*25-125*			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
Blank (DL80718-BLK1)			Prepared & Analyzed: 12/11/2018							
Acetone	ND	5.00	ug/L							
Acrylonitrile	ND	1.00	ug/L							
Benzene	ND	1.00	ug/L							
Bromobenzene	ND	1.00	ug/L							
Bromochloromethane	ND	1.00	ug/L							
Bromodichloromethane	ND	1.00	ug/L							
Bromoform	ND	1.00	ug/L							
Bromomethane	ND	1.00	ug/L							
2-Butanone (MEK)	ND	5.00	ug/L							
sec-Butylbenzene	ND	1.00	ug/L							
tert-Butylbenzene	ND	1.00	ug/L							
n-Butylbenzene	ND	1.00	ug/L							
Carbon disulfide	ND	1.00	ug/L							
Carbon tetrachloride	ND	1.00	ug/L							
Chlorobenzene	ND	1.00	ug/L							
Chloroethane (Ethyl chloride)	ND	1.00	ug/L							
Chloroform	ND	1.00	ug/L							
Chloromethane	ND	1.00	ug/L							
2-Chlorotoluene	ND	1.00	ug/L							
4-Chlorotoluene	ND	1.00	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	1.00	ug/L							
Dibromochloromethane	ND	1.00	ug/L							
1,2-Dibromoethane (Ethylene dibromide, EDB)	ND	1.00	ug/L							
Dibromomethane (Methylene bromide)	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	1.00	ug/L							
1,4-Dichlorobenzene	ND	1.00	ug/L							
1,3-Dichlorobenzene	ND	1.00	ug/L							

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
Blank (DL80718-BLK1)			Prepared & Analyzed: 12/11/2018							
1,2-Dichlorobenzene	ND	1.00	ug/L							
Dichlorodifluoromethane (Freon-12)	ND	1.00	ug/L							
1,2-Dichloroethane	ND	1.00	ug/L							
1,1-Dichloroethane	ND	1.00	ug/L							
trans-1,2-Dichloroethene	ND	1.00	ug/L							
1,1-Dichloroethene	ND	1.00	ug/L							
cis-1,2-Dichloroethene	ND	1.00	ug/L							
1,3-Dichloropropane	ND	1.00	ug/L							
1,2-Dichloropropane	ND	1.00	ug/L							
2,2-Dichloropropane	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
1,1-Dichloropropene	ND	1.00	ug/L							
Diethyl ether	ND	1.00	ug/L							
1,4-Dioxane	ND	20.0	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Hexachlorobutadiene	ND	1.00	ug/L							
2-Hexanone (MBK)	ND	5.00	ug/L							
Isopropylbenzene (Cumene)	ND	1.00	ug/L							
4-Isopropyltoluene (p-Isopropyltoluene)	ND	1.00	ug/L							
Methyl tert-butyl ether (MTBE)	ND	1.00	ug/L							
Methylene chloride (Dichloromethane)	ND	1.00	ug/L							
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L							
Naphthalene	ND	1.00	ug/L							
n-Propylbenzene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
1,1,1,2-Tetrachloroethane	ND	1.00	ug/L							
1,1,2,2-Tetrachloroethane	ND	1.00	ug/L							
Tetrachloroethene	ND	1.00	ug/L							
Tetrahydrofuran (THF)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
1,2,4-Trichlorobenzene	ND	1.00	ug/L							
1,2,3-Trichlorobenzene	ND	1.00	ug/L							
1,1,1-Trichloroethane	ND	1.00	ug/L							
1,1,2-Trichloroethane	ND	1.00	ug/L							
Trichloroethene	ND	1.00	ug/L							
Trichlorofluoromethane (Freon 11)	ND	1.00	ug/L							
1,2,3-Trichloropropane	ND	1.00	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.00	ug/L							
1,3,5-Trimethylbenzene	ND	1.00	ug/L							
1,2,4-Trimethylbenzene	ND	1.00	ug/L							
Vinyl chloride	ND	1.00	ug/L							
m,p-Xylene	ND	1.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Surrogate: 4-Bromofluorobenzene	*52.3*		ug/L	*50.0*		*105*	*70-130*			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
Blank (DL80718-BLK1)				Prepared & Analyzed: 12/11/2018						
Surrogate: 1,2-Dichloroethane-d4	*50.4*		ug/L	*50.0*		*101*	*70-130*			
Surrogate: Toluene-d8	*48.5*		ug/L	*50.0*		*97.1*	*70-130*			
LCS (DL80718-BS1)				Prepared & Analyzed: 12/11/2018						
Acetone	51.7	5.00	ug/L	50.0		103	70-130			
Acrylonitrile	52.5	1.00	ug/L	50.0		105	70-130			
Benzene	50.6	1.00	ug/L	50.0		101	70-130			
Bromobenzene	53.3	1.00	ug/L	50.0		107	70-130			
Bromochloromethane	55.3	1.00	ug/L	50.0		111	70-130			
Bromodichloromethane	52.7	1.00	ug/L	50.0		105	70-130			
Bromoform	58.2	1.00	ug/L	50.0		116	70-130			
Bromomethane	49.3	1.00	ug/L	50.0		98.7	70-130			
2-Butanone (MEK)	56.5	5.00	ug/L	50.0		113	70-130			
sec-Butylbenzene	46.4	1.00	ug/L	50.0		92.8	70-130			
tert-Butylbenzene	47.9	1.00	ug/L	50.0		95.7	70-130			
n-Butylbenzene	48.0	1.00	ug/L	50.0		95.9	70-130			
Carbon disulfide	48.4	1.00	ug/L	50.0		96.7	70-130			
Carbon tetrachloride	55.3	1.00	ug/L	50.0		111	70-130			
Chlorobenzene	51.6	1.00	ug/L	50.0		103	70-130			
Chloroethane (Ethyl chloride)	60.5	1.00	ug/L	50.0		121	70-130			
Chloroform	51.1	1.00	ug/L	50.0		102	70-130			
Chloromethane	46.7	1.00	ug/L	50.0		93.4	70-130			
2-Chlorotoluene	49.3	1.00	ug/L	50.0		98.6	70-130			
4-Chlorotoluene	49.8	1.00	ug/L	50.0		99.6	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	48.1	1.00	ug/L	50.0		96.2	70-130			
Dibromochloromethane	53.8	1.00	ug/L	50.0		108	70-130			
1,2-Dibromoethane (Ethylene dibromide, EDB)	54.3	1.00	ug/L	50.0		109	70-130			
Dibromomethane (Methylene bromide)	54.8	1.00	ug/L	50.0		110	70-130			
trans-1,4-Dichloro-2-butene	35.0	1.00	ug/L	50.0		70.1	70-130			
1,4-Dichlorobenzene	49.6	1.00	ug/L	50.0		99.3	70-130			
1,3-Dichlorobenzene	52.3	1.00	ug/L	50.0		105	70-130			
1,2-Dichlorobenzene	52.1	1.00	ug/L	50.0		104	70-130			
Dichlorodifluoromethane (Freon-12)	45.5	1.00	ug/L	50.0		91.0	70-130			
1,2-Dichloroethane	56.1	1.00	ug/L	50.0		112	70-130			
1,1-Dichloroethane	52.4	1.00	ug/L	50.0		105	70-130			
trans-1,2-Dichloroethene	53.4	1.00	ug/L	50.0		107	70-130			
1,1-Dichloroethene	56.2	1.00	ug/L	50.0		112	70-130			
cis-1,2-Dichloroethene	53.3	1.00	ug/L	50.0		107	70-130			
1,3-Dichloropropane	52.0	1.00	ug/L	50.0		104	70-130			
1,2-Dichloropropane	52.1	1.00	ug/L	50.0		104	70-130			
2,2-Dichloropropane	52.9	1.00	ug/L	50.0		106	70-130			
trans-1,3-Dichloropropene	53.9	1.00	ug/L	50.0		108	70-130			
cis-1,3-Dichloropropene	55.4	1.00	ug/L	50.0		111	70-130			
1,1-Dichloropropene	52.6	1.00	ug/L	50.0		105	70-130			
Diethyl ether	44.0	1.00	ug/L	50.0		88.0	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
LCS (DL80718-BS1)				Prepared & Analyzed: 12/11/2018						
1,4-Dioxane	49.7	20.0	ug/L	50.0		99.4	70-130			
Ethylbenzene	50.2	1.00	ug/L	50.0		100	70-130			
Hexachlorobutadiene	49.8	1.00	ug/L	50.0		99.6	70-130			
2-Hexanone (MBK)	54.5	5.00	ug/L	50.0		109	70-130			
Isopropylbenzene (Cumene)	49.9	1.00	ug/L	50.0		99.8	70-130			
4-Isopropyltoluene (p-Isopropyltoluene)	49.3	1.00	ug/L	50.0		98.6	70-130			
Methyl tert-butyl ether (MTBE)	43.4	1.00	ug/L	50.0		86.7	70-130			
Methylene chloride (Dichloromethane)	55.9	1.00	ug/L	50.0		112	70-130			
4-Methyl-2-pentanone (MIBK)	54.7	5.00	ug/L	50.0		109	70-130			
Naphthalene	39.1	1.00	ug/L	50.0		78.3	70-130			
n-Propylbenzene	48.2	1.00	ug/L	50.0		96.3	70-130			
Styrene	52.6	1.00	ug/L	50.0		105	70-130			
1,1,1,2-Tetrachloroethane	56.5	1.00	ug/L	50.0		113	70-130			
1,1,2,2-Tetrachloroethane	50.8	1.00	ug/L	50.0		102	70-130			
Tetrachloroethene	61.1	1.00	ug/L	50.0		122	70-130			
Tetrahydrofuran (THF)	50.8	1.00	ug/L	50.0		102	70-130			
Toluene	51.3	1.00	ug/L	50.0		103	70-130			
1,2,4-Trichlorobenzene	46.4	1.00	ug/L	50.0		92.9	70-130			
1,2,3-Trichlorobenzene	44.7	1.00	ug/L	50.0		89.4	70-130			
1,1,1-Trichloroethane	53.9	1.00	ug/L	50.0		108	70-130			
1,1,2-Trichloroethane	55.8	1.00	ug/L	50.0		112	70-130			
Trichloroethene	57.0	1.00	ug/L	50.0		114	70-130			
Trichlorofluoromethane (Freon 11)	49.5	1.00	ug/L	50.0		99.1	70-130			
1,2,3-Trichloropropane	49.2	1.00	ug/L	50.0		98.5	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	58.6	1.00	ug/L	50.0		117	70-130			
1,3,5-Trimethylbenzene	48.9	1.00	ug/L	50.0		97.8	70-130			
1,2,4-Trimethylbenzene	49.1	1.00	ug/L	50.0		98.1	70-130			
Vinyl chloride	52.6	1.00	ug/L	50.0		105	70-130			
m,p-Xylene	53.7	1.00	ug/L	50.0		107	70-130			
o-Xylene	49.9	1.00	ug/L	50.0		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	*54.4*		ug/L	*50.0*		*109*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*49.6*		ug/L	*50.0*		*99.2*	*70-130*			
Surrogate: Toluene-d8	*48.6*		ug/L	*50.0*		*97.1*	*70-130*			
Matrix Spike (DL80718-MS1)	**Source: D8K2818-02**			Prepared & Analyzed: 12/11/2018						
Acetone	50.5	5.00	ug/L	50.0	2.17	96.7	70-130			
Acrylonitrile	46.0	1.00	ug/L	50.0	ND	91.9	70-130			
Benzene	53.9	1.00	ug/L	50.0	ND	108	70-130			
Bromobenzene	54.6	1.00	ug/L	50.0	ND	109	70-130			
Bromochloromethane	55.8	1.00	ug/L	50.0	ND	112	70-130			
Bromodichloromethane	55.6	1.00	ug/L	50.0	ND	111	70-130			
Bromoform	57.6	1.00	ug/L	50.0	ND	115	70-130			
Bromomethane	51.9	1.00	ug/L	50.0	ND	104	70-130			
2-Butanone (MEK)	49.7	5.00	ug/L	50.0	ND	99.3	70-130			
sec-Butylbenzene	50.6	1.00	ug/L	50.0	ND	101	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
Matrix Spike (DL80718-MS1)	**Source: D8K2818-02**		Prepared & Analyzed: 12/11/2018							
tert-Butylbenzene	49.9	1.00	ug/L	50.0	ND	99.8	70-130			
n-Butylbenzene	50.8	1.00	ug/L	50.0	ND	102	70-130			
Carbon disulfide	54.7	1.00	ug/L	50.0	ND	109	70-130			
Carbon tetrachloride	62.4	1.00	ug/L	50.0	ND	125	70-130			
Chlorobenzene	54.4	1.00	ug/L	50.0	ND	109	70-130			
Chloroethane (Ethyl chloride)	74.3	1.00	ug/L	50.0	ND	149	70-130			M1
Chloroform	54.6	1.00	ug/L	50.0	ND	109	70-130			
Chloromethane	50.0	1.00	ug/L	50.0	ND	100	70-130			
2-Chlorotoluene	50.6	1.00	ug/L	50.0	ND	101	70-130			
4-Chlorotoluene	50.8	1.00	ug/L	50.0	ND	102	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	46.0	1.00	ug/L	50.0	ND	92.0	70-130			
Dibromochloromethane	54.2	1.00	ug/L	50.0	ND	108	70-130			
1,2-Dibromoethane (Ethylene dibromide, EDB)	54.9	1.00	ug/L	50.0	ND	110	70-130			
Dibromomethane (Methylene bromide)	57.5	1.00	ug/L	50.0	ND	115	70-130			
trans-1,4-Dichloro-2-butene	31.9	1.00	ug/L	50.0	ND	63.7	70-130			M2
1,4-Dichlorobenzene	50.5	1.00	ug/L	50.0	ND	101	70-130			
1,3-Dichlorobenzene	53.2	1.00	ug/L	50.0	ND	106	70-130			
1,2-Dichlorobenzene	51.4	1.00	ug/L	50.0	ND	103	70-130			
Dichlorodifluoromethane (Freon-12)	50.4	1.00	ug/L	50.0	ND	101	70-130			
1,2-Dichloroethane	56.9	1.00	ug/L	50.0	ND	114	70-130			
1,1-Dichloroethane	56.2	1.00	ug/L	50.0	ND	112	70-130			
trans-1,2-Dichloroethene	60.0	1.00	ug/L	50.0	ND	120	70-130			
1,1-Dichloroethene	64.0	1.00	ug/L	50.0	ND	128	70-130			
cis-1,2-Dichloroethene	57.2	1.00	ug/L	50.0	ND	114	70-130			
1,3-Dichloropropane	51.6	1.00	ug/L	50.0	ND	103	70-130			
1,2-Dichloropropane	52.5	1.00	ug/L	50.0	ND	105	70-130			
2,2-Dichloropropane	56.8	1.00	ug/L	50.0	ND	114	70-130			
trans-1,3-Dichloropropene	53.8	1.00	ug/L	50.0	ND	108	70-130			
cis-1,3-Dichloropropene	56.0	1.00	ug/L	50.0	ND	112	70-130			
1,1-Dichloropropene	58.5	1.00	ug/L	50.0	ND	117	70-130			
Diethyl ether	39.7	1.00	ug/L	50.0	ND	79.4	70-130			
1,4-Dioxane	53.5	20.0	ug/L	50.0	ND	107	70-130			
Ethylbenzene	54.6	1.00	ug/L	50.0	ND	109	70-130			
Hexachlorobutadiene	53.0	1.00	ug/L	50.0	ND	106	70-130			
2-Hexanone (MBK)	48.0	5.00	ug/L	50.0	ND	95.9	70-130			
Isopropylbenzene (Cumene)	51.8	1.00	ug/L	50.0	ND	104	70-130			
4-Isopropyltoluene (p-Isopropyltoluene)	52.4	1.00	ug/L	50.0	ND	105	70-130			
Methyl tert-butyl ether (MTBE)	39.5	1.00	ug/L	50.0	ND	78.9	70-130			
Methylene chloride (Dichloromethane)	60.6	1.00	ug/L	50.0	ND	121	70-130			
4-Methyl-2-pentanone (MIBK)	49.2	5.00	ug/L	50.0	ND	98.4	70-130			
Naphthalene	36.5	1.00	ug/L	50.0	ND	73.1	70-130			
n-Propylbenzene	51.4	1.00	ug/L	50.0	ND	103	70-130			
Styrene	54.5	1.00	ug/L	50.0	ND	109	70-130			
1,1,1,2-Tetrachloroethane	59.0	1.00	ug/L	50.0	ND	118	70-130			
1,1,2,2-Tetrachloroethane	48.4	1.00	ug/L	50.0	ND	96.8	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
Matrix Spike (DL80718-MS1)	**Source: D8K2818-02**		Prepared & Analyzed: 12/11/2018							
Tetrachloroethene	66.9	1.00	ug/L	50.0	ND	134	70-130			M1
Tetrahydrofuran (THF)	49.6	1.00	ug/L	50.0	ND	99.3	70-130			
Toluene	55.0	1.00	ug/L	50.0	ND	110	70-130			
1,2,4-Trichlorobenzene	46.8	1.00	ug/L	50.0	ND	93.6	70-130			
1,2,3-Trichlorobenzene	42.5	1.00	ug/L	50.0	ND	85.1	70-130			
1,1,1-Trichloroethane	60.2	1.00	ug/L	50.0	ND	120	70-130			
1,1,2-Trichloroethane	56.8	1.00	ug/L	50.0	ND	114	70-130			
Trichloroethene	61.1	1.00	ug/L	50.0	ND	122	70-130			
Trichlorofluoromethane (Freon 11)	52.4	1.00	ug/L	50.0	ND	105	70-130			
1,2,3-Trichloropropane	47.1	1.00	ug/L	50.0	ND	94.3	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	65.3	1.00	ug/L	50.0	ND	131	70-130			M1
1,3,5-Trimethylbenzene	50.8	1.00	ug/L	50.0	ND	102	70-130			
1,2,4-Trimethylbenzene	50.3	1.00	ug/L	50.0	ND	101	70-130			
Vinyl chloride	57.0	1.00	ug/L	50.0	ND	114	70-130			
m,p-Xylene	56.8	1.00	ug/L	50.0	ND	114	70-130			
o-Xylene	53.1	1.00	ug/L	50.0	ND	106	70-130			
Surrogate: 4-Bromofluorobenzene	*55.1*		ug/L	*50.0*		*110*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*48.7*		ug/L	*50.0*		*97.4*	*70-130*			
Surrogate: Toluene-d8	*48.9*		ug/L	*50.0*		*97.9*	*70-130*			
Matrix Spike Dup (DL80718-MSD1)	**Source: D8K2818-02**		Prepared & Analyzed: 12/11/2018							
Acetone	44.0	5.00	ug/L	50.0	2.17	83.6	70-130	13.9	20	
Acrylonitrile	43.8	1.00	ug/L	50.0	ND	87.5	70-130	4.90	20	
Benzene	50.2	1.00	ug/L	50.0	ND	100	70-130	7.05	20	
Bromobenzene	52.1	1.00	ug/L	50.0	ND	104	70-130	4.76	20	
Bromochloromethane	52.9	1.00	ug/L	50.0	ND	106	70-130	5.37	20	
Bromodichloromethane	51.8	1.00	ug/L	50.0	ND	104	70-130	7.17	20	
Bromoform	54.1	1.00	ug/L	50.0	ND	108	70-130	6.23	20	
Bromomethane	49.5	1.00	ug/L	50.0	ND	99.0	70-130	4.75	20	
2-Butanone (MEK)	48.0	5.00	ug/L	50.0	ND	95.9	70-130	3.50	20	
sec-Butylbenzene	48.2	1.00	ug/L	50.0	ND	96.5	70-130	4.82	20	
tert-Butylbenzene	47.1	1.00	ug/L	50.0	ND	94.2	70-130	5.79	20	
n-Butylbenzene	50.4	1.00	ug/L	50.0	ND	101	70-130	0.810	20	
Carbon disulfide	49.5	1.00	ug/L	50.0	ND	98.9	70-130	9.97	20	
Carbon tetrachloride	59.2	1.00	ug/L	50.0	ND	118	70-130	5.15	20	
Chlorobenzene	49.8	1.00	ug/L	50.0	ND	99.7	70-130	8.71	20	
Chloroethane (Ethyl chloride)	66.8	1.00	ug/L	50.0	ND	134	70-130	10.6	20	M1
Chloroform	51.2	1.00	ug/L	50.0	ND	102	70-130	6.33	20	
Chloromethane	46.4	1.00	ug/L	50.0	ND	92.8	70-130	7.45	20	
2-Chlorotoluene	48.5	1.00	ug/L	50.0	ND	97.0	70-130	4.14	20	
4-Chlorotoluene	47.9	1.00	ug/L	50.0	ND	95.7	70-130	6.06	20	
1,2-Dibromo-3-chloropropane (DBCP)	42.8	1.00	ug/L	50.0	ND	85.6	70-130	7.28	20	
Dibromochloromethane	50.6	1.00	ug/L	50.0	ND	101	70-130	7.00	20	
1,2-Dibromoethane (Ethylene dibromide, EDB)	51.5	1.00	ug/L	50.0	ND	103	70-130	6.47	20	
Dibromomethane (Methylene bromide)	54.6	1.00	ug/L	50.0	ND	109	70-130	5.12	20	

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
Matrix Spike Dup (DL80718-MSD1)	**Source: D8K2818-02**		Prepared & Analyzed: 12/11/2018							
trans-1,4-Dichloro-2-butene	32.1	1.00	ug/L	50.0	ND	64.2	70-130	0.751	20	M2
1,4-Dichlorobenzene	47.4	1.00	ug/L	50.0	ND	94.8	70-130	6.45	20	
1,3-Dichlorobenzene	49.7	1.00	ug/L	50.0	ND	99.5	70-130	6.74	20	
1,2-Dichlorobenzene	48.7	1.00	ug/L	50.0	ND	97.4	70-130	5.26	20	
Dichlorodifluoromethane (Freon-12)	45.8	1.00	ug/L	50.0	ND	91.7	70-130	9.40	20	
1,2-Dichloroethane	54.7	1.00	ug/L	50.0	ND	109	70-130	3.91	20	
1,1-Dichloroethane	52.2	1.00	ug/L	50.0	ND	104	70-130	7.38	20	
trans-1,2-Dichloroethene	54.1	1.00	ug/L	50.0	ND	108	70-130	10.4	20	
1,1-Dichloroethene	58.9	1.00	ug/L	50.0	ND	118	70-130	8.29	20	
cis-1,2-Dichloroethene	51.3	1.00	ug/L	50.0	ND	103	70-130	11.0	20	
1,3-Dichloropropane	48.8	1.00	ug/L	50.0	ND	97.6	70-130	5.50	20	
1,2-Dichloropropane	50.9	1.00	ug/L	50.0	ND	102	70-130	3.08	20	
2,2-Dichloropropane	54.0	1.00	ug/L	50.0	ND	108	70-130	5.07	20	
trans-1,3-Dichloropropene	50.8	1.00	ug/L	50.0	ND	102	70-130	5.73	20	
cis-1,3-Dichloropropene	53.1	1.00	ug/L	50.0	ND	106	70-130	5.39	20	
1,1-Dichloropropene	54.3	1.00	ug/L	50.0	ND	109	70-130	7.43	20	
Diethyl ether	37.2	1.00	ug/L	50.0	ND	74.4	70-130	6.58	20	
1,4-Dioxane	46.8	20.0	ug/L	50.0	ND	93.6	70-130	13.4	20	
Ethylbenzene	49.7	1.00	ug/L	50.0	ND	99.4	70-130	9.37	20	
Hexachlorobutadiene	50.7	1.00	ug/L	50.0	ND	101	70-130	4.55	20	
2-Hexanone (MBK)	46.7	5.00	ug/L	50.0	ND	93.4	70-130	2.70	20	
Isopropylbenzene (Cumene)	48.3	1.00	ug/L	50.0	ND	96.6	70-130	7.00	20	
4-Isopropyltoluene (p-Isopropyltoluene)	49.6	1.00	ug/L	50.0	ND	99.1	70-130	5.53	20	
Methyl tert-butyl ether (MTBE)	37.7	1.00	ug/L	50.0	ND	75.3	70-130	4.67	20	
Methylene chloride (Dichloromethane)	56.7	1.00	ug/L	50.0	ND	113	70-130	6.70	20	
4-Methyl-2-pentanone (MIBK)	47.0	5.00	ug/L	50.0	ND	94.0	70-130	4.57	20	
Naphthalene	36.1	1.00	ug/L	50.0	ND	72.2	70-130	1.16	20	
n-Propylbenzene	47.9	1.00	ug/L	50.0	ND	95.8	70-130	6.93	20	
Styrene	51.0	1.00	ug/L	50.0	ND	102	70-130	6.67	20	
1,1,1,2-Tetrachloroethane	54.2	1.00	ug/L	50.0	ND	108	70-130	8.41	20	
1,1,2,2-Tetrachloroethane	46.2	1.00	ug/L	50.0	ND	92.5	70-130	4.54	20	
Tetrachloroethene	61.1	1.00	ug/L	50.0	ND	122	70-130	9.00	20	
Tetrahydrofuran (THF)	47.7	1.00	ug/L	50.0	ND	95.3	70-130	4.05	20	
Toluene	50.2	1.00	ug/L	50.0	ND	100	70-130	9.14	20	
1,2,4-Trichlorobenzene	45.0	1.00	ug/L	50.0	ND	90.0	70-130	3.90	20	
1,2,3-Trichlorobenzene	40.7	1.00	ug/L	50.0	ND	81.4	70-130	4.45	20	
1,1,1-Trichloroethane	56.0	1.00	ug/L	50.0	ND	112	70-130	7.32	20	
1,1,2-Trichloroethane	53.1	1.00	ug/L	50.0	ND	106	70-130	6.79	20	
Trichloroethene	58.3	1.00	ug/L	50.0	ND	117	70-130	4.67	20	
Trichlorofluoromethane (Freon 11)	48.1	1.00	ug/L	50.0	ND	96.2	70-130	8.56	20	
1,2,3-Trichloropropane	44.5	1.00	ug/L	50.0	ND	89.0	70-130	5.72	20	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	58.8	1.00	ug/L	50.0	ND	118	70-130	10.5	20	
1,3,5-Trimethylbenzene	48.2	1.00	ug/L	50.0	ND	96.5	70-130	5.11	20	
1,2,4-Trimethylbenzene	47.6	1.00	ug/L	50.0	ND	95.2	70-130	5.58	20	
Vinyl chloride	52.3	1.00	ug/L	50.0	ND	105	70-130	8.52	20	

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80718 - 5030C VOA W - EPA 8260C										
Matrix Spike Dup (DL80718-MSD1)	**Source: D8K2818-02**		Prepared & Analyzed: 12/11/2018							
m,p-Xylene	51.9	1.00	ug/L	50.0	ND	104	70-130	9.05	20	
o-Xylene	49.5	1.00	ug/L	50.0	ND	99.0	70-130	7.04	20	
Surrogate: 4-Bromofluorobenzene	*54.6*		ug/L	*50.0*		*109*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*49.6*		ug/L	*50.0*		*99.2*	*70-130*			
Surrogate: Toluene-d8	*47.9*		ug/L	*50.0*		*95.9*	*70-130*			
Batch DL81054 - 5030C VOA W - EPA 8260C										
Blank (DL81054-BLK1)			Prepared & Analyzed: 12/14/2018							
Acetone	ND	5.00	ug/L							
Acrylonitrile	ND	1.00	ug/L							
Benzene	ND	1.00	ug/L							
Bromobenzene	ND	1.00	ug/L							
Bromochloromethane	ND	1.00	ug/L							
Bromodichloromethane	ND	1.00	ug/L							
Bromoform	ND	1.00	ug/L							
Bromomethane	ND	1.00	ug/L							
2-Butanone (MEK)	ND	5.00	ug/L							
sec-Butylbenzene	ND	1.00	ug/L							
tert-Butylbenzene	ND	1.00	ug/L							
n-Butylbenzene	ND	1.00	ug/L							
Carbon disulfide	ND	1.00	ug/L							
Carbon tetrachloride	ND	1.00	ug/L							
Chlorobenzene	ND	1.00	ug/L							
Chloroethane (Ethyl chloride)	ND	1.00	ug/L							
Chloroform	ND	1.00	ug/L							
Chloromethane	ND	1.00	ug/L							
2-Chlorotoluene	ND	1.00	ug/L							
4-Chlorotoluene	ND	1.00	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	1.00	ug/L							
Dibromochloromethane	ND	1.00	ug/L							
1,2-Dibromoethane (Ethylene dibromide, EDB)	ND	1.00	ug/L							
Dibromomethane (Methylene bromide)	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	1.00	ug/L							
1,4-Dichlorobenzene	ND	1.00	ug/L							
1,3-Dichlorobenzene	ND	1.00	ug/L							
1,2-Dichlorobenzene	ND	1.00	ug/L							
Dichlorodifluoromethane (Freon-12)	ND	1.00	ug/L							
1,2-Dichloroethane	ND	1.00	ug/L							
1,1-Dichloroethane	ND	1.00	ug/L							
trans-1,2-Dichloroethene	ND	1.00	ug/L							
1,1-Dichloroethene	ND	1.00	ug/L							
cis-1,2-Dichloroethene	ND	1.00	ug/L							
1,3-Dichloropropane	ND	1.00	ug/L							
1,2-Dichloropropane	ND	1.00	ug/L							

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL81054 - 5030C VOA W - EPA 8260C										
Blank (DL81054-BLK1)			Prepared & Analyzed: 12/14/2018							
2,2-Dichloropropane	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
1,1-Dichloropropene	ND	1.00	ug/L							
Diethyl ether	ND	1.00	ug/L							
1,4-Dioxane	ND	20.0	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Hexachlorobutadiene	ND	1.00	ug/L							
2-Hexanone (MBK)	ND	5.00	ug/L							
Isopropylbenzene (Cumene)	ND	1.00	ug/L							
4-Isopropyltoluene (p-Isopropyltoluene)	ND	1.00	ug/L							
Methyl tert-butyl ether (MTBE)	ND	1.00	ug/L							
Methylene chloride (Dichloromethane)	ND	1.00	ug/L							
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L							
Naphthalene	ND	1.00	ug/L							
n-Propylbenzene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
1,1,1,2-Tetrachloroethane	ND	1.00	ug/L							
1,1,2,2-Tetrachloroethane	ND	1.00	ug/L							
Tetrachloroethene	ND	1.00	ug/L							
Tetrahydrofuran (THF)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
1,2,4-Trichlorobenzene	ND	1.00	ug/L							
1,2,3-Trichlorobenzene	ND	1.00	ug/L							
1,1,1-Trichloroethane	ND	1.00	ug/L							
1,1,2-Trichloroethane	ND	1.00	ug/L							
Trichloroethene	ND	1.00	ug/L							
Trichlorofluoromethane (Freon 11)	ND	1.00	ug/L							
1,2,3-Trichloropropane	ND	1.00	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.00	ug/L							
1,3,5-Trimethylbenzene	ND	1.00	ug/L							
1,2,4-Trimethylbenzene	ND	1.00	ug/L							
Vinyl chloride	ND	1.00	ug/L							
m,p-Xylene	ND	1.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Surrogate: 4-Bromofluorobenzene	*50.7*		ug/L	*50.0*		*101*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*52.0*		ug/L	*50.0*		*104*	*70-130*			
Surrogate: Toluene-d8	*49.4*		ug/L	*50.0*		*98.8*	*70-130*			
LCS (DL81054-BS1)			Prepared & Analyzed: 12/14/2018							
Acetone	44.6	5.00	ug/L	50.0		89.2	70-130			
Acrylonitrile	44.9	1.00	ug/L	50.0		89.9	70-130			
Benzene	48.0	1.00	ug/L	50.0		95.9	70-130			
Bromobenzene	51.8	1.00	ug/L	50.0		104	70-130			
Bromochloromethane	52.2	1.00	ug/L	50.0		104	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL81054 - 5030C VOA W - EPA 8260C										
LCS (DL81054-BS1)				Prepared & Analyzed: 12/14/2018						
Bromodichloromethane	51.1	1.00	ug/L	50.0		102	70-130			
Bromoform	54.5	1.00	ug/L	50.0		109	70-130			
Bromomethane	45.5	1.00	ug/L	50.0		91.1	70-130			
2-Butanone (MEK)	50.7	5.00	ug/L	50.0		101	70-130			
sec-Butylbenzene	46.8	1.00	ug/L	50.0		93.6	70-130			
tert-Butylbenzene	46.9	1.00	ug/L	50.0		93.8	70-130			
n-Butylbenzene	47.7	1.00	ug/L	50.0		95.3	70-130			
Carbon disulfide	44.6	1.00	ug/L	50.0		89.2	70-130			
Carbon tetrachloride	52.9	1.00	ug/L	50.0		106	70-130			
Chlorobenzene	48.5	1.00	ug/L	50.0		96.9	70-130			
Chloroethane (Ethyl chloride)	62.2	1.00	ug/L	50.0		124	70-130			
Chloroform	49.5	1.00	ug/L	50.0		99.0	70-130			
Chloromethane	40.0	1.00	ug/L	50.0		79.9	70-130			
2-Chlorotoluene	47.1	1.00	ug/L	50.0		94.2	70-130			
4-Chlorotoluene	47.4	1.00	ug/L	50.0		94.8	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	46.2	1.00	ug/L	50.0		92.4	70-130			
Dibromochloromethane	51.3	1.00	ug/L	50.0		103	70-130			
1,2-Dibromoethane (Ethylene dibromide, EDB)	51.0	1.00	ug/L	50.0		102	70-130			
Dibromomethane (Methylene bromide)	53.7	1.00	ug/L	50.0		107	70-130			
trans-1,4-Dichloro-2-butene	41.5	1.00	ug/L	50.0		83.0	70-130			
1,4-Dichlorobenzene	48.0	1.00	ug/L	50.0		96.0	70-130			
1,3-Dichlorobenzene	51.1	1.00	ug/L	50.0		102	70-130			
1,2-Dichlorobenzene	50.5	1.00	ug/L	50.0		101	70-130			
Dichlorodifluoromethane (Freon-12)	36.8	1.00	ug/L	50.0		73.6	70-130			
1,2-Dichloroethane	53.1	1.00	ug/L	50.0		106	70-130			
1,1-Dichloroethane	49.2	1.00	ug/L	50.0		98.4	70-130			
trans-1,2-Dichloroethene	50.9	1.00	ug/L	50.0		102	70-130			
1,1-Dichloroethene	50.9	1.00	ug/L	50.0		102	70-130			
cis-1,2-Dichloroethene	50.7	1.00	ug/L	50.0		101	70-130			
1,3-Dichloropropane	49.5	1.00	ug/L	50.0		98.9	70-130			
1,2-Dichloropropane	48.9	1.00	ug/L	50.0		97.8	70-130			
2,2-Dichloropropane	53.4	1.00	ug/L	50.0		107	70-130			
trans-1,3-Dichloropropene	51.7	1.00	ug/L	50.0		103	70-130			
cis-1,3-Dichloropropene	52.4	1.00	ug/L	50.0		105	70-130			
1,1-Dichloropropene	49.1	1.00	ug/L	50.0		98.3	70-130			
1,4-Dioxane	46.0	20.0	ug/L	50.0		92.0	70-130			
Ethylbenzene	47.8	1.00	ug/L	50.0		95.5	70-130			
Hexachlorobutadiene	50.9	1.00	ug/L	50.0		102	70-130			
2-Hexanone (MBK)	54.5	5.00	ug/L	50.0		109	70-130			
Isopropylbenzene (Cumene)	46.9	1.00	ug/L	50.0		93.7	70-130			
4-Isopropyltoluene (p-Isopropyltoluene)	48.5	1.00	ug/L	50.0		96.9	70-130			
Methyl tert-butyl ether (MTBE)	39.1	1.00	ug/L	50.0		78.2	70-130			
Methylene chloride (Dichloromethane)	55.7	1.00	ug/L	50.0		111	70-130			
4-Methyl-2-pentanone (MIBK)	55.2	5.00	ug/L	50.0		110	70-130			
Naphthalene	43.2	1.00	ug/L	50.0		86.4	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL81054 - 5030C VOA W - EPA 8260C										
LCS (DL81054-BS1)				Prepared & Analyzed: 12/14/2018						
n-Propylbenzene	46.4	1.00	ug/L	50.0		92.7	70-130			
Styrene	49.6	1.00	ug/L	50.0		99.2	70-130			
1,1,1,2-Tetrachloroethane	54.0	1.00	ug/L	50.0		108	70-130			
1,1,2,2-Tetrachloroethane	48.2	1.00	ug/L	50.0		96.5	70-130			
Tetrachloroethene	55.1	1.00	ug/L	50.0		110	70-130			
Tetrahydrofuran (THF)	47.1	1.00	ug/L	50.0		94.3	70-130			
Toluene	48.5	1.00	ug/L	50.0		97.1	70-130			
1,2,4-Trichlorobenzene	47.8	1.00	ug/L	50.0		95.6	70-130			
1,2,3-Trichlorobenzene	47.6	1.00	ug/L	50.0		95.2	70-130			
1,1,1-Trichloroethane	51.4	1.00	ug/L	50.0		103	70-130			
1,1,2-Trichloroethane	53.0	1.00	ug/L	50.0		106	70-130			
Trichloroethene	53.5	1.00	ug/L	50.0		107	70-130			
Trichlorofluoromethane (Freon 11)	40.7	1.00	ug/L	50.0		81.3	70-130			
1,2,3-Trichloropropane	45.3	1.00	ug/L	50.0		90.6	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	48.9	1.00	ug/L	50.0		97.8	70-130			
1,3,5-Trimethylbenzene	46.9	1.00	ug/L	50.0		93.8	70-130			
1,2,4-Trimethylbenzene	47.4	1.00	ug/L	50.0		94.7	70-130			
Vinyl chloride	45.9	1.00	ug/L	50.0		91.8	70-130			
m,p-Xylene	50.1	1.00	ug/L	50.0		100	70-130			
o-Xylene	46.6	1.00	ug/L	50.0		93.2	70-130			
Surrogate: 4-Bromofluorobenzene	*55.4*		ug/L	*50.0*		*111*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*49.5*		ug/L	*50.0*		*99.1*	*70-130*			
Surrogate: Toluene-d8	*48.7*		ug/L	*50.0*		*97.3*	*70-130*			

Definitions

M1:	Matrix spike recovery is above acceptance limits.
M2:	Matrix spike recovery is below acceptance limits.
RL:	Reporting Limit
RPD:	Relative Percent Difference
Y1:	Accreditation is not offered by the accrediting body for this analyte.

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 5.1°C

Cooler Inspection Checklist

Ice Present or not required?	Yes	Shipping containers sealed or not required?	Yes
Custody seals intact or not required?	Yes	Chain of Custody (COC) Present?	Yes
COC includes customer information?	Yes	Relinquished and received signature on COC?	Yes
Sample collector identified on COC?	Yes	Sample type identified on COC?	Yes
Correct containers listed on COC?	Yes	Correct number of containers listed on COC?	Yes
Containers Intact?	Yes	COC includes requested analyses?	Yes
Enough sample volume for indicated tests received?	Yes	Sample labels match COC (Name, Date & Time?)	Yes
Samples arrived within hold time?	Yes	Correct preservatives on COC or not required?	Yes
Chemical preservations checked or not required?	Yes	Preservation checks meet method requirements?	Yes
VOA vials have zero headspace, or not recd.?	Yes	Trip Blank(s) Present or not required?	Yes

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville

LAO00346	Rhode Island Department of Health

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:

M Montgomery

Melisa L. Montgomery
QA Officer
Reported: 01/08/2019 16:29

D8L0091
GZA

Micibal

ESS Laboratory
Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CU

Turn Time	5-day
Rush	
Regulatory State	RI
Is this project for any of the following?:	○CT RCP ○MA MCP ○RGP
Reporting Limits	
Electonic Deliverables	☑Limit Checker ☑Standard Excel ☑Other (Please Specify →) PDF

Company Name	GZA GeoEnvironmental
Project #	34502.01
Project Name	Seville Dyeing
Contact Person	Richard Carone
Address	1009 Valley St, Suite 300
City	Providence
State	RI
Zip Code	02909
PO #	
Telephone Number	(401) 427-2776
FAX Number	
Email Address	richard.carone gzacom

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	VOC	TPH
	11/30/18	1207	Grab	GW	MW-3	X	X
	11/30/18	1137	Grab	GW	MW-4	X	X
	11/30/18	1230	Grab	GW	MW-7 ①	X	X
	11/30/18	1030	Grab	GW	MW-8	X	X
	11/30/18	800	Grab	GW	BD11302018	X	X
	11/30/18	800			Trip Blank	X	
	11/30/18	900	Grab	GW	E-1	X	
	11/30/18	800	Grab	GW	E-2	X	
Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial						V	AG
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*						7	6
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Ascorbic Acid 12-Other*						2	3
Number of Containers per Sample:						2	2

Laboratory Use Only

Cooler Present: ______
Seals Intact: ______
Cooler Temperature: ______ °C

Sampled by: Rowan Hume

Comments: Please specify "Other" preservative and containers types in this space
① Well went dry, unable to completely fill 2nd TPH bottle.

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
[signature] 12/3/18 0640	[signature] 12-3-18 1110	[signature] 12-3-18 1630	[signature] 12-3-18 1630
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)

5.1°C

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8K2844

Project Description

Seville Dye

For:

Rick Carlone

GZA GeoEnvironmental, Inc.

188 Valley St., Suite 300

Providence, RI 02909

Melisa L. Montgomery
QA Officer

Tuesday, January 8, 2019

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc. - Dayville. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

MICROBAC®

Microbac Laboratories, Inc. - Dayville

CERTIFICATE OF ANALYSIS

D8K2844

Revised Report: Per client, QC reported.

GZA GeoEnvironmental, Inc.

Rick Carlone
188 Valley St., Suite 300
Providence, RI 02909

Project Name: 34502.01 Seville Dye

Project / PO Number: N/A
Received: 11/29/2018
Reported: 01/08/2019

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW9-S2D	D8K2844-01	Solid	Grab		11/27/18 10:55	11/29/18 15:05
MW8-S2B	D8K2844-02	Solid	Grab		11/27/18 12:00	11/29/18 15:05
B11-S1	D8K2844-03	Solid	Grab		11/27/18 13:00	11/29/18 15:05
B-10	D8K2844-04	Solid	Grab		11/27/18 13:45	11/29/18 15:05
B7-S1	D8K2844-05	Solid	Grab		11/27/18 14:45	11/29/18 15:05
B3-S2	D8K2844-06	Solid	Grab		11/27/18 15:00	11/29/18 15:05
B2-S2	D8K2844-07	Solid	Grab		11/27/18 15:15	11/29/18 15:05
B5-S2	D8K2844-08	Solid	Grab		11/27/18 15:30	11/29/18 15:05
MW3-S1	D8K2844-09	Solid	Grab		11/27/18 16:30	11/29/18 15:05
Trip Blank	D8K2844-10	Aqueous	Trip Blank		11/27/18 08:00	11/29/18 15:05
MW-4 (0-2)	D8K2844-11	Solid	Grab		11/28/18 15:15	11/29/18 15:05
BD 11/28/28	D8K2844-12	Solid	Grab		11/28/18 15:16	11/29/18 15:05
MW-7 (10-15')	D8K2844-13	Solid	Grab		11/28/18 12:55	11/29/18 15:05
MW-6 (0-5')	D8K2844-14	Solid	Grab		11/28/18 13:12	11/29/18 15:05
Trip Blank	D8K2844-15	Aqueous	Trip Blank		11/27/18 08:00	11/29/18 15:05

Analytical Testing Parameters

Client Sample ID:	MW9-S2D		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-01	**Collection Date:**	11/27/2018 10:55

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**94.0**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Arsenic	**5.61**	0.266	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Beryllium	<0.0532	0.0532	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Cadmium	<0.106	0.106	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Chromium	**11.4**	0.106	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Copper	**3.55**	0.106	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Lead	**2.04**	0.160	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Nickel	**4.93**	0.266	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Selenium	<0.266	0.266	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Silver	<0.106	0.106	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Thallium	<0.266	0.266	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2050	NJP
Zinc	**7.38**	0.266	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1851	NJP
Method: EPA 7471B							
Mercury	<0.0351	0.0351	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1619	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A		**Method Notes:** D1					
Aroclor-1016 (PCB-1016) [2C]	<212	212	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1318	MRB
Aroclor-1221 (PCB-1221) [2C]	<212	212	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1318	MRB
Aroclor-1232 (PCB-1232) [2C]	<212	212	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1318	MRB
Aroclor-1242 (PCB-1242) [2C]	<212	212	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1318	MRB
Aroclor-1248 (PCB-1248) [2C]	<212	212	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1318	MRB
Aroclor-1254 (PCB-1254) [2C]	<212	212	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1318	MRB
Aroclor-1260 (PCB-1260) [2C]	<212	212	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1318	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	69.2	Limit: 30-150	% Rec	**S3**	12/07/18 1200	12/12/18 1318	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	48.8	Limit: 30-150	% Rec	**S3**	12/07/18 1200	12/12/18 1318	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**10800**	424	mg/kg dry	**Y1**	12/05/18 1130	12/07/18 2115	CDT
Surrogate: 1-Chlorooctadecane	101	Limit: 25-125	% Rec		12/05/18 1130	12/06/18 1441	CDT

Client Sample ID:	MW9-S2D		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-01	**Collection Date:**	11/27/2018 10:55

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	**2280**	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Acenaphthylene	<701	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Anthracene	**1270**	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Benzo[a]anthracene	**2040**	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Benzo[a]pyrene	<701	701	ug/kg dry	**D1, I1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Benzo[b]fluoranthene	<701	701	ug/kg dry	**D1, I1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Benzo[g,h,i]perylene	<701	701	ug/kg dry	**D1, I1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Benzo[k]fluoranthene	<701	701	ug/kg dry	**D1, I1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Chrysene	**5350**	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Dibenz(a,h) anthracene	<701	701	ug/kg dry	**D1, I1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Fluoranthene	<701	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Fluorene	**3110**	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Indeno(1,2,3-cd) pyrene	<701	701	ug/kg dry	**D1, I1,Y1**	12/03/18 1100	12/04/18 2156	CDT
2-Methylnaphthalene	<701	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Naphthalene	<701	701	ug/kg dry	**D1,Y**	12/03/18 1100	12/04/18 2156	CDT
Phenanthrene	**11200**	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Pyrene	**6640**	701	ug/kg dry	**D1,Y1**	12/03/18 1100	12/04/18 2156	CDT
Surrogate: 2-Fluorobiphenyl	57.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 2156	CDT
Surrogate: 2-Fluorophenol	40.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 2156	CDT
Surrogate: Nitrobenzene-d5	50.8	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 2156	CDT
Surrogate: Phenol-d6	43.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 2156	CDT
Surrogate: p-Terphenyl-d14	75.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 2156	CDT
Surrogate: 2,4,6-Tribromophenol	54.8	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 2156	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<103	103	ug/L	**Y1**		12/10/18 1531	MRB
Acrylonitrile	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Benzene	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Bromobenzene	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Bromochloromethane	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Bromodichloromethane	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Bromoform	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
2-Butanone (MEK)	<103	103	ug/L	**Y1**		12/10/18 1531	MRB
sec-Butylbenzene	**324**	10.3	ug/L	**Y1**		12/10/18 1531	MRB
tert-Butylbenzene	<20.6	20.6	ug/L	**Y1**		12/10/18 1531	MRB
n-Butylbenzene	**357**	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Carbon disulfide	<20.6	20.6	ug/L	**Y1**		12/10/18 1531	MRB
Carbon tetrachloride	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Chlorobenzene	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Chloroethane (Ethyl chloride)	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Chloroform	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW9-S2D		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-01	**Collection Date:**	11/27/2018 10:55

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
2-Chlorotoluene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
4-Chlorotoluene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<4.12	4.12	ug/L	Y1		12/10/18 1531	MRB
Dibromochloromethane	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.03	1.03	ug/L	Y1		12/10/18 1531	MRB
Dibromomethane (Methylene bromide)	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
trans-1,4-Dichloro-2-butene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,4-Dichlorobenzene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,3-Dichlorobenzene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,2-Dichlorobenzene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Dichlorodifluoromethane (Freon-12)	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,2-Dichloroethane	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,1-Dichloroethane	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
trans-1,2-Dichloroethene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,1-Dichloroethene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
cis-1,2-Dichloroethene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,3-Dichloropropane	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,2-Dichloropropane	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
2,2-Dichloropropane	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
trans-1,3-Dichloropropene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
cis-1,3-Dichloropropene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,1-Dichloropropene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Diethyl ether	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,4-Dioxane	<412	412	ug/L	Y1		12/10/18 1531	MRB
Ethylbenzene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Hexachlorobutadiene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
2-Hexanone (MBK)	<103	103	ug/L	Y1		12/10/18 1531	MRB
Isopropylbenzene (Cumene)	**126**	10.3	ug/L	Y1		12/10/18 1531	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Methyl tert-butyl ether (MTBE)	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Methylene chloride (Dichloromethane)	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
4-Methyl-2-pentanone (MIBK)	<103	103	ug/L	Y1		12/10/18 1531	MRB
Naphthalene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
n-Propylbenzene	**212**	10.3	ug/L	Y1		12/10/18 1531	MRB
Styrene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,1,1,2-Tetrachloroethane	<20.6	20.6	ug/L	Y1		12/10/18 1531	MRB
1,1,2,2-Tetrachloroethane	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Tetrachloroethene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Tetrahydrofuran (THF)	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
Toluene	<10.3	10.3	ug/L	Y1		12/10/18 1531	MRB
1,2,4-Trichlorobenzene	<20.6	20.6	ug/L	Y1		12/10/18 1531	MRB
1,2,3-Trichlorobenzene	<20.6	20.6	ug/L	Y1		12/10/18 1531	MRB
1,1,1-Trichloroethane	<20.6	20.6	ug/L	Y1		12/10/18 1531	MRB
1,1,2-Trichloroethane	<20.6	20.6	ug/L	Y1		12/10/18 1531	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW9-S2D		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-01	**Collection Date:**	11/27/2018 10:55

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Trichloroethene	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Trichlorofluoromethane (Freon 11)	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
1,2,3-Trichloropropane	<20.6	20.6	ug/L	**Y1**		12/10/18 1531	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<20.6	20.6	ug/L	**Y1**		12/10/18 1531	MRB
1,3,5-Trimethylbenzene	<20.6	20.6	ug/L	**Y1**		12/10/18 1531	MRB
1,2,4-Trimethylbenzene	**44.9**	20.6	ug/L	**Y1**		12/10/18 1531	MRB
Vinyl chloride	<10.3	10.3	ug/L	**Y1**		12/10/18 1531	MRB
m,p-Xylene	<20.6	20.6	ug/L	**Y1**		12/10/18 1531	MRB
o-Xylene	**15.0**	10.3	ug/L	**Y1**		12/10/18 1531	MRB
Surrogate: 4-Bromofluorobenzene	111	Limit: 70-130	% Rec			12/10/18 1531	MRB
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec			12/10/18 1531	MRB
Surrogate: Toluene-d8	96.7	Limit: 70-130	% Rec			12/10/18 1531	MRB

Client Sample ID:	MW8-S2B		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-02	**Collection Date:**	11/27/2018 12:00

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**93.0**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Arsenic	**5.89**	0.269	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Beryllium	**0.0867**	0.0538	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Cadmium	<0.108	0.108	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Chromium	**5.85**	0.108	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Copper	**4.92**	0.108	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Lead	**2.61**	0.161	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Nickel	**5.58**	0.269	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Selenium	<0.269	0.269	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Silver	<0.108	0.108	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Thallium	<0.269	0.269	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2053	NJP
Zinc	**13.7**	0.269	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1901	NJP
Method: EPA 7471B							
Mercury	<0.0355	0.0355	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1622	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<10.7	10.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1648	MRB
Aroclor-1221 (PCB-1221) [2C]	<10.7	10.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1648	MRB
Aroclor-1232 (PCB-1232) [2C]	<10.7	10.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1648	MRB
Aroclor-1242 (PCB-1242) [2C]	<10.7	10.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1648	MRB
Aroclor-1248 (PCB-1248) [2C]	<10.7	10.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1648	MRB
Aroclor-1254 (PCB-1254) [2C]	<10.7	10.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1648	MRB
Aroclor-1260 (PCB-1260) [2C]	<10.7	10.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1648	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	60.5	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1648	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	47.0	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1648	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**170**	10.7	mg/kg dry	**Y1**	12/05/18 1130	12/05/18 1642	CDT
Surrogate: 1-Chlorooctadecane	71.3	Limit: 25-125	% Rec		12/05/18 1130	12/05/18 1642	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	MW8-S2B		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-02	**Collection Date:**	11/27/2018 12:00

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Acenaphthylene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Anthracene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Benzo[a]anthracene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Benzo[a]pyrene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Benzo[b]fluoranthene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Benzo[g,h,i]perylene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Benzo[k]fluoranthene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Chrysene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Dibenz(a,h) anthracene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Fluoranthene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Fluorene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Indeno(1,2,3-cd) pyrene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
2-Methylnaphthalene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Naphthalene	<354	354	ug/kg dry	**Y**	12/03/18 1100	12/04/18 1725	CDT
Phenanthrene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Pyrene	<354	354	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1725	CDT
Surrogate: 2-Fluorobiphenyl	51.4	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1725	CDT
Surrogate: 2-Fluorophenol	50.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1725	CDT
Surrogate: Nitrobenzene-d5	50.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1725	CDT
Surrogate: Phenol-d6	50.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1725	CDT
Surrogate: p-Terphenyl-d14	67.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1725	CDT
Surrogate: 2,4,6-Tribromophenol	57.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1725	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<109	109	ug/L	**Y1**		12/10/18 1556	MRB
Acrylonitrile	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Benzene	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Bromobenzene	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Bromochloromethane	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Bromodichloromethane	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Bromoform	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Bromomethane	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
2-Butanone (MEK)	<109	109	ug/L	**Y1**		12/10/18 1556	MRB
sec-Butylbenzene	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
tert-Butylbenzene	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
n-Butylbenzene	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Carbon disulfide	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
Carbon tetrachloride	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Chlorobenzene	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Chloroethane (Ethyl chloride)	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW8-S2B		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-02	**Collection Date:**	11/27/2018 12:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Chloromethane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
2-Chlorotoluene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
4-Chlorotoluene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<4.36	4.36	ug/L	Y1		12/10/18 1556	MRB
Dibromochloromethane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.09	1.09	ug/L	Y1		12/10/18 1556	MRB
Dibromomethane (Methylene bromide)	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
trans-1,4-Dichloro-2-butene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,4-Dichlorobenzene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,3-Dichlorobenzene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,2-Dichlorobenzene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Dichlorodifluoromethane (Freon-12)	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,2-Dichloroethane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,1-Dichloroethane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
trans-1,2-Dichloroethene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,1-Dichloroethene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
cis-1,2-Dichloroethene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,3-Dichloropropane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,2-Dichloropropane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
2,2-Dichloropropane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
trans-1,3-Dichloropropene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
cis-1,3-Dichloropropene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,1-Dichloropropene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Diethyl ether	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,4-Dioxane	<436	436	ug/L	Y1		12/10/18 1556	MRB
Ethylbenzene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Hexachlorobutadiene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
2-Hexanone (MBK)	<109	109	ug/L	Y1		12/10/18 1556	MRB
Isopropylbenzene (Cumene)	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Methyl tert-butyl ether (MTBE)	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Methylene chloride (Dichloromethane)	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
4-Methyl-2-pentanone (MIBK)	<109	109	ug/L	Y1		12/10/18 1556	MRB
Naphthalene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
n-Propylbenzene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Styrene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,1,1,2-Tetrachloroethane	<21.8	21.8	ug/L	Y1		12/10/18 1556	MRB
1,1,2,2-Tetrachloroethane	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Tetrachloroethene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Tetrahydrofuran (THF)	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
Toluene	<10.9	10.9	ug/L	Y1		12/10/18 1556	MRB
1,2,4-Trichlorobenzene	<21.8	21.8	ug/L	Y1		12/10/18 1556	MRB
1,2,3-Trichlorobenzene	<21.8	21.8	ug/L	Y1		12/10/18 1556	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW8-S2B		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-02	**Collection Date:**	11/27/2018 12:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
1,1,2-Trichloroethane	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
Trichloroethene	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Trichlorofluoromethane (Freon 11)	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
1,2,3-Trichloropropane	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
1,3,5-Trimethylbenzene	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
1,2,4-Trimethylbenzene	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
Vinyl chloride	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
m,p-Xylene	<21.8	21.8	ug/L	**Y1**		12/10/18 1556	MRB
o-Xylene	<10.9	10.9	ug/L	**Y1**		12/10/18 1556	MRB
Surrogate: 4-Bromofluorobenzene	110	Limit: 70-130	% Rec			12/10/18 1556	MRB
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 70-130	% Rec			12/10/18 1556	MRB
Surrogate: Toluene-d8	98.3	Limit: 70-130	% Rec			12/10/18 1556	MRB

Client Sample ID:	B11-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-03	**Collection Date:**	11/27/2018 13:00

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**88.0**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**M3,Y1**	12/07/18 1146	12/10/18 1835	NJP
Arsenic	**6.60**	0.284	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1835	NJP
Beryllium	**0.254**	0.0568	mg/kg dry	**R3,Y1**	12/07/18 1146	12/10/18 1835	NJP
Cadmium	**0.215**	0.114	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1835	NJP
Chromium	**50.6**	0.114	mg/kg dry	**M3,Y1**	12/07/18 1146	12/10/18 1835	NJP
Copper	**31.1**	0.114	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1835	NJP
Lead	**47.6**	0.170	mg/kg dry	**M3,Y1**	12/07/18 1146	12/10/18 1835	NJP
Nickel	**10.6**	0.284	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1835	NJP
Selenium	<0.284	0.284	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1835	NJP
Silver	**4.12**	0.114	mg/kg dry	**R1,Y1**	12/07/18 1146	12/10/18 1835	NJP
Thallium	<0.284	0.284	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2037	NJP
Zinc	**69.7**	0.284	mg/kg dry	**M3,Y1**	12/07/18 1146	12/10/18 1835	NJP
Method: EPA 7471B							
Mercury	**0.347**	0.0375	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1624	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1427	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1427	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1427	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1427	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1427	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1427	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1427	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	172	Limit: 30-150	% Rec	**M, S1**	12/07/18 1200	12/12/18 1427	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	50.0	Limit: 30-150	% Rec		12/07/18 1200	12/12/18 1427	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**425**	45.2	mg/kg dry	**Y1**	12/05/18 1130	12/06/18 1231	CDT
Surrogate: 1-Chlorooctadecane	75.4	Limit: 25-125	% Rec		12/05/18 1130	12/06/18 1231	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	B11-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-03	**Collection Date:**	11/27/2018 13:00

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	**617**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Acenaphthylene	<375	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Anthracene	**1640**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Benzo[a]anthracene	**3670**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Benzo[a]pyrene	**3600**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Benzo[b]fluoranthene	**4660**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Benzo[g,h,i]perylene	**1460**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Benzo[k]fluoranthene	**1520**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Chrysene	**3230**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Dibenz(a,h) anthracene	**401**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Fluoranthene	**7260**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Fluorene	**681**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Indeno(1,2,3-cd) pyrene	**1610**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
2-Methylnaphthalene	<375	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Naphthalene	<375	375	ug/kg dry	**Y**	12/03/18 1100	12/04/18 1928	CDT
Phenanthrene	**6580**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Pyrene	**6860**	375	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1928	CDT
Surrogate: 2-Fluorobiphenyl	45.4	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1928	CDT
Surrogate: 2-Fluorophenol	32.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1928	CDT
Surrogate: Nitrobenzene-d5	31.4	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1928	CDT
Surrogate: Phenol-d6	38.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1928	CDT
Surrogate: p-Terphenyl-d14	69.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1928	CDT
Surrogate: 2,4,6-Tribromophenol	31.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1928	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<107	107	ug/L	**Y1**		12/10/18 1622	MRB
Acrylonitrile	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Benzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Bromobenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Bromochloromethane	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Bromodichloromethane	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Bromoform	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Bromomethane	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
2-Butanone (MEK)	<107	107	ug/L	**Y1**		12/10/18 1622	MRB
sec-Butylbenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
tert-Butylbenzene	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
n-Butylbenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Carbon disulfide	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
Carbon tetrachloride	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Chlorobenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Chloroethane (Ethyl chloride)	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B11-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-03	**Collection Date:**	11/27/2018 13:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Chloromethane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
2-Chlorotoluene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
4-Chlorotoluene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<4.28	4.28	ug/L	Y1		12/10/18 1622	MRB
Dibromochloromethane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.07	1.07	ug/L	Y1		12/10/18 1622	MRB
Dibromomethane (Methylene bromide)	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
trans-1,4-Dichloro-2-butene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,4-Dichlorobenzene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,3-Dichlorobenzene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,2-Dichlorobenzene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Dichlorodifluoromethane (Freon-12)	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,2-Dichloroethane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,1-Dichloroethane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
trans-1,2-Dichloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,1-Dichloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
cis-1,2-Dichloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,3-Dichloropropane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,2-Dichloropropane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
2,2-Dichloropropane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
trans-1,3-Dichloropropene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
cis-1,3-Dichloropropene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,1-Dichloropropene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Diethyl ether	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,4-Dioxane	<428	428	ug/L	Y1		12/10/18 1622	MRB
Ethylbenzene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Hexachlorobutadiene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
2-Hexanone (MBK)	<107	107	ug/L	Y1		12/10/18 1622	MRB
Isopropylbenzene (Cumene)	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Methyl tert-butyl ether (MTBE)	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Methylene chloride (Dichloromethane)	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
4-Methyl-2-pentanone (MIBK)	<107	107	ug/L	Y1		12/10/18 1622	MRB
Naphthalene	**169**	10.7	ug/L	Q8,Y1		12/10/18 1622	MRB
n-Propylbenzene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Styrene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,1,1,2-Tetrachloroethane	<21.4	21.4	ug/L	Y1		12/10/18 1622	MRB
1,1,2,2-Tetrachloroethane	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Tetrachloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Tetrahydrofuran (THF)	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
Toluene	<10.7	10.7	ug/L	Y1		12/10/18 1622	MRB
1,2,4-Trichlorobenzene	<21.4	21.4	ug/L	Y1		12/10/18 1622	MRB
1,2,3-Trichlorobenzene	<21.4	21.4	ug/L	Y1		12/10/18 1622	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B11-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-03	**Collection Date:**	11/27/2018 13:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
1,1,2-Trichloroethane	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
Trichloroethene	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Trichlorofluoromethane (Freon 11)	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
1,2,3-Trichloropropane	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
1,3,5-Trimethylbenzene	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
1,2,4-Trimethylbenzene	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
Vinyl chloride	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
m,p-Xylene	<21.4	21.4	ug/L	**Y1**		12/10/18 1622	MRB
o-Xylene	<10.7	10.7	ug/L	**Y1**		12/10/18 1622	MRB
Surrogate: 4-Bromofluorobenzene	110	Limit: 70-130	% Rec			12/10/18 1622	MRB
Surrogate: 1,2-Dichloroethane-d4	104	Limit: 70-130	% Rec			12/10/18 1622	MRB
Surrogate: Toluene-d8	96.4	Limit: 70-130	% Rec			12/10/18 1622	MRB

Client Sample ID:	B-10		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-04	**Collection Date:**	11/27/2018 13:45

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**41.8**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Arsenic	**0.721**	0.598	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Beryllium	<0.120	0.120	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Cadmium	<0.239	0.239	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Chromium	**12.6**	0.239	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Copper	**35800**	239	mg/kg dry	**Y1**	12/07/18 1146	12/11/18 1932	NJP
Lead	**15.9**	0.359	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Nickel	**41.7**	0.598	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Selenium	<0.598	0.598	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Silver	**3.72**	0.239	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1904	NJP
Thallium	<0.598	0.598	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2103	NJP
Zinc	**10800**	120	mg/kg dry	**Y1**	12/07/18 1146	12/11/18 1935	NJP
Method: EPA 7471B							
Mercury	<0.0789	0.0789	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1632	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<23.9	23.9	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1712	MRB
Aroclor-1221 (PCB-1221) [2C]	<23.9	23.9	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1712	MRB
Aroclor-1232 (PCB-1232) [2C]	<23.9	23.9	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1712	MRB
Aroclor-1242 (PCB-1242) [2C]	<23.9	23.9	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1712	MRB
Aroclor-1248 (PCB-1248) [2C]	<23.9	23.9	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1712	MRB
Aroclor-1254 (PCB-1254) [2C]	<23.9	23.9	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1712	MRB
Aroclor-1260 (PCB-1260) [2C]	<23.9	23.9	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1712	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	57.0	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1712	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	30.7	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1712	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**3670**	238	mg/kg dry	**Y1**	12/05/18 1130	12/06/18 1415	CDT
Surrogate: 1-Chlorooctadecane	42.5	Limit: 25-125	% Rec		12/05/18 1130	12/06/18 1415	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	B-10		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-04	**Collection Date:**	11/27/2018 13:45

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Acenaphthylene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Anthracene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Benzo[a]anthracene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Benzo[a]pyrene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Benzo[b]fluoranthene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Benzo[g,h,i]perylene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Benzo[k]fluoranthene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Chrysene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Dibenz(a,h) anthracene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Fluoranthene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Fluorene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Indeno(1,2,3-cd) pyrene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
2-Methylnaphthalene	**4200**	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Naphthalene	**1010**	394	ug/kg dry	**Y**	12/03/18 1100	12/05/18 1835	CDT
Phenanthrene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Pyrene	<394	394	ug/kg dry	**Y1**	12/03/18 1100	12/05/18 1835	CDT
Surrogate: 2-Fluorobiphenyl	13.2	Limit: 30-130	% Rec	**S2**	12/03/18 1100	12/05/18 1835	CDT
Surrogate: 2-Fluorophenol	10.0	Limit: 30-130	% Rec	**S2**	12/03/18 1100	12/05/18 1835	CDT
Surrogate: Nitrobenzene-d5	20.5	Limit: 30-130	% Rec	**S2**	12/03/18 1100	12/05/18 1835	CDT
Surrogate: Phenol-d6	12.3	Limit: 30-130	% Rec	**S2**	12/03/18 1100	12/05/18 1835	CDT
Surrogate: p-Terphenyl-d14	15.9	Limit: 30-130	% Rec	**S2**	12/03/18 1100	12/05/18 1835	CDT
Surrogate: 2,4,6-Tribromophenol	5.40	Limit: 30-130	% Rec	**S2**	12/03/18 1100	12/05/18 1835	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<125	125	ug/L	**Y1**		12/10/18 1648	MRB
Acrylonitrile	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Benzene	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Bromobenzene	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Bromochloromethane	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Bromodichloromethane	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Bromoform	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Bromomethane	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
2-Butanone (MEK)	<125	125	ug/L	**Y1**		12/10/18 1648	MRB
sec-Butylbenzene	**80.5**	12.5	ug/L	**Y1**		12/10/18 1648	MRB
tert-Butylbenzene	<25.1	25.1	ug/L	**Y1**		12/10/18 1648	MRB
n-Butylbenzene	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Carbon disulfide	<25.1	25.1	ug/L	**Y1**		12/10/18 1648	MRB
Carbon tetrachloride	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Chlorobenzene	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Chloroethane (Ethyl chloride)	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID: B-10
Sample Matrix: Solid
Lab Sample ID: D8K2844-04
Collected By: Rowan Hayes
Collection Date: 11/27/2018 13:45

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
Chloromethane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
2-Chlorotoluene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
4-Chlorotoluene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<5.02	5.02	ug/L	Y1		12/10/18 1648	MRB
Dibromochloromethane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.25	1.25	ug/L	Y1		12/10/18 1648	MRB
Dibromomethane (Methylene bromide)	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
trans-1,4-Dichloro-2-butene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,4-Dichlorobenzene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,3-Dichlorobenzene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,2-Dichlorobenzene	**30.1**	12.5	ug/L	Y1		12/10/18 1648	MRB
Dichlorodifluoromethane (Freon-12)	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,2-Dichloroethane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,1-Dichloroethane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
trans-1,2-Dichloroethene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,1-Dichloroethene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
cis-1,2-Dichloroethene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,3-Dichloropropane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,2-Dichloropropane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
2,2-Dichloropropane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
trans-1,3-Dichloropropene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
cis-1,3-Dichloropropene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,1-Dichloropropene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
Diethyl ether	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,4-Dioxane	<502	502	ug/L	Y1		12/10/18 1648	MRB
Ethylbenzene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
Hexachlorobutadiene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
2-Hexanone (MBK)	<125	125	ug/L	Y1		12/10/18 1648	MRB
Isopropylbenzene (Cumene)	**76.2**	12.5	ug/L	Y1		12/10/18 1648	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	**71.0**	12.5	ug/L	Y1		12/10/18 1648	MRB
Methyl tert-butyl ether (MTBE)	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
Methylene chloride (Dichloromethane)	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
4-Methyl-2-pentanone (MIBK)	<125	125	ug/L	Y1		12/10/18 1648	MRB
Naphthalene	**182**	12.5	ug/L	Q8,Y1		12/10/18 1648	MRB
n-Propylbenzene	**151**	12.5	ug/L	Y1		12/10/18 1648	MRB
Styrene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
1,1,1,2-Tetrachloroethane	<25.1	25.1	ug/L	Y1		12/10/18 1648	MRB
1,1,2,2-Tetrachloroethane	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
Tetrachloroethene	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
Tetrahydrofuran (THF)	<12.5	12.5	ug/L	Y1		12/10/18 1648	MRB
Toluene	**184**	12.5	ug/L	Y1		12/10/18 1648	MRB
1,2,4-Trichlorobenzene	<25.1	25.1	ug/L	Y1		12/10/18 1648	MRB
1,2,3-Trichlorobenzene	<25.1	25.1	ug/L	Y1		12/10/18 1648	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B-10		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-04	**Collection Date:**	11/27/2018 13:45

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<25.1	25.1	ug/L	**Y1**		12/10/18 1648	MRB
1,1,2-Trichloroethane	<25.1	25.1	ug/L	**Y1**		12/10/18 1648	MRB
Trichloroethene	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Trichlorofluoromethane (Freon 11)	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
1,2,3-Trichloropropane	<25.1	25.1	ug/L	**Y1**		12/10/18 1648	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<25.1	25.1	ug/L	**Y1**		12/10/18 1648	MRB
1,3,5-Trimethylbenzene	**281**	25.1	ug/L	**Y1**		12/10/18 1648	MRB
1,2,4-Trimethylbenzene	**967**	25.1	ug/L	**Y1**		12/10/18 1648	MRB
Vinyl chloride	<12.5	12.5	ug/L	**Y1**		12/10/18 1648	MRB
m,p-Xylene	**307**	25.1	ug/L	**Y1**		12/10/18 1648	MRB
o-Xylene	**191**	12.5	ug/L	**Y1**		12/10/18 1648	MRB
Surrogate: 4-Bromofluorobenzene	108	Limit: 70-130	% Rec			12/10/18 1648	MRB
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 70-130	% Rec			12/10/18 1648	MRB
Surrogate: Toluene-d8	96.8	Limit: 70-130	% Rec			12/10/18 1648	MRB

Client Sample ID:	B7-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-05	**Collection Date:**	11/27/2018 14:45

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**89.6**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Arsenic	**10.6**	0.279	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Beryllium	**0.102**	0.0558	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Cadmium	**0.479**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Chromium	**19.9**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Copper	**55.5**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Lead	**30.0**	0.167	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Nickel	**21.6**	0.279	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Selenium	<0.279	0.279	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Silver	**0.344**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Thallium	<0.279	0.279	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2106	NJP
Zinc	**79.5**	0.279	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1907	NJP
Method: EPA 7471B							
Mercury	<0.0368	0.0368	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1634	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1723	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1723	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1723	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1723	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1723	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1723	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1723	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	68.7	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1723	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	52.8	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1723	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**271**	11.1	mg/kg dry	**Y1**	12/05/18 1130	12/06/18 1139	CDT
Surrogate: 1-Chlorooctadecane	78.3	Limit: 25-125	% Rec		12/05/18 1130	12/06/18 1139	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	B7-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-05	**Collection Date:**	11/27/2018 14:45

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<368	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Acenaphthylene	<368	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Anthracene	<368	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Benzo[a]anthracene	**2000**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Benzo[a]pyrene	**2080**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Benzo[b]fluoranthene	**4060**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Benzo[g,h,i]perylene	**1520**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Benzo[k]fluoranthene	**1430**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Chrysene	**2680**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Dibenz(a,h) anthracene	**632**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Fluoranthene	**2090**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Fluorene	<368	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Indeno(1,2,3-cd) pyrene	**1610**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
2-Methylnaphthalene	<368	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Naphthalene	<368	368	ug/kg dry	**Y**	12/03/18 1100	12/04/18 1758	CDT
Phenanthrene	<368	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Pyrene	**2010**	368	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1758	CDT
Surrogate: 2-Fluorobiphenyl	58.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1758	CDT
Surrogate: 2-Fluorophenol	48.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1758	CDT
Surrogate: Nitrobenzene-d5	49.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1758	CDT
Surrogate: Phenol-d6	49.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1758	CDT
Surrogate: p-Terphenyl-d14	74.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1758	CDT
Surrogate: 2,4,6-Tribromophenol	65.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1758	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<124	124	ug/L	**Y1**		12/10/18 1714	MRB
Acrylonitrile	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Benzene	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Bromobenzene	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Bromochloromethane	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Bromodichloromethane	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Bromoform	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Bromomethane	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
2-Butanone (MEK)	<124	124	ug/L	**Y1**		12/10/18 1714	MRB
sec-Butylbenzene	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
tert-Butylbenzene	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
n-Butylbenzene	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Carbon disulfide	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
Carbon tetrachloride	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Chlorobenzene	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Chloroethane (Ethyl chloride)	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B7-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-05	**Collection Date:**	11/27/2018 14:45

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Chloromethane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
2-Chlorotoluene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
4-Chlorotoluene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<4.95	4.95	ug/L	Y1		12/10/18 1714	MRB
Dibromochloromethane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.24	1.24	ug/L	Y1		12/10/18 1714	MRB
Dibromomethane (Methylene bromide)	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
trans-1,4-Dichloro-2-butene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,4-Dichlorobenzene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,3-Dichlorobenzene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,2-Dichlorobenzene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Dichlorodifluoromethane (Freon-12)	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,2-Dichloroethane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,1-Dichloroethane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
trans-1,2-Dichloroethene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,1-Dichloroethene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
cis-1,2-Dichloroethene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,3-Dichloropropane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,2-Dichloropropane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
2,2-Dichloropropane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
trans-1,3-Dichloropropene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
cis-1,3-Dichloropropene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,1-Dichloropropene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Diethyl ether	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,4-Dioxane	<495	495	ug/L	Y1		12/10/18 1714	MRB
Ethylbenzene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Hexachlorobutadiene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
2-Hexanone (MBK)	<124	124	ug/L	Y1		12/10/18 1714	MRB
Isopropylbenzene (Cumene)	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Methyl tert-butyl ether (MTBE)	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Methylene chloride (Dichloromethane)	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
4-Methyl-2-pentanone (MIBK)	<124	124	ug/L	Y1		12/10/18 1714	MRB
Naphthalene	**13.8**	12.4	ug/L	Q8,Y1		12/10/18 1714	MRB
n-Propylbenzene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Styrene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,1,1,2-Tetrachloroethane	<24.7	24.7	ug/L	Y1		12/10/18 1714	MRB
1,1,2,2-Tetrachloroethane	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Tetrachloroethene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Tetrahydrofuran (THF)	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
Toluene	<12.4	12.4	ug/L	Y1		12/10/18 1714	MRB
1,2,4-Trichlorobenzene	<24.7	24.7	ug/L	Y1		12/10/18 1714	MRB
1,2,3-Trichlorobenzene	<24.7	24.7	ug/L	Y1		12/10/18 1714	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B7-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-05	**Collection Date:**	11/27/2018 14:45

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
1,1,2-Trichloroethane	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
Trichloroethene	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Trichlorofluoromethane (Freon 11)	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
1,2,3-Trichloropropane	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
1,3,5-Trimethylbenzene	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
1,2,4-Trimethylbenzene	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
Vinyl chloride	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
m,p-Xylene	<24.7	24.7	ug/L	**Y1**		12/10/18 1714	MRB
o-Xylene	<12.4	12.4	ug/L	**Y1**		12/10/18 1714	MRB
Surrogate: 4-Bromofluorobenzene	111	Limit: 70-130	% Rec			12/10/18 1714	MRB
Surrogate: 1,2-Dichloroethane-d4	104	Limit: 70-130	% Rec			12/10/18 1714	MRB
Surrogate: Toluene-d8	94.2	Limit: 70-130	% Rec			12/10/18 1714	MRB

Client Sample ID:	B3-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-06	**Collection Date:**	11/27/2018 15:00

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**85.6**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Arsenic	**8.03**	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Beryllium	**0.0922**	0.0584	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Cadmium	**0.328**	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Chromium	**17.9**	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Copper	**45.4**	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Lead	**9.90**	0.175	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Nickel	**9.40**	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Selenium	<0.292	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Silver	<0.117	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Thallium	**0.543**	0.292	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2109	NJP
Zinc	**19.8**	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1910	NJP
Method: EPA 7471B							
Mercury	<0.0386	0.0386	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1613	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.6	11.6	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1735	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.6	11.6	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1735	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.6	11.6	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1735	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.6	11.6	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1735	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.6	11.6	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1735	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.6	11.6	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1735	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.6	11.6	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1735	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	58.9	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1735	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	56.9	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1735	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**35.8**	11.6	mg/kg dry	**Y1**	12/05/18 1130	12/06/18 1113	CDT
Surrogate: 1-Chlorooctadecane	75.5	Limit: 25-125	% Rec		12/05/18 1130	12/06/18 1113	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	B3-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-06	**Collection Date:**	11/27/2018 15:00

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Acenaphthylene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Anthracene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Benzo[a]anthracene	**123**	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Benzo[a]pyrene	**124**	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Benzo[b]fluoranthene	**150**	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Benzo[g,h,i]perylene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Benzo[k]fluoranthene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Chrysene	**119**	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Dibenz(a,h) anthracene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Fluoranthene	**176**	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Fluorene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Indeno(1,2,3-cd) pyrene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
2-Methylnaphthalene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Naphthalene	<76.9	76.9	ug/kg dry	**Y**	12/03/18 1100	12/04/18 1542	CDT
Phenanthrene	<76.9	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Pyrene	**178**	76.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1542	CDT
Surrogate: 2-Fluorobiphenyl	56.4	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1542	CDT
Surrogate: 2-Fluorophenol	53.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1542	CDT
Surrogate: Nitrobenzene-d5	52.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1542	CDT
Surrogate: Phenol-d6	55.7	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1542	CDT
Surrogate: p-Terphenyl-d14	69.0	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1542	CDT
Surrogate: 2,4,6-Tribromophenol	61.9	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1542	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<128	128	ug/L	**Y1**		12/10/18 1740	MRB
Acrylonitrile	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Benzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Bromobenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Bromochloromethane	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Bromodichloromethane	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Bromoform	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Bromomethane	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
2-Butanone (MEK)	<128	128	ug/L	**Y1**		12/10/18 1740	MRB
sec-Butylbenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
tert-Butylbenzene	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
n-Butylbenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Carbon disulfide	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
Carbon tetrachloride	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Chlorobenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Chloroethane (Ethyl chloride)	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B3-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-06	**Collection Date:**	11/27/2018 15:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Chloromethane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
2-Chlorotoluene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
4-Chlorotoluene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<5.14	5.14	ug/L	Y1		12/10/18 1740	MRB
Dibromochloromethane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.28	1.28	ug/L	Y1		12/10/18 1740	MRB
Dibromomethane (Methylene bromide)	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
trans-1,4-Dichloro-2-butene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,4-Dichlorobenzene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,3-Dichlorobenzene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,2-Dichlorobenzene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Dichlorodifluoromethane (Freon-12)	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,2-Dichloroethane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,1-Dichloroethane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
trans-1,2-Dichloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,1-Dichloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
cis-1,2-Dichloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,3-Dichloropropane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,2-Dichloropropane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
2,2-Dichloropropane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
trans-1,3-Dichloropropene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
cis-1,3-Dichloropropene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,1-Dichloropropene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Diethyl ether	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,4-Dioxane	<514	514	ug/L	Y1		12/10/18 1740	MRB
Ethylbenzene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Hexachlorobutadiene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
2-Hexanone (MBK)	<128	128	ug/L	Y1		12/10/18 1740	MRB
Isopropylbenzene (Cumene)	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Methyl tert-butyl ether (MTBE)	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Methylene chloride (Dichloromethane)	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
4-Methyl-2-pentanone (MIBK)	<128	128	ug/L	Y1		12/10/18 1740	MRB
Naphthalene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
n-Propylbenzene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Styrene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,1,1,2-Tetrachloroethane	<25.7	25.7	ug/L	Y1		12/10/18 1740	MRB
1,1,2,2-Tetrachloroethane	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Tetrachloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Tetrahydrofuran (THF)	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
Toluene	<12.8	12.8	ug/L	Y1		12/10/18 1740	MRB
1,2,4-Trichlorobenzene	<25.7	25.7	ug/L	Y1		12/10/18 1740	MRB
1,2,3-Trichlorobenzene	<25.7	25.7	ug/L	Y1		12/10/18 1740	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B3-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-06	**Collection Date:**	11/27/2018 15:00

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
1,1,2-Trichloroethane	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
Trichloroethene	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Trichlorofluoromethane (Freon 11)	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
1,2,3-Trichloropropane	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
1,3,5-Trimethylbenzene	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
1,2,4-Trimethylbenzene	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
Vinyl chloride	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
m,p-Xylene	<25.7	25.7	ug/L	**Y1**		12/10/18 1740	MRB
o-Xylene	<12.8	12.8	ug/L	**Y1**		12/10/18 1740	MRB
Surrogate: 4-Bromofluorobenzene	110	Limit: 70-130	% Rec			12/10/18 1740	MRB
Surrogate: 1,2-Dichloroethane-d4	104	Limit: 70-130	% Rec			12/10/18 1740	MRB
Surrogate: Toluene-d8	100	Limit: 70-130	% Rec			12/10/18 1740	MRB

Client Sample ID:	B2-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-07	**Collection Date:**	11/27/2018 15:15

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**81.4**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Arsenic	**10.1**	0.307	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Beryllium	<0.0614	0.0614	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Cadmium	**0.603**	0.123	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Chromium	**33.9**	0.123	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Copper	**42.8**	0.123	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Lead	**20.9**	0.184	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Nickel	**25.0**	0.307	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Selenium	<0.307	0.307	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Silver	**0.137**	0.123	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Thallium	**0.611**	0.307	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2112	NJP
Zinc	**36.9**	0.307	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1914	NJP
Method: EPA 7471B							
Mercury	**0.0984**	0.0405	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1637	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<12.2	12.2	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1504	MRB
Aroclor-1221 (PCB-1221) [2C]	<12.2	12.2	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1504	MRB
Aroclor-1232 (PCB-1232) [2C]	<12.2	12.2	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1504	MRB
Aroclor-1242 (PCB-1242) [2C]	<12.2	12.2	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1504	MRB
Aroclor-1248 (PCB-1248) [2C]	<12.2	12.2	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1504	MRB
Aroclor-1254 (PCB-1254) [2C]	<12.2	12.2	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1504	MRB
Aroclor-1260 (PCB-1260) [2C]	<12.2	12.2	ug/kg dry	**Y1**	12/07/18 1200	12/12/18 1504	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	77.2	Limit: 30-150	% Rec		12/07/18 1200	12/12/18 1504	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	58.3	Limit: 30-150	% Rec		12/07/18 1200	12/12/18 1504	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**41.2**	12.3	mg/kg dry	**Y1**	12/06/18 1040	12/07/18 1612	CDT
Surrogate: 1-Chlorooctadecane	62.5	Limit: 25-125	% Rec		12/06/18 1040	12/07/18 1612	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	B2-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-07	**Collection Date:**	11/27/2018 15:15

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Acenaphthylene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Anthracene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Benzo[a]anthracene	**106**	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Benzo[a]pyrene	**93.2**	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Benzo[b]fluoranthene	**137**	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Benzo[g,h,i]perylene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Benzo[k]fluoranthene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Chrysene	**104**	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Dibenz(a,h) anthracene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Fluoranthene	**182**	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Fluorene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Indeno(1,2,3-cd) pyrene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
2-Methylnaphthalene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Naphthalene	<80.9	80.9	ug/kg dry	**Y**	12/03/18 1100	12/04/18 1617	CDT
Phenanthrene	<80.9	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Pyrene	**168**	80.9	ug/kg dry	**Y1**	12/03/18 1100	12/04/18 1617	CDT
Surrogate: 2-Fluorobiphenyl	55.4	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1617	CDT
Surrogate: 2-Fluorophenol	52.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1617	CDT
Surrogate: Nitrobenzene-d5	49.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1617	CDT
Surrogate: Phenol-d6	52.4	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1617	CDT
Surrogate: p-Terphenyl-d14	66.2	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1617	CDT
Surrogate: 2,4,6-Tribromophenol	59.6	Limit: 30-130	% Rec		12/03/18 1100	12/04/18 1617	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<107	107	ug/L	**Y1**		12/10/18 1806	MRB
Acrylonitrile	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Benzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Bromobenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Bromochloromethane	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Bromodichloromethane	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Bromoform	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Bromomethane	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
2-Butanone (MEK)	<107	107	ug/L	**Y1**		12/10/18 1806	MRB
sec-Butylbenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
tert-Butylbenzene	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
n-Butylbenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Carbon disulfide	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
Carbon tetrachloride	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Chlorobenzene	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Chloroethane (Ethyl chloride)	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B2-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-07	**Collection Date:**	11/27/2018 15:15

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Chloromethane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
2-Chlorotoluene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
4-Chlorotoluene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<4.30	4.30	ug/L	Y1		12/10/18 1806	MRB
Dibromochloromethane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.07	1.07	ug/L	Y1		12/10/18 1806	MRB
Dibromomethane (Methylene bromide)	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
trans-1,4-Dichloro-2-butene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,4-Dichlorobenzene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,3-Dichlorobenzene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,2-Dichlorobenzene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Dichlorodifluoromethane (Freon-12)	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,2-Dichloroethane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,1-Dichloroethane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
trans-1,2-Dichloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,1-Dichloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
cis-1,2-Dichloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,3-Dichloropropane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,2-Dichloropropane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
2,2-Dichloropropane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
trans-1,3-Dichloropropene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
cis-1,3-Dichloropropene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,1-Dichloropropene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Diethyl ether	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,4-Dioxane	<430	430	ug/L	Y1		12/10/18 1806	MRB
Ethylbenzene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Hexachlorobutadiene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
2-Hexanone (MBK)	<107	107	ug/L	Y1		12/10/18 1806	MRB
Isopropylbenzene (Cumene)	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Methyl tert-butyl ether (MTBE)	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Methylene chloride (Dichloromethane)	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
4-Methyl-2-pentanone (MIBK)	<107	107	ug/L	Y1		12/10/18 1806	MRB
Naphthalene	**11.6**	10.7	ug/L	Q8,Y1		12/10/18 1806	MRB
n-Propylbenzene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Styrene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,1,1,2-Tetrachloroethane	<21.5	21.5	ug/L	Y1		12/10/18 1806	MRB
1,1,2,2-Tetrachloroethane	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Tetrachloroethene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Tetrahydrofuran (THF)	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
Toluene	<10.7	10.7	ug/L	Y1		12/10/18 1806	MRB
1,2,4-Trichlorobenzene	<21.5	21.5	ug/L	Y1		12/10/18 1806	MRB
1,2,3-Trichlorobenzene	<21.5	21.5	ug/L	Y1		12/10/18 1806	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B2-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-07	**Collection Date:**	11/27/2018 15:15

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
1,1,2-Trichloroethane	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
Trichloroethene	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Trichlorofluoromethane (Freon 11)	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
1,2,3-Trichloropropane	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
1,3,5-Trimethylbenzene	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
1,2,4-Trimethylbenzene	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
Vinyl chloride	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
m,p-Xylene	<21.5	21.5	ug/L	**Y1**		12/10/18 1806	MRB
o-Xylene	<10.7	10.7	ug/L	**Y1**		12/10/18 1806	MRB
Surrogate: 4-Bromofluorobenzene	107	Limit: 70-130	% Rec			12/10/18 1806	MRB
Surrogate: 1,2-Dichloroethane-d4	97.4	Limit: 70-130	% Rec			12/10/18 1806	MRB
Surrogate: Toluene-d8	98.6	Limit: 70-130	% Rec			12/10/18 1806	MRB

Client Sample ID:	B5-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-08	**Collection Date:**	11/27/2018 15:30

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**87.4**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Arsenic	**7.97**	0.286	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Beryllium	**0.108**	0.0572	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Cadmium	**0.399**	0.114	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Chromium	**14.4**	0.114	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Copper	**54.9**	0.114	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Lead	**21.2**	0.172	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Nickel	**15.7**	0.286	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Selenium	<0.286	0.286	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Silver	<0.114	0.114	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Thallium	**0.594**	0.286	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2115	NJP
Zinc	**34.4**	0.286	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1917	NJP
Method: EPA 7471B							
Mercury	**0.197**	0.0378	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1639	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1822	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1822	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1822	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1822	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1822	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1822	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.4	11.4	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1822	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	62.7	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1822	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	50.7	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1822	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**241**	11.4	mg/kg dry	**Y1**	12/05/18 1130	12/06/18 1205	CDT
Surrogate: 1-Chlorooctadecane	75.0	Limit: 25-125	% Rec		12/05/18 1130	12/06/18 1205	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	B5-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-08	**Collection Date:**	11/27/2018 15:30

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<377	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Acenaphthylene	<377	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Anthracene	**415**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Benzo[a]anthracene	**1280**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Benzo[a]pyrene	**1540**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Benzo[b]fluoranthene	**1880**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Benzo[g,h,i]perylene	**781**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Benzo[k]fluoranthene	**712**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Chrysene	**1320**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Dibenz(a,h) anthracene	<377	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Fluoranthene	**2850**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Fluorene	<377	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Indeno(1,2,3-cd) pyrene	**838**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
2-Methylnaphthalene	<377	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Naphthalene	<377	377	ug/kg dry	**Y**	12/04/18 1100	12/04/18 1829	CDT
Phenanthrene	**2030**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Pyrene	**2910**	377	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1829	CDT
Surrogate: 2-Fluorobiphenyl	61.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1829	CDT
Surrogate: 2-Fluorophenol	55.6	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1829	CDT
Surrogate: Nitrobenzene-d5	55.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1829	CDT
Surrogate: Phenol-d6	58.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1829	CDT
Surrogate: p-Terphenyl-d14	73.0	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1829	CDT
Surrogate: 2,4,6-Tribromophenol	65.6	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1829	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<128	128	ug/L	**Y1**		12/10/18 1831	MRB
Acrylonitrile	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Benzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Bromobenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Bromochloromethane	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Bromodichloromethane	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Bromoform	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Bromomethane	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
2-Butanone (MEK)	<128	128	ug/L	**Y1**		12/10/18 1831	MRB
sec-Butylbenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
tert-Butylbenzene	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
n-Butylbenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Carbon disulfide	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
Carbon tetrachloride	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Chlorobenzene	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Chloroethane (Ethyl chloride)	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB

Client Sample ID:	B5-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-08	**Collection Date:**	11/27/2018 15:30

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Chloromethane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
2-Chlorotoluene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
4-Chlorotoluene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<5.11	5.11	ug/L	Y1		12/10/18 1831	MRB
Dibromochloromethane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.28	1.28	ug/L	Y1		12/10/18 1831	MRB
Dibromomethane (Methylene bromide)	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
trans-1,4-Dichloro-2-butene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,4-Dichlorobenzene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,3-Dichlorobenzene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,2-Dichlorobenzene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Dichlorodifluoromethane (Freon-12)	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,2-Dichloroethane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,1-Dichloroethane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
trans-1,2-Dichloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,1-Dichloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
cis-1,2-Dichloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,3-Dichloropropane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,2-Dichloropropane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
2,2-Dichloropropane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
trans-1,3-Dichloropropene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
cis-1,3-Dichloropropene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,1-Dichloropropene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Diethyl ether	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,4-Dioxane	<511	511	ug/L	Y1		12/10/18 1831	MRB
Ethylbenzene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Hexachlorobutadiene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
2-Hexanone (MBK)	<128	128	ug/L	Y1		12/10/18 1831	MRB
Isopropylbenzene (Cumene)	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Methyl tert-butyl ether (MTBE)	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Methylene chloride (Dichloromethane)	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
4-Methyl-2-pentanone (MIBK)	<128	128	ug/L	Y1		12/10/18 1831	MRB
Naphthalene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
n-Propylbenzene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Styrene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,1,1,2-Tetrachloroethane	<25.5	25.5	ug/L	Y1		12/10/18 1831	MRB
1,1,2,2-Tetrachloroethane	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Tetrachloroethene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Tetrahydrofuran (THF)	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
Toluene	<12.8	12.8	ug/L	Y1		12/10/18 1831	MRB
1,2,4-Trichlorobenzene	<25.5	25.5	ug/L	Y1		12/10/18 1831	MRB
1,2,3-Trichlorobenzene	<25.5	25.5	ug/L	Y1		12/10/18 1831	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	B5-S2		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-08	**Collection Date:**	11/27/2018 15:30

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
1,1,2-Trichloroethane	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
Trichloroethene	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Trichlorofluoromethane (Freon 11)	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
1,2,3-Trichloropropane	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
1,3,5-Trimethylbenzene	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
1,2,4-Trimethylbenzene	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
Vinyl chloride	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
m,p-Xylene	<25.5	25.5	ug/L	**Y1**		12/10/18 1831	MRB
o-Xylene	<12.8	12.8	ug/L	**Y1**		12/10/18 1831	MRB
Surrogate: 4-Bromofluorobenzene	106	Limit: 70-130	% Rec			12/10/18 1831	MRB
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 70-130	% Rec			12/10/18 1831	MRB
Surrogate: Toluene-d8	97.1	Limit: 70-130	% Rec			12/10/18 1831	MRB

Client Sample ID:	MW3-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-09	**Collection Date:**	11/27/2018 16:30

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**85.5**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Arsenic	**14.7**	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Beryllium	**0.857**	0.0585	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Cadmium	**0.822**	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Chromium	**57.6**	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Copper	**176**	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Lead	**33.9**	0.175	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Nickel	**47.5**	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Selenium	<0.292	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Silver	**0.158**	0.117	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Thallium	<0.292	0.292	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2119	NJP
Zinc	**138**	0.292	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1920	NJP
Method: EPA 7471B							
Mercury	**0.251**	0.0386	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1642	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.7	11.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1834	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.7	11.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1834	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.7	11.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1834	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.7	11.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1834	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.7	11.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1834	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.7	11.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1834	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.7	11.7	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1834	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	76.7	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1834	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	67.6	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1834	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**518**	46.6	mg/kg dry	**Y1**	12/05/18 1130	12/06/18 1257	CDT
Surrogate: 1-Chlorooctadecane	78.3	Limit: 25-125	% Rec		12/05/18 1130	12/06/18 1257	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	MW3-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-09	**Collection Date:**	11/27/2018 16:30

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<385	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Acenaphthylene	<385	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Anthracene	<385	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Benzo[a]anthracene	**5770**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Benzo[a]pyrene	**6350**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Benzo[b]fluoranthene	**12300**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Benzo[g,h,i]perylene	**4960**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Benzo[k]fluoranthene	**4110**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Chrysene	**7800**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Dibenz(a,h) anthracene	**1320**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Fluoranthene	**8050**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Fluorene	<385	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Indeno(1,2,3-cd) pyrene	**5030**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
2-Methylnaphthalene	<385	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Naphthalene	<385	385	ug/kg dry	**Y**	12/04/18 1100	12/04/18 1859	CDT
Phenanthrene	**1820**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Pyrene	**8160**	385	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1859	CDT
Surrogate: 2-Fluorobiphenyl	55.2	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1859	CDT
Surrogate: 2-Fluorophenol	42.6	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1859	CDT
Surrogate: Nitrobenzene-d5	43.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1859	CDT
Surrogate: Phenol-d6	48.6	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1859	CDT
Surrogate: p-Terphenyl-d14	74.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1859	CDT
Surrogate: 2,4,6-Tribromophenol	65.6	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1859	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<100	100	ug/L	**Y1**		12/10/18 1857	MRB
Acrylonitrile	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Benzene	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Bromobenzene	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Bromochloromethane	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Bromodichloromethane	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Bromoform	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Bromomethane	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
2-Butanone (MEK)	<100	100	ug/L	**Y1**		12/10/18 1857	MRB
sec-Butylbenzene	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
tert-Butylbenzene	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
n-Butylbenzene	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Carbon disulfide	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
Carbon tetrachloride	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Chlorobenzene	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Chloroethane (Ethyl chloride)	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB

Client Sample ID:	MW3-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-09	**Collection Date:**	11/27/2018 16:30

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Chloromethane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
2-Chlorotoluene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
4-Chlorotoluene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<4.02	4.02	ug/L	Y1		12/10/18 1857	MRB
Dibromochloromethane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	Y1		12/10/18 1857	MRB
Dibromomethane (Methylene bromide)	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
trans-1,4-Dichloro-2-butene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,4-Dichlorobenzene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,3-Dichlorobenzene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,2-Dichlorobenzene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Dichlorodifluoromethane (Freon-12)	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,2-Dichloroethane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,1-Dichloroethane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
trans-1,2-Dichloroethene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,1-Dichloroethene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
cis-1,2-Dichloroethene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,3-Dichloropropane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,2-Dichloropropane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
2,2-Dichloropropane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
trans-1,3-Dichloropropene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
cis-1,3-Dichloropropene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,1-Dichloropropene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Diethyl ether	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,4-Dioxane	<402	402	ug/L	Y1		12/10/18 1857	MRB
Ethylbenzene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Hexachlorobutadiene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
2-Hexanone (MBK)	<100	100	ug/L	Y1		12/10/18 1857	MRB
Isopropylbenzene (Cumene)	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Methyl tert-butyl ether (MTBE)	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Methylene chloride (Dichloromethane)	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
4-Methyl-2-pentanone (MIBK)	<100	100	ug/L	Y1		12/10/18 1857	MRB
Naphthalene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
n-Propylbenzene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Styrene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,1,1,2-Tetrachloroethane	<20.1	20.1	ug/L	Y1		12/10/18 1857	MRB
1,1,2,2-Tetrachloroethane	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Tetrachloroethene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Tetrahydrofuran (THF)	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
Toluene	<10.0	10.0	ug/L	Y1		12/10/18 1857	MRB
1,2,4-Trichlorobenzene	<20.1	20.1	ug/L	Y1		12/10/18 1857	MRB
1,2,3-Trichlorobenzene	<20.1	20.1	ug/L	Y1		12/10/18 1857	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW3-S1		
Sample Matrix:	Solid	**Collected By:**	Rowan Hayes
Lab Sample ID:	D8K2844-09	**Collection Date:**	11/27/2018 16:30

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
1,1,2-Trichloroethane	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
Trichloroethene	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Trichlorofluoromethane (Freon 11)	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
1,2,3-Trichloropropane	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
1,3,5-Trimethylbenzene	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
1,2,4-Trimethylbenzene	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
Vinyl chloride	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
m,p-Xylene	<20.1	20.1	ug/L	**Y1**		12/10/18 1857	MRB
o-Xylene	<10.0	10.0	ug/L	**Y1**		12/10/18 1857	MRB
Surrogate: 4-Bromofluorobenzene	108	Limit: 70-130	% Rec			12/10/18 1857	MRB
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec			12/10/18 1857	MRB
Surrogate: Toluene-d8	95.6	Limit: 70-130	% Rec			12/10/18 1857	MRB

Client Sample ID:	MW-4 (0-2)		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-11	**Collection Date:**	11/28/2018 15:15

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**90.5**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Arsenic	**45.2**	0.276	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Beryllium	<0.0552	0.0552	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Cadmium	**2.06**	0.110	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Chromium	**74.8**	0.110	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Copper	**1630**	0.110	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Lead	**63.3**	0.166	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Nickel	**118**	0.276	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Selenium	<0.276	0.276	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Silver	**1.59**	0.110	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Thallium	**0.914**	0.276	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2122	NJP
Zinc	**39.2**	0.276	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1923	NJP
Method: EPA 7471B							
Mercury	**0.616**	0.0365	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1644	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.0	11.0	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1845	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.0	11.0	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1845	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.0	11.0	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1845	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.0	11.0	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1845	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.0	11.0	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1845	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.0	11.0	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1845	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.0	11.0	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1845	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	74.0	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1845	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	65.4	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1845	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**184**	11.0	mg/kg dry	**Y1**	12/06/18 1040	12/06/18 2118	CDT
Surrogate: 1-Chlorooctadecane	65.0	Limit: 25-125	% Rec		12/06/18 1040	12/06/18 2118	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	MW-4 (0-2)		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-11	**Collection Date:**	11/28/2018 15:15

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<364	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Acenaphthylene	<364	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Anthracene	<364	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Benzo[a]anthracene	**710**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Benzo[a]pyrene	**1280**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Benzo[b]fluoranthene	**1560**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Benzo[g,h,i]perylene	**500**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Benzo[k]fluoranthene	**640**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Chrysene	**897**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Dibenz(a,h) anthracene	<364	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Fluoranthene	**1180**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Fluorene	<364	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Indeno(1,2,3-cd) pyrene	**555**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
2-Methylnaphthalene	<364	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Naphthalene	<364	364	ug/kg dry	**Y**	12/04/18 1100	12/04/18 1958	CDT
Phenanthrene	<364	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Pyrene	**1140**	364	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 1958	CDT
Surrogate: 2-Fluorobiphenyl	51.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1958	CDT
Surrogate: 2-Fluorophenol	44.0	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1958	CDT
Surrogate: Nitrobenzene-d5	44.2	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1958	CDT
Surrogate: Phenol-d6	47.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1958	CDT
Surrogate: p-Terphenyl-d14	75.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1958	CDT
Surrogate: 2,4,6-Tribromophenol	63.2	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 1958	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<88.5	88.5	ug/L	**Y1**		12/10/18 1923	MRB
Acrylonitrile	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Benzene	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Bromobenzene	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Bromochloromethane	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Bromodichloromethane	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Bromoform	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Bromomethane	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
2-Butanone (MEK)	<88.5	88.5	ug/L	**Y1**		12/10/18 1923	MRB
sec-Butylbenzene	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
tert-Butylbenzene	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
n-Butylbenzene	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Carbon disulfide	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
Carbon tetrachloride	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Chlorobenzene	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Chloroethane (Ethyl chloride)	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW-4 (0-2)		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-11	**Collection Date:**	11/28/2018 15:15

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Chloromethane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
2-Chlorotoluene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
4-Chlorotoluene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<3.54	3.54	ug/L	Y1		12/10/18 1923	MRB
Dibromochloromethane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.00	1.00	ug/L	Y1		12/10/18 1923	MRB
Dibromomethane (Methylene bromide)	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
trans-1,4-Dichloro-2-butene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,4-Dichlorobenzene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,3-Dichlorobenzene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,2-Dichlorobenzene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Dichlorodifluoromethane (Freon-12)	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,2-Dichloroethane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,1-Dichloroethane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
trans-1,2-Dichloroethene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,1-Dichloroethene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
cis-1,2-Dichloroethene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,3-Dichloropropane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,2-Dichloropropane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
2,2-Dichloropropane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
trans-1,3-Dichloropropene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
cis-1,3-Dichloropropene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,1-Dichloropropene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Diethyl ether	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,4-Dioxane	<354	354	ug/L	Y1		12/10/18 1923	MRB
Ethylbenzene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Hexachlorobutadiene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
2-Hexanone (MBK)	<88.5	88.5	ug/L	Y1		12/10/18 1923	MRB
Isopropylbenzene (Cumene)	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Methyl tert-butyl ether (MTBE)	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Methylene chloride (Dichloromethane)	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
4-Methyl-2-pentanone (MIBK)	<88.5	88.5	ug/L	Y1		12/10/18 1923	MRB
Naphthalene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
n-Propylbenzene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Styrene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,1,1,2-Tetrachloroethane	<17.7	17.7	ug/L	Y1		12/10/18 1923	MRB
1,1,2,2-Tetrachloroethane	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Tetrachloroethene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Tetrahydrofuran (THF)	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
Toluene	<8.85	8.85	ug/L	Y1		12/10/18 1923	MRB
1,2,4-Trichlorobenzene	<17.7	17.7	ug/L	Y1		12/10/18 1923	MRB
1,2,3-Trichlorobenzene	<17.7	17.7	ug/L	Y1		12/10/18 1923	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW-4 (0-2)		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-11	**Collection Date:**	11/28/2018 15:15

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
1,1,2-Trichloroethane	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
Trichloroethene	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Trichlorofluoromethane (Freon 11)	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
1,2,3-Trichloropropane	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
1,3,5-Trimethylbenzene	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
1,2,4-Trimethylbenzene	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
Vinyl chloride	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
m,p-Xylene	<17.7	17.7	ug/L	**Y1**		12/10/18 1923	MRB
o-Xylene	<8.85	8.85	ug/L	**Y1**		12/10/18 1923	MRB
Surrogate: 4-Bromofluorobenzene	103	Limit: 70-130	% Rec			12/10/18 1923	MRB
Surrogate: 1,2-Dichloroethane-d4	104	Limit: 70-130	% Rec			12/10/18 1923	MRB
Surrogate: Toluene-d8	96.7	Limit: 70-130	% Rec			12/10/18 1923	MRB

Client Sample ID:	BD 11/28/28		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-12	**Collection Date:**	11/28/2018 15:16

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**89.3**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Arsenic	**17.3**	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Beryllium	<0.0560	0.0560	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Cadmium	**1.04**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Chromium	**35.7**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Copper	**418**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Lead	**36.7**	0.168	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Nickel	**40.1**	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Selenium	<0.280	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Silver	**0.402**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Thallium	**0.456**	0.280	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2125	NJP
Zinc	**88.0**	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1926	NJP
Method: EPA 7471B							
Mercury	**0.0452**	0.0370	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1647	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1857	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1857	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1857	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1857	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1857	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1857	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1857	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	65.4	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1857	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	54.1	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1857	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**417**	22.3	mg/kg dry	**Y1**	12/06/18 1040	12/07/18 1753	CDT
Surrogate: 1-Chlorooctadecane	69.2	Limit: 25-125	% Rec		12/06/18 1040	12/06/18 2306	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	BD 11/28/28		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-12	**Collection Date:**	11/28/2018 15:16

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Acenaphthylene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Anthracene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Benzo[a]anthracene	**1320**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Benzo[a]pyrene	**2580**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Benzo[b]fluoranthene	**3310**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Benzo[g,h,i]perylene	**1070**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Benzo[k]fluoranthene	**1170**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Chrysene	**1470**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Dibenz(a,h) anthracene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Fluoranthene	**1790**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Fluorene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Indeno(1,2,3-cd) pyrene	**1150**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
2-Methylnaphthalene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Naphthalene	<369	369	ug/kg dry	**Y**	12/04/18 1100	12/04/18 2028	CDT
Phenanthrene	**533**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Pyrene	**1730**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2028	CDT
Surrogate: 2-Fluorobiphenyl	57.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2028	CDT
Surrogate: 2-Fluorophenol	51.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2028	CDT
Surrogate: Nitrobenzene-d5	49.2	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2028	CDT
Surrogate: Phenol-d6	54.0	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2028	CDT
Surrogate: p-Terphenyl-d14	74.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2028	CDT
Surrogate: 2,4,6-Tribromophenol	69.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2028	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<131	131	ug/L	**Y1**		12/10/18 1949	MRB
Acrylonitrile	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Benzene	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Bromobenzene	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Bromochloromethane	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Bromodichloromethane	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Bromoform	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Bromomethane	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
2-Butanone (MEK)	<131	131	ug/L	**Y1**		12/10/18 1949	MRB
sec-Butylbenzene	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
tert-Butylbenzene	<26.1	26.1	ug/L	**Y1**		12/10/18 1949	MRB
n-Butylbenzene	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Carbon disulfide	<26.1	26.1	ug/L	**Y1**		12/10/18 1949	MRB
Carbon tetrachloride	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Chlorobenzene	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB
Chloroethane (Ethyl chloride)	<13.1	13.1	ug/L	**Y1**		12/10/18 1949	MRB

Client Sample ID:	BD 11/28/28		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-12	**Collection Date:**	11/28/2018 15:16

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Chloromethane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
2-Chlorotoluene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
4-Chlorotoluene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<5.22	5.22	ug/L	Y1		12/10/18 1949	MRB
Dibromochloromethane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.31	1.31	ug/L	Y1		12/10/18 1949	MRB
Dibromomethane (Methylene bromide)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
trans-1,4-Dichloro-2-butene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,4-Dichlorobenzene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,3-Dichlorobenzene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,2-Dichlorobenzene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Dichlorodifluoromethane (Freon-12)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,2-Dichloroethane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,1-Dichloroethane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
trans-1,2-Dichloroethene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,1-Dichloroethene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
cis-1,2-Dichloroethene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,3-Dichloropropane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,2-Dichloropropane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
2,2-Dichloropropane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
trans-1,3-Dichloropropene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
cis-1,3-Dichloropropene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,1-Dichloropropene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Diethyl ether	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,4-Dioxane	<522	522	ug/L	Y1		12/10/18 1949	MRB
Ethylbenzene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Hexachlorobutadiene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
2-Hexanone (MBK)	<131	131	ug/L	Y1		12/10/18 1949	MRB
Isopropylbenzene (Cumene)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Methyl tert-butyl ether (MTBE)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Methylene chloride (Dichloromethane)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
4-Methyl-2-pentanone (MIBK)	<131	131	ug/L	Y1		12/10/18 1949	MRB
Naphthalene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
n-Propylbenzene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Styrene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,1,1,2-Tetrachloroethane	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
1,1,2,2-Tetrachloroethane	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Tetrachloroethene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Tetrahydrofuran (THF)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Toluene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,2,4-Trichlorobenzene	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
1,2,3-Trichlorobenzene	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB

Client Sample ID: BD 11/28/28
Sample Matrix: Solid
Lab Sample ID: D8K2844-12
Collected By: Jaelyn Kaehler
Collection Date: 11/28/2018 15:16

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
1,1,2-Trichloroethane	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
Trichloroethene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Trichlorofluoromethane (Freon 11)	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
1,2,3-Trichloropropane	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
1,3,5-Trimethylbenzene	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
1,2,4-Trimethylbenzene	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
Vinyl chloride	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
m,p-Xylene	<26.1	26.1	ug/L	Y1		12/10/18 1949	MRB
o-Xylene	<13.1	13.1	ug/L	Y1		12/10/18 1949	MRB
Surrogate: 4-Bromofluorobenzene	109	Limit: 70-130	% Rec			12/10/18 1949	MRB
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 70-130	% Rec			12/10/18 1949	MRB
Surrogate: Toluene-d8	96.6	Limit: 70-130	% Rec			12/10/18 1949	MRB

Client Sample ID: MW-7 (10-15')
Sample Matrix: Solid
Lab Sample ID: D8K2844-13
Collected By: Jaelyn Kaehler
Collection Date: 11/28/2018 12:55

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**92.9**		% by Weight	Y1	11/30/18 1943	12/01/18 1626	DJM

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M		**Method Notes:** AC					
C9-C36 TPH	**4020**	214	mg/kg dry	Y1	12/06/18 1040	12/07/18 1935	CDT
Surrogate: 1-Chlorooctadecane	76.1	Limit: 25-125	% Rec		12/06/18 1040	12/06/18 2359	CDT

Client Sample ID:	MW-6 (0-5')		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-14	**Collection Date:**	11/28/2018 13:12

Inorganics	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: SM2540 G-1997							
Percent Solids	**89.3**		% by Weight	**Y1**	11/30/18 1943	12/01/18 1626	DJM

Metals, Total	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3050B/EPA 6010C							
Antimony	<0.500	0.500	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Arsenic	**8.89**	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Beryllium	**0.210**	0.0560	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Cadmium	**0.228**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Chromium	**27.9**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Copper	**27.9**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Lead	**318**	0.168	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Nickel	**12.4**	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Selenium	<0.280	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Silver	**0.241**	0.112	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Thallium	<0.280	0.280	mg/kg dry	**Y1**	12/07/18 1349	12/10/18 2128	NJP
Zinc	**98.1**	0.280	mg/kg dry	**Y1**	12/07/18 1146	12/10/18 1930	NJP
Method: EPA 7471B							
Mercury	**0.0716**	0.0370	mg/kg dry	**Y1**	12/05/18 1457	12/05/18 1649	DLO

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8082A							
Aroclor-1016 (PCB-1016) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1909	MRB
Aroclor-1221 (PCB-1221) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1909	MRB
Aroclor-1232 (PCB-1232) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1909	MRB
Aroclor-1242 (PCB-1242) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1909	MRB
Aroclor-1248 (PCB-1248) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1909	MRB
Aroclor-1254 (PCB-1254) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1909	MRB
Aroclor-1260 (PCB-1260) [2C]	<11.2	11.2	ug/kg dry	**Y1**	12/07/18 1200	12/10/18 1909	MRB
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	108	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1909	MRB
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	47.7	Limit: 30-150	% Rec		12/07/18 1200	12/10/18 1909	MRB

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8100M							
C9-C36 TPH	**1430**	55.8	mg/kg dry	**Y1**	12/06/18 1040	12/07/18 2025	CDT
Surrogate: 1-Chlorooctadecane	109	Limit: 25-125	% Rec		12/06/18 1040	12/07/18 0052	CDT

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst

Client Sample ID:	MW-6 (0-5')		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-14	**Collection Date:**	11/28/2018 13:12

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 3550C/EPA 8270D							
Acenaphthene	**1620**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Acenaphthylene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Anthracene	**2500**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Benzo[a]anthracene	**5130**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Benzo[a]pyrene	**5090**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Benzo[b]fluoranthene	**5820**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Benzo[g,h,i]perylene	**1530**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Benzo[k]fluoranthene	**2840**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Chrysene	**4740**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Dibenz(a,h) anthracene	**522**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Fluoranthene	**9980**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Fluorene	**1690**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Indeno(1,2,3-cd) pyrene	**1880**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
2-Methylnaphthalene	<369	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Naphthalene	<369	369	ug/kg dry	**Y**	12/04/18 1100	12/04/18 2058	CDT
Phenanthrene	**11700**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Pyrene	**9220**	369	ug/kg dry	**Y1**	12/04/18 1100	12/04/18 2058	CDT
Surrogate: 2-Fluorobiphenyl	41.2	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2058	CDT
Surrogate: 2-Fluorophenol	33.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2058	CDT
Surrogate: Nitrobenzene-d5	31.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2058	CDT
Surrogate: Phenol-d6	35.4	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2058	CDT
Surrogate: p-Terphenyl-d14	57.8	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2058	CDT
Surrogate: 2,4,6-Tribromophenol	49.0	Limit: 30-130	% Rec		12/04/18 1100	12/04/18 2058	CDT

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Method: EPA 5030C/EPA 8260C							
Acetone	<122	122	ug/L	**Y1**		12/10/18 2015	MRB
Acrylonitrile	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Benzene	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Bromobenzene	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Bromochloromethane	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Bromodichloromethane	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Bromoform	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Bromomethane	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
2-Butanone (MEK)	<122	122	ug/L	**Y1**		12/10/18 2015	MRB
sec-Butylbenzene	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
tert-Butylbenzene	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
n-Butylbenzene	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Carbon disulfide	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
Carbon tetrachloride	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Chlorobenzene	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Chloroethane (Ethyl chloride)	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW-6 (0-5')		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-14	**Collection Date:**	11/28/2018 13:12

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
Chloroform	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Chloromethane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
2-Chlorotoluene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
4-Chlorotoluene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,2-Dibromo-3-chloropropane (DBCP)	<4.87	4.87	ug/L	Y1		12/10/18 2015	MRB
Dibromochloromethane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,2-Dibromoethane (Ethylene dibromide, EDB)	<1.22	1.22	ug/L	Y1		12/10/18 2015	MRB
Dibromomethane (Methylene bromide)	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
trans-1,4-Dichloro-2-butene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,4-Dichlorobenzene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,3-Dichlorobenzene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,2-Dichlorobenzene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Dichlorodifluoromethane (Freon-12)	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,2-Dichloroethane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,1-Dichloroethane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
trans-1,2-Dichloroethene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,1-Dichloroethene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
cis-1,2-Dichloroethene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,3-Dichloropropane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,2-Dichloropropane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
2,2-Dichloropropane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
trans-1,3-Dichloropropene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
cis-1,3-Dichloropropene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,1-Dichloropropene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Diethyl ether	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,4-Dioxane	<487	487	ug/L	Y1		12/10/18 2015	MRB
Ethylbenzene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Hexachlorobutadiene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
2-Hexanone (MBK)	<122	122	ug/L	Y1		12/10/18 2015	MRB
Isopropylbenzene (Cumene)	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
4-Isopropyltoluene (p-Isopropyltoluene)	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Methyl tert-butyl ether (MTBE)	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Methylene chloride (Dichloromethane)	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
4-Methyl-2-pentanone (MIBK)	<122	122	ug/L	Y1		12/10/18 2015	MRB
Naphthalene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
n-Propylbenzene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Styrene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,1,1,2-Tetrachloroethane	<24.4	24.4	ug/L	Y1		12/10/18 2015	MRB
1,1,2,2-Tetrachloroethane	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Tetrachloroethene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Tetrahydrofuran (THF)	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
Toluene	<12.2	12.2	ug/L	Y1		12/10/18 2015	MRB
1,2,4-Trichlorobenzene	<24.4	24.4	ug/L	Y1		12/10/18 2015	MRB
1,2,3-Trichlorobenzene	<24.4	24.4	ug/L	Y1		12/10/18 2015	MRB

CERTIFICATE OF ANALYSIS

D8K2844

Client Sample ID:	MW-6 (0-5')		
Sample Matrix:	Solid	**Collected By:**	Jaelyn Kaehler
Lab Sample ID:	D8K2844-14	**Collection Date:**	11/28/2018 13:12

Volatile Organic Compounds - GC/MS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,1,1-Trichloroethane	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
1,1,2-Trichloroethane	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
Trichloroethene	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Trichlorofluoromethane (Freon 11)	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
1,2,3-Trichloropropane	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
1,3,5-Trimethylbenzene	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
1,2,4-Trimethylbenzene	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
Vinyl chloride	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
m,p-Xylene	<24.4	24.4	ug/L	**Y1**		12/10/18 2015	MRB
o-Xylene	<12.2	12.2	ug/L	**Y1**		12/10/18 2015	MRB
Surrogate: 4-Bromofluorobenzene	107	Limit: 70-130	% Rec			12/10/18 2015	MRB
Surrogate: 1,2-Dichloroethane-d4	99.9	Limit: 70-130	% Rec			12/10/18 2015	MRB
Surrogate: Toluene-d8	97.3	Limit: 70-130	% Rec			12/10/18 2015	MRB

Batch Quality Control Summary: Microbac Laboratories, Inc. - Dayville

Inorganics	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DK81865 - Wet-Solids-S - SM2540 G-1997										
Blank (DK81865-BLK1)			Prepared: 11/30/2018 Analyzed: 12/01/2018							
Percent Solids	0.00		% by Weight							
Duplicate (DK81865-DUP1)	**Source: D8K2844-02**		Prepared: 11/30/2018 Analyzed: 12/01/2018							
Percent Solids	91.6		% by Weight		93.0			1.52	10	
Duplicate (DK81865-DUP2)	**Source: D8K2844-14**		Prepared: 11/30/2018 Analyzed: 12/01/2018							
Percent Solids	89.6		% by Weight		89.3			0.335	10	

Metals, Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80282 - 7471 - EPA 7471B										
Blank (DL80282-BLK1)			Prepared & Analyzed: 12/05/2018							
Mercury	ND	0.0330	mg/kg wet							
LCS (DL80282-BS1)			Prepared & Analyzed: 12/05/2018							
Mercury	0.857	0.0330	mg/kg wet	0.833		103	80-120			
Matrix Spike (DL80282-MS1)	**Source: D8K2844-06**		Prepared & Analyzed: 12/05/2018							
Mercury	0.995	0.0386	mg/kg dry	0.974	0.0290	99.2	80-120			
Matrix Spike Dup (DL80282-MSD1)	**Source: D8K2844-06**		Prepared & Analyzed: 12/05/2018							
Mercury	1.04	0.0386	mg/kg dry	0.974	0.0290	104	80-120	4.26	35	
Batch DL80485 - 3050B S Acid ICP - EPA 6010C										
Blank (DL80485-BLK1)			Prepared: 12/07/2018 Analyzed: 12/10/2018							
Silver	ND	0.100	mg/kg wet							
Arsenic	ND	0.250	mg/kg wet							
Beryllium	ND	0.0500	mg/kg wet							
Cadmium	ND	0.100	mg/kg wet							
Chromium	ND	0.100	mg/kg wet							
Copper	ND	0.100	mg/kg wet							
Nickel	ND	0.250	mg/kg wet							
Lead	ND	0.150	mg/kg wet							
Antimony	ND	0.150	mg/kg wet							
Selenium	ND	0.250	mg/kg wet							
Zinc	ND	0.250	mg/kg wet							
LCS (DL80485-BS1)			Prepared: 12/07/2018 Analyzed: 12/10/2018							
Silver	25.7	0.100	mg/kg wet	25.0		103	80-120			
Arsenic	25.8	0.250	mg/kg wet	25.0		103	80-120			
Beryllium	25.2	0.0500	mg/kg wet	25.0		101	80-120			
Cadmium	25.0	0.100	mg/kg wet	25.0		99.9	80-120			
Chromium	25.2	0.100	mg/kg wet	25.0		101	80-120			
Copper	24.2	0.100	mg/kg wet	25.0		97.0	80-120			
Nickel	25.6	0.250	mg/kg wet	25.0		102	80-120			
Lead	25.5	0.150	mg/kg wet	25.0		102	80-120			

Metals, Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80485 - 3050B S Acid ICP - EPA 6010C										
LCS (DL80485-BS1)				Prepared: 12/07/2018 Analyzed: 12/10/2018						
Antimony	25.7	0.150	mg/kg wet	25.0		103	80-120			
Selenium	25.6	0.250	mg/kg wet	25.0		102	80-120			
Zinc	25.3	0.250	mg/kg wet	25.0		101	80-120			
Duplicate (DL80485-DUP1)		**Source: D8K2844-03**		Prepared: 12/07/2018 Analyzed: 12/10/2018						
Silver	6.61	0.114	mg/kg dry		4.12			46.4	35	R1
Arsenic	5.40	0.284	mg/kg dry		6.60			19.9	35	
Beryllium	0.174	0.0568	mg/kg dry		0.254			37.5	35	R3
Cadmium	0.248	0.114	mg/kg dry		0.215			14.1	35	
Chromium	42.3	0.114	mg/kg dry		50.6			17.9	35	
Copper	32.2	0.114	mg/kg dry		31.1			3.34	35	
Nickel	10.2	0.284	mg/kg dry		10.6			3.32	35	
Lead	48.1	0.170	mg/kg dry		47.6			1.08	35	
Antimony	0.458	0.170	mg/kg dry		0.397			14.4	35	
Selenium	ND	0.284	mg/kg dry		ND				35	
Zinc	78.3	0.284	mg/kg dry		69.7			11.6	35	
Matrix Spike (DL80485-MS1)		**Source: D8K2844-03**		Prepared: 12/07/2018 Analyzed: 12/10/2018						
Silver	36.4	0.114	mg/kg dry	28.4	4.12	113	75-125			
Arsenic	33.7	0.284	mg/kg dry	28.4	6.60	95.3	75-125			
Beryllium	26.9	0.0568	mg/kg dry	28.4	0.254	93.7	75-125			
Cadmium	26.8	0.114	mg/kg dry	28.4	0.215	93.4	75-125			
Chromium	58.1	0.114	mg/kg dry	28.4	50.6	26.7	75-125			M3
Copper	53.2	0.114	mg/kg dry	28.4	31.1	77.8	75-125			
Nickel	39.2	0.284	mg/kg dry	28.4	10.6	101	75-125			
Lead	74.9	0.170	mg/kg dry	28.4	47.6	95.9	75-125			
Antimony	19.0	0.170	mg/kg dry	28.4	0.397	65.6	75-125			M3
Selenium	25.9	0.284	mg/kg dry	28.4	ND	91.0	75-125			
Zinc	99.9	0.284	mg/kg dry	28.4	69.7	106	75-125			
Matrix Spike Dup (DL80485-MSD1)		**Source: D8K2844-03**		Prepared: 12/07/2018 Analyzed: 12/10/2018						
Silver	36.3	0.114	mg/kg dry	28.4	4.12	113	75-125	0.268	35	
Arsenic	34.7	0.284	mg/kg dry	28.4	6.60	99.0	75-125	3.04	35	
Beryllium	25.8	0.0568	mg/kg dry	28.4	0.254	89.8	75-125	4.21	35	
Cadmium	26.2	0.114	mg/kg dry	28.4	0.215	91.6	75-125	1.92	35	
Chromium	75.3	0.114	mg/kg dry	28.4	50.6	87.1	75-125	25.7	35	
Copper	65.8	0.114	mg/kg dry	28.4	31.1	122	75-125	21.1	35	
Nickel	37.0	0.284	mg/kg dry	28.4	10.6	93.0	75-125	5.85	35	
Lead	123	0.170	mg/kg dry	28.4	47.6	266	75-125	48.8	35	M3
Antimony	17.8	0.170	mg/kg dry	28.4	0.397	61.2	75-125	6.84	35	M3
Selenium	25.4	0.284	mg/kg dry	28.4	ND	89.3	75-125	1.98	35	
Zinc	147	0.284	mg/kg dry	28.4	69.7	271	75-125	38.0	35	M3
Post Spike (DL80485-PS1)		**Source: D8K2844-03**		Prepared: 12/07/2018 Analyzed: 12/10/2018						
Chromium	1290		ug/L	500	890	80.4	75-125			
Lead	1240		ug/L	500	838	80.6	75-125			
Antimony	424		ug/L	500	6.98	83.4	75-125			
Zinc	1610		ug/L	500	1230	76.4	75-125			

Metals, Total	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80486 - 3050B S Acid ICP - EPA 6010C										
Blank (DL80486-BLK1)			Prepared: 12/07/2018 Analyzed: 12/10/2018							
Thallium	ND	0.250	mg/kg wet							
LCS (DL80486-BS1)			Prepared: 12/07/2018 Analyzed: 12/10/2018							
Thallium	24.3	0.250	mg/kg wet	25.0		97.2	80-120			
Duplicate (DL80486-DUP1)	**Source: D8K2844-03**		Prepared: 12/07/2018 Analyzed: 12/10/2018							
Thallium	ND	0.284	mg/kg dry		ND				35	
Matrix Spike (DL80486-MS1)	**Source: D8K2844-03**		Prepared: 12/07/2018 Analyzed: 12/10/2018							
Thallium	21.2	0.284	mg/kg dry	28.4	ND	74.6	75-125			
Matrix Spike Dup (DL80486-MSD1)	**Source: D8K2844-03**		Prepared: 12/07/2018 Analyzed: 12/10/2018							
Thallium	21.8	0.284	mg/kg dry	28.4	ND	76.8	75-125	2.92	35	

Polychlorinated Biphenyls (PCBs) - GC/ECD	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80521 - 3550C Ultrasonic - EPA 8082A										
Blank (DL80521-BLK1)			Prepared: 12/07/2018 Analyzed: 12/10/2018							
Aroclor-1016 (PCB-1016) [2C]	ND	10.0	ug/kg wet							
Aroclor-1221 (PCB-1221) [2C]	ND	10.0	ug/kg wet							
Aroclor-1232 (PCB-1232) [2C]	ND	10.0	ug/kg wet							
Aroclor-1242 (PCB-1242) [2C]	ND	10.0	ug/kg wet							
Aroclor-1248 (PCB-1248) [2C]	ND	10.0	ug/kg wet							
Aroclor-1254 (PCB-1254) [2C]	ND	10.0	ug/kg wet							
Aroclor-1260 (PCB-1260) [2C]	ND	10.0	ug/kg wet							
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	*9.01*		ug/kg wet	*10.0*		*90.1*	*30-150*			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	*7.85*		ug/kg wet	*10.0*		*78.5*	*30-150*			
LCS (DL80521-BS1)			Prepared: 12/07/2018 Analyzed: 12/10/2018							
Aroclor-1016 (PCB-1016) [2C]	87.7	10.0	ug/kg wet	100		87.7	40-140			
Aroclor-1260 (PCB-1260) [2C]	96.1	10.0	ug/kg wet	100		96.1	40-140			
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	*9.14*		ug/kg wet	*10.0*		*91.4*	*30-150*			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	*8.06*		ug/kg wet	*10.0*		*80.6*	*30-150*			
Matrix Spike (DL80521-MS1)	**Source: D8K2844-06**		Prepared: 12/07/2018 Analyzed: 12/10/2018							
Aroclor-1016 (PCB-1016) [2C]	44.1	11.6	ug/kg dry	116	ND	37.9	40-140			M2
Aroclor-1260 (PCB-1260) [2C]	66.0	11.6	ug/kg dry	116	ND	56.8	40-140			
Surrogate: Decachlorobiphenyl (BZ-209) [2C]	*7.75*		ug/kg dry	*11.6*		*66.7*	*30-150*			
Surrogate: 2,4,5,6-Tetrachloro-m-xylene [2C]	*7.82*		ug/kg dry	*11.6*		*67.3*	*30-150*			

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80284 - 3550C Ultrasonic - EPA 8100M										
Blank (DL80284-BLK1)			Prepared & Analyzed: 12/05/2018							
C9-C36 TPH	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*6.16*		mg/kg wet	*10.0*		*61.6*	*25-125*			

Petroleum Hydrocarbon Range Organics - GC/FID	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80284 - 3550C Ultrasonic - EPA 8100M										
LCS (DL80284-BS1)			Prepared & Analyzed: 12/05/2018							
C9-C36 TPH	96.3	10.0	mg/kg wet	140		68.8	30-130			
Surrogate: 1-Chlorooctadecane	*7.53*		mg/kg wet	*10.0*		*75.3*	*25-125*			
Matrix Spike (DL80284-MS1)	**Source: D8K2844-06**		Prepared & Analyzed: 12/05/2018							
C9-C36 TPH	132	11.6	mg/kg dry	163	35.8	59.0	25-125			
Surrogate: 1-Chlorooctadecane	*8.74*		mg/kg dry	*11.6*		*75.1*	*25-125*			
Batch DL80391 - 3550C Ultrasonic - EPA 8100M										
Blank (DL80391-BLK1)			Prepared: 12/06/2018 Analyzed: 12/07/2018							
C9-C36 TPH	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*5.22*		mg/kg wet	*10.0*		*52.2*	*25-125*			
LCS (DL80391-BS1)			Prepared: 12/06/2018 Analyzed: 12/07/2018							
C9-C36 TPH	75.1	10.0	mg/kg wet	140		53.6	30-130			
Surrogate: 1-Chlorooctadecane	*6.23*		mg/kg wet	*10.0*		*62.3*	*25-125*			
Matrix Spike (DL80391-MS1)	**Source: D8K2844-07**		Prepared: 12/06/2018 Analyzed: 12/07/2018							
C9-C36 TPH	177	12.2	mg/kg dry	171	41.2	79.5	25-125			
Surrogate: 1-Chlorooctadecane	*7.65*		mg/kg dry	*12.2*		*62.7*	*25-125*			

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80075 - 3550C Ultrasonic - EPA 8270D										
Blank (DL80075-BLK1)			Prepared: 12/03/2018 Analyzed: 12/04/2018							
Acenaphthene	ND	33.0	ug/kg wet							
Acenaphthylene	ND	33.0	ug/kg wet							
Anthracene	ND	33.0	ug/kg wet							
Benzo[a]anthracene	ND	33.0	ug/kg wet							
Benzo[a]pyrene	ND	33.0	ug/kg wet							
Benzo[b]fluoranthene	ND	33.0	ug/kg wet							
Benzo[g,h,i]perylene	ND	33.0	ug/kg wet							
Benzo[k]fluoranthene	ND	33.0	ug/kg wet							
Chrysene	ND	33.0	ug/kg wet							
Dibenz(a,h) anthracene	ND	33.0	ug/kg wet							
Fluoranthene	ND	33.0	ug/kg wet							
Fluorene	ND	33.0	ug/kg wet							
Indeno(1,2,3-cd) pyrene	ND	33.0	ug/kg wet							
2-Methylnaphthalene	ND	33.0	ug/kg wet							
Naphthalene	ND	33.0	ug/kg wet							
Phenanthrene	ND	33.0	ug/kg wet							
Pyrene	ND	33.0	ug/kg wet							
Surrogate: 2-Fluorobiphenyl	*911*		ug/kg wet	*1670*		*54.6*	*30-130*			
Surrogate: 2-Fluorophenol	*953*		ug/kg wet	*1670*		*57.2*	*30-130*			
Surrogate: Nitrobenzene-d5	*923*		ug/kg wet	*1670*		*55.4*	*30-130*			
Surrogate: Phenol-d6	*968*		ug/kg wet	*1670*		*58.1*	*30-130*			

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80075 - 3550C Ultrasonic - EPA 8270D										
Blank (DL80075-BLK1)			Prepared: 12/03/2018 Analyzed: 12/04/2018							
Surrogate: p-Terphenyl-d14	*1110*		ug/kg wet	*1670*		*66.8*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*1030*		ug/kg wet	*1670*		*61.5*	*30-130*			
LCS (DL80075-BS1)			Prepared: 12/03/2018 Analyzed: 12/04/2018							
Acenaphthene	1010	33.0	ug/kg wet	1670		60.3	40-140			
Acenaphthylene	1100	33.0	ug/kg wet	1670		66.2	40-140			
Anthracene	939	33.0	ug/kg wet	1670		56.4	40-140			
Benzo[a]anthracene	1220	33.0	ug/kg wet	1670		73.5	40-140			
Benzo[a]pyrene	1610	33.0	ug/kg wet	1670		96.3	40-140			
Benzo[b]fluoranthene	1500	33.0	ug/kg wet	1670		89.8	40-140			
Benzo[g,h,i]perylene	1460	33.0	ug/kg wet	1670		87.7	40-140			
Benzo[k]fluoranthene	1460	33.0	ug/kg wet	1670		87.6	40-140			
Chrysene	1170	33.0	ug/kg wet	1670		70.4	40-140			
Dibenz(a,h) anthracene	1520	33.0	ug/kg wet	1670		91.3	40-140			
Fluoranthene	1090	33.0	ug/kg wet	1670		65.2	40-140			
Fluorene	982	33.0	ug/kg wet	1670		58.9	40-140			
Indeno(1,2,3-cd) pyrene	1610	33.0	ug/kg wet	1670		96.6	40-140			
2-Methylnaphthalene	939	33.0	ug/kg wet	1670		56.3	40-140			
Naphthalene	1050	33.0	ug/kg wet	1670		63.0	40-140			
Phenanthrene	1170	33.0	ug/kg wet	1670		70.1	40-140			
Pyrene	1080	33.0	ug/kg wet	1670		65.1	40-140			
Surrogate: 2-Fluorobiphenyl	*939*		ug/kg wet	*1670*		*56.3*	*30-130*			
Surrogate: 2-Fluorophenol	*1020*		ug/kg wet	*1670*		*61.2*	*30-130*			
Surrogate: Nitrobenzene-d5	*955*		ug/kg wet	*1670*		*57.3*	*30-130*			
Surrogate: Phenol-d6	*1030*		ug/kg wet	*1670*		*61.7*	*30-130*			
Surrogate: p-Terphenyl-d14	*1230*		ug/kg wet	*1670*		*74.1*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*1280*		ug/kg wet	*1670*		*76.8*	*30-130*			
Matrix Spike (DL80075-MS1)	**Source: D8K2844-02**		Prepared: 12/03/2018 Analyzed: 12/04/2018							
Acenaphthene	1520	355	ug/kg dry	1790	ND	84.8	20-109			
Acenaphthylene	1110	355	ug/kg dry	1790	ND	62.0	30-130			
Anthracene	1460	355	ug/kg dry	1790	ND	81.4	35-111			
Benzo[a]anthracene	1780	355	ug/kg dry	1790	ND	99.2	25-116			
Benzo[a]pyrene	1880	355	ug/kg dry	1790	ND	105	50-111			
Benzo[b]fluoranthene	1660	355	ug/kg dry	1790	ND	92.8	23-120			
Benzo[g,h,i]perylene	1320	355	ug/kg dry	1790	ND	73.8	10-132			
Benzo[k]fluoranthene	1670	355	ug/kg dry	1790	ND	93.4	34-107			
Chrysene	2000	355	ug/kg dry	1790	ND	112	38-100			M1
Dibenz(a,h) anthracene	1380	355	ug/kg dry	1790	ND	77.0	10-125			
Fluoranthene	1590	355	ug/kg dry	1790	ND	88.6	34-115			
Fluorene	1580	355	ug/kg dry	1790	ND	88.4	40-87			M1
Indeno(1,2,3-cd) pyrene	1390	355	ug/kg dry	1790	ND	77.4	22-124			
2-Methylnaphthalene	2810	355	ug/kg dry	1790	293	141	30-130			M1
Naphthalene	1330	355	ug/kg dry	1790	ND	74.0	16-94			
Phenanthrene	2050	355	ug/kg dry	1790	ND	114	14-133			
Pyrene	2010	355	ug/kg dry	1790	ND	112	33-114			
Surrogate: 2-Fluorobiphenyl	*1170*		ug/kg dry	*1790*		*65.4*	*30-130*			

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80075 - 3550C Ultrasonic - EPA 8270D										
Matrix Spike (DL80075-MS1)	**Source: D8K2844-02**		Prepared: 12/03/2018 Analyzed: 12/04/2018							
Surrogate: 2-Fluorophenol	*1000*		ug/kg dry	*1790*		*56.0*	*30-130*			
Surrogate: Nitrobenzene-d5	*1080*		ug/kg dry	*1790*		*60.4*	*30-130*			
Surrogate: Phenol-d6	*1080*		ug/kg dry	*1790*		*60.4*	*30-130*			
Surrogate: p-Terphenyl-d14	*1410*		ug/kg dry	*1790*		*78.6*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*1390*		ug/kg dry	*1790*		*77.4*	*30-130*			
Batch DL80152 - 3550C Ultrasonic - EPA 8270D										
Blank (DL80152-BLK1)			Prepared & Analyzed: 12/04/2018							
Acenaphthene	ND	33.0	ug/kg wet							
Acenaphthylene	ND	33.0	ug/kg wet							
Anthracene	ND	33.0	ug/kg wet							
Benzo[a]anthracene	ND	33.0	ug/kg wet							
Benzo[a]pyrene	ND	33.0	ug/kg wet							
Benzo[b]fluoranthene	ND	33.0	ug/kg wet							
Benzo[g,h,i]perylene	ND	33.0	ug/kg wet							
Benzo[k]fluoranthene	ND	33.0	ug/kg wet							
Chrysene	ND	33.0	ug/kg wet							
Dibenz(a,h) anthracene	ND	33.0	ug/kg wet							
Fluoranthene	ND	33.0	ug/kg wet							
Fluorene	ND	33.0	ug/kg wet							
Indeno(1,2,3-cd) pyrene	ND	33.0	ug/kg wet							
2-Methylnaphthalene	ND	33.0	ug/kg wet							
Naphthalene	ND	33.0	ug/kg wet							
Phenanthrene	ND	33.0	ug/kg wet							
Pyrene	ND	33.0	ug/kg wet							
Surrogate: 2-Fluorobiphenyl	*694*		ug/kg wet	*1670*		*41.7*	*30-130*			
Surrogate: 2-Fluorophenol	*661*		ug/kg wet	*1670*		*39.7*	*30-130*			
Surrogate: Nitrobenzene-d5	*646*		ug/kg wet	*1670*		*38.8*	*30-130*			
Surrogate: Phenol-d6	*685*		ug/kg wet	*1670*		*41.1*	*30-130*			
Surrogate: p-Terphenyl-d14	*1200*		ug/kg wet	*1670*		*71.9*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*840*		ug/kg wet	*1670*		*50.4*	*30-130*			
LCS (DL80152-BS1)			Prepared & Analyzed: 12/04/2018							
Acenaphthene	969	33.0	ug/kg wet	1670		58.1	40-140			
Acenaphthylene	1060	33.0	ug/kg wet	1670		63.6	40-140			
Anthracene	900	33.0	ug/kg wet	1670		54.0	40-140			
Benzo[a]anthracene	1250	33.0	ug/kg wet	1670		75.1	40-140			
Benzo[a]pyrene	1650	33.0	ug/kg wet	1670		98.8	40-140			
Benzo[b]fluoranthene	1460	33.0	ug/kg wet	1670		87.4	40-140			
Benzo[g,h,i]perylene	1470	33.0	ug/kg wet	1670		88.1	40-140			
Benzo[k]fluoranthene	1500	33.0	ug/kg wet	1670		89.7	40-140			
Chrysene	1190	33.0	ug/kg wet	1670		71.3	40-140			
Dibenz(a,h) anthracene	1570	33.0	ug/kg wet	1670		94.5	40-140			
Fluoranthene	1050	33.0	ug/kg wet	1670		62.7	40-140			
Fluorene	939	33.0	ug/kg wet	1670		56.3	40-140			
Indeno(1,2,3-cd) pyrene	1540	33.0	ug/kg wet	1670		92.5	40-140			

Semi-Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80152 - 3550C Ultrasonic - EPA 8270D										
LCS (DL80152-BS1)			Prepared & Analyzed: 12/04/2018							
2-Methylnaphthalene	883	33.0	ug/kg wet	1670		53.0	40-140			
Naphthalene	1000	33.0	ug/kg wet	1670		60.0	40-140			
Phenanthrene	1120	33.0	ug/kg wet	1670		67.1	40-140			
Pyrene	1100	33.0	ug/kg wet	1670		66.1	40-140			
Surrogate: 2-Fluorobiphenyl	*871*		ug/kg wet	*1670*		*52.3*	*30-130*			
Surrogate: 2-Fluorophenol	*1010*		ug/kg wet	*1670*		*60.6*	*30-130*			
Surrogate: Nitrobenzene-d5	*913*		ug/kg wet	*1670*		*54.8*	*30-130*			
Surrogate: Phenol-d6	*1010*		ug/kg wet	*1670*		*60.4*	*30-130*			
Surrogate: p-Terphenyl-d14	*1230*		ug/kg wet	*1670*		*73.8*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*1220*		ug/kg wet	*1670*		*73.0*	*30-130*			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80684 - 5030C VOA W - EPA 8260C										
Blank (DL80684-BLK1)			Prepared & Analyzed: 12/10/2018							
Acetone	ND	5.00	ug/L							
Acrylonitrile	ND	1.00	ug/L							
Benzene	ND	1.00	ug/L							
Bromobenzene	ND	1.00	ug/L							
Bromochloromethane	ND	1.00	ug/L							
Bromodichloromethane	ND	1.00	ug/L							
Bromoform	ND	1.00	ug/L							
Bromomethane	ND	1.00	ug/L							
2-Butanone (MEK)	ND	5.00	ug/L							
sec-Butylbenzene	ND	1.00	ug/L							
tert-Butylbenzene	ND	1.00	ug/L							
n-Butylbenzene	ND	1.00	ug/L							
Carbon disulfide	ND	1.00	ug/L							
Carbon tetrachloride	ND	1.00	ug/L							
Chlorobenzene	ND	1.00	ug/L							
Chloroethane (Ethyl chloride)	ND	1.00	ug/L							
Chloroform	ND	1.00	ug/L							
Chloromethane	ND	1.00	ug/L							
2-Chlorotoluene	ND	1.00	ug/L							
4-Chlorotoluene	ND	1.00	ug/L							
1,2-Dibromo-3-chloropropane (DBCP)	ND	1.00	ug/L							
Dibromochloromethane	ND	1.00	ug/L							
1,2-Dibromoethane (Ethylene dibromide, EDB)	ND	1.00	ug/L							
Dibromomethane (Methylene bromide)	ND	1.00	ug/L							
trans-1,4-Dichloro-2-butene	ND	1.00	ug/L							
1,4-Dichlorobenzene	ND	1.00	ug/L							
1,3-Dichlorobenzene	ND	1.00	ug/L							
1,2-Dichlorobenzene	ND	1.00	ug/L							

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80684 - 5030C VOA W - EPA 8260C										
Blank (DL80684-BLK1)			Prepared & Analyzed: 12/10/2018							
Dichlorodifluoromethane (Freon-12)	ND	1.00	ug/L							
1,2-Dichloroethane	ND	1.00	ug/L							
1,1-Dichloroethane	ND	1.00	ug/L							
trans-1,2-Dichloroethene	ND	1.00	ug/L							
1,1-Dichloroethene	ND	1.00	ug/L							
cis-1,2-Dichloroethene	ND	1.00	ug/L							
1,3-Dichloropropane	ND	1.00	ug/L							
1,2-Dichloropropane	ND	1.00	ug/L							
2,2-Dichloropropane	ND	1.00	ug/L							
trans-1,3-Dichloropropene	ND	1.00	ug/L							
cis-1,3-Dichloropropene	ND	1.00	ug/L							
1,1-Dichloropropene	ND	1.00	ug/L							
Diethyl ether	ND	1.00	ug/L							
1,4-Dioxane	ND	20.0	ug/L							
Ethylbenzene	ND	1.00	ug/L							
Hexachlorobutadiene	ND	1.00	ug/L							
2-Hexanone (MBK)	ND	5.00	ug/L							
Isopropylbenzene (Cumene)	ND	1.00	ug/L							
4-Isopropyltoluene (p-Isopropyltoluene)	ND	1.00	ug/L							
Methyl tert-butyl ether (MTBE)	ND	1.00	ug/L							
Methylene chloride (Dichloromethane)	ND	1.00	ug/L							
4-Methyl-2-pentanone (MIBK)	ND	5.00	ug/L							
Naphthalene	ND	1.00	ug/L							
n-Propylbenzene	ND	1.00	ug/L							
Styrene	ND	1.00	ug/L							
1,1,1,2-Tetrachloroethane	ND	1.00	ug/L							
1,1,2,2-Tetrachloroethane	ND	1.00	ug/L							
Tetrachloroethene	ND	1.00	ug/L							
Tetrahydrofuran (THF)	ND	1.00	ug/L							
Toluene	ND	1.00	ug/L							
1,2,4-Trichlorobenzene	ND	1.00	ug/L							
1,2,3-Trichlorobenzene	ND	1.00	ug/L							
1,1,1-Trichloroethane	ND	1.00	ug/L							
1,1,2-Trichloroethane	ND	1.00	ug/L							
Trichloroethene	ND	1.00	ug/L							
Trichlorofluoromethane (Freon 11)	ND	1.00	ug/L							
1,2,3-Trichloropropane	ND	1.00	ug/L							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	1.00	ug/L							
1,3,5-Trimethylbenzene	ND	1.00	ug/L							
1,2,4-Trimethylbenzene	ND	1.00	ug/L							
Vinyl chloride	ND	1.00	ug/L							
m,p-Xylene	ND	1.00	ug/L							
o-Xylene	ND	1.00	ug/L							
Surrogate: 4-Bromofluorobenzene	*50.8*		ug/L	*50.0*		*102*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*50.5*		ug/L	*50.0*		*101*	*70-130*			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80684 - 5030C VOA W - EPA 8260C										
Blank (DL80684-BLK1)			Prepared & Analyzed: 12/10/2018							
Surrogate: Toluene-d8	*48.2*		ug/L	*50.0*		*96.4*	*70-130*			
LCS (DL80684-BS1)			Prepared & Analyzed: 12/10/2018							
Acetone	52.1	5.00	ug/L	50.0		104	70-130			
Acrylonitrile	53.3	1.00	ug/L	50.0		107	70-130			
Benzene	50.0	1.00	ug/L	50.0		100	70-130			
Bromobenzene	53.1	1.00	ug/L	50.0		106	70-130			
Bromochloromethane	56.8	1.00	ug/L	50.0		114	70-130			
Bromodichloromethane	54.5	1.00	ug/L	50.0		109	70-130			
Bromoform	58.1	1.00	ug/L	50.0		116	70-130			
Bromomethane	48.6	1.00	ug/L	50.0		97.3	70-130			
2-Butanone (MEK)	56.5	5.00	ug/L	50.0		113	70-130			
sec-Butylbenzene	45.4	1.00	ug/L	50.0		90.8	70-130			
tert-Butylbenzene	43.1	1.00	ug/L	50.0		86.1	70-130			
n-Butylbenzene	46.3	1.00	ug/L	50.0		92.5	70-130			
Carbon disulfide	48.2	1.00	ug/L	50.0		96.4	70-130			
Carbon tetrachloride	56.1	1.00	ug/L	50.0		112	70-130			
Chlorobenzene	50.1	1.00	ug/L	50.0		100	70-130			
Chloroethane (Ethyl chloride)	68.0	1.00	ug/L	50.0		136	70-130			Q2
Chloroform	52.6	1.00	ug/L	50.0		105	70-130			
Chloromethane	47.3	1.00	ug/L	50.0		94.5	70-130			
2-Chlorotoluene	47.6	1.00	ug/L	50.0		95.2	70-130			
4-Chlorotoluene	48.0	1.00	ug/L	50.0		96.0	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	46.0	1.00	ug/L	50.0		92.0	70-130			
Dibromochloromethane	53.4	1.00	ug/L	50.0		107	70-130			
1,2-Dibromoethane (Ethylene dibromide, EDB)	53.2	1.00	ug/L	50.0		106	70-130			
Dibromomethane (Methylene bromide)	57.0	1.00	ug/L	50.0		114	70-130			
trans-1,4-Dichloro-2-butene	37.6	1.00	ug/L	50.0		75.3	70-130			
1,4-Dichlorobenzene	48.4	1.00	ug/L	50.0		96.7	70-130			
1,3-Dichlorobenzene	51.1	1.00	ug/L	50.0		102	70-130			
1,2-Dichlorobenzene	50.2	1.00	ug/L	50.0		100	70-130			
Dichlorodifluoromethane (Freon-12)	43.6	1.00	ug/L	50.0		87.3	70-130			
1,2-Dichloroethane	57.6	1.00	ug/L	50.0		115	70-130			
1,1-Dichloroethane	53.0	1.00	ug/L	50.0		106	70-130			
trans-1,2-Dichloroethene	54.0	1.00	ug/L	50.0		108	70-130			
1,1-Dichloroethene	54.3	1.00	ug/L	50.0		109	70-130			
cis-1,2-Dichloroethene	54.4	1.00	ug/L	50.0		109	70-130			
1,3-Dichloropropane	51.7	1.00	ug/L	50.0		103	70-130			
1,2-Dichloropropane	52.2	1.00	ug/L	50.0		104	70-130			
2,2-Dichloropropane	51.8	1.00	ug/L	50.0		104	70-130			
trans-1,3-Dichloropropene	53.1	1.00	ug/L	50.0		106	70-130			
cis-1,3-Dichloropropene	54.1	1.00	ug/L	50.0		108	70-130			
1,1-Dichloropropene	53.1	1.00	ug/L	50.0		106	70-130			
Diethyl ether	42.4	1.00	ug/L	50.0		84.7	70-130			
1,4-Dioxane	50.1	20.0	ug/L	50.0		100	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80684 - 5030C VOA W - EPA 8260C										
LCS (DL80684-BS1)			Prepared & Analyzed: 12/10/2018							
Ethylbenzene	48.9	1.00	ug/L	50.0		97.8	70-130			
Hexachlorobutadiene	47.0	1.00	ug/L	50.0		94.0	70-130			
2-Hexanone (MBK)	52.5	5.00	ug/L	50.0		105	70-130			
Isopropylbenzene (Cumene)	47.9	1.00	ug/L	50.0		95.7	70-130			
4-Isopropyltoluene (p-Isopropyltoluene)	47.4	1.00	ug/L	50.0		94.8	70-130			
Methyl tert-butyl ether (MTBE)	41.7	1.00	ug/L	50.0		83.3	70-130			
Methylene chloride (Dichloromethane)	58.5	1.00	ug/L	50.0		117	70-130			
4-Methyl-2-pentanone (MIBK)	52.3	5.00	ug/L	50.0		105	70-130			
Naphthalene	35.6	1.00	ug/L	50.0		71.3	70-130			
n-Propylbenzene	46.2	1.00	ug/L	50.0		92.4	70-130			
Styrene	50.6	1.00	ug/L	50.0		101	70-130			
1,1,1,2-Tetrachloroethane	54.5	1.00	ug/L	50.0		109	70-130			
1,1,2,2-Tetrachloroethane	49.1	1.00	ug/L	50.0		98.2	70-130			
Tetrachloroethene	58.3	1.00	ug/L	50.0		117	70-130			
Tetrahydrofuran (THF)	49.1	1.00	ug/L	50.0		98.3	70-130			
Toluene	50.1	1.00	ug/L	50.0		100	70-130			
1,2,4-Trichlorobenzene	45.9	1.00	ug/L	50.0		91.8	70-130			
1,2,3-Trichlorobenzene	43.1	1.00	ug/L	50.0		86.2	70-130			
1,1,1-Trichloroethane	54.6	1.00	ug/L	50.0		109	70-130			
1,1,2-Trichloroethane	54.0	1.00	ug/L	50.0		108	70-130			
Trichloroethene	58.1	1.00	ug/L	50.0		116	70-130			
Trichlorofluoromethane (Freon 11)	48.1	1.00	ug/L	50.0		96.1	70-130			
1,2,3-Trichloropropane	49.3	1.00	ug/L	50.0		98.6	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	56.1	1.00	ug/L	50.0		112	70-130			
1,3,5-Trimethylbenzene	46.9	1.00	ug/L	50.0		93.8	70-130			
1,2,4-Trimethylbenzene	47.0	1.00	ug/L	50.0		94.1	70-130			
Vinyl chloride	50.8	1.00	ug/L	50.0		102	70-130			
m,p-Xylene	51.3	1.00	ug/L	50.0		103	70-130			
o-Xylene	48.0	1.00	ug/L	50.0		96.1	70-130			
Surrogate: 4-Bromofluorobenzene	*53.6*		ug/L	*50.0*		*107*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*50.6*		ug/L	*50.0*		*101*	*70-130*			
Surrogate: Toluene-d8	*48.7*		ug/L	*50.0*		*97.3*	*70-130*			
Matrix Spike (DL80684-MS1)	**Source: D8K2844-14**		Prepared & Analyzed: 12/10/2018							
Acetone	42.3	5.00	ug/L	50.0	ND	84.6	70-130			
Acrylonitrile	51.6	1.00	ug/L	50.0	ND	103	70-130			
Benzene	59.3	1.00	ug/L	50.0	ND	119	70-130			
Bromobenzene	55.9	1.00	ug/L	50.0	ND	112	70-130			
Bromochloromethane	64.2	1.00	ug/L	50.0	ND	128	70-130			
Bromodichloromethane	61.3	1.00	ug/L	50.0	ND	123	70-130			
Bromoform	60.8	1.00	ug/L	50.0	ND	122	70-130			
Bromomethane	33.7	1.00	ug/L	50.0	ND	67.4	70-130			M2
2-Butanone (MEK)	46.6	5.00	ug/L	50.0	ND	93.3	70-130			
sec-Butylbenzene	54.3	1.00	ug/L	50.0	ND	109	70-130			
tert-Butylbenzene	53.0	1.00	ug/L	50.0	ND	106	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80684 - 5030C VOA W - EPA 8260C										
Matrix Spike (DL80684-MS1)	**Source: D8K2844-14**		Prepared & Analyzed: 12/10/2018							
n-Butylbenzene	59.7	1.00	ug/L	50.0	ND	119	70-130			
Carbon disulfide	27.0	1.00	ug/L	50.0	ND	53.9	70-130			M2
Carbon tetrachloride	68.6	1.00	ug/L	50.0	ND	137	70-130			M1
Chlorobenzene	55.4	1.00	ug/L	50.0	ND	111	70-130			
Chloroethane (Ethyl chloride)	7.55	1.00	ug/L	50.0	ND	15.1	70-130			M2
Chloroform	58.6	1.00	ug/L	50.0	ND	117	70-130			
Chloromethane	50.3	1.00	ug/L	50.0	ND	101	70-130			
2-Chlorotoluene	52.3	1.00	ug/L	50.0	ND	105	70-130			
4-Chlorotoluene	67.1	1.00	ug/L	50.0	ND	134	70-130			M1
1,2-Dibromo-3-chloropropane (DBCP)	47.2	1.00	ug/L	50.0	ND	94.3	70-130			
Dibromochloromethane	57.1	1.00	ug/L	50.0	ND	114	70-130			
1,2-Dibromoethane (Ethylene dibromide, EDB)	57.4	1.00	ug/L	50.0	ND	115	70-130			
Dibromomethane (Methylene bromide)	63.5	1.00	ug/L	50.0	ND	127	70-130			
trans-1,4-Dichloro-2-butene	50.8	1.00	ug/L	50.0	ND	102	70-130			
1,4-Dichlorobenzene	103	1.00	ug/L	50.0	ND	206	70-130			M1
1,3-Dichlorobenzene	55.3	1.00	ug/L	50.0	ND	111	70-130			
1,2-Dichlorobenzene	53.9	1.00	ug/L	50.0	ND	108	70-130			
Dichlorodifluoromethane (Freon-12)	49.4	1.00	ug/L	50.0	ND	98.8	70-130			
1,2-Dichloroethane	65.0	1.00	ug/L	50.0	ND	130	70-130			
1,1-Dichloroethane	55.6	1.00	ug/L	50.0	ND	111	70-130			
trans-1,2-Dichloroethene	66.5	1.00	ug/L	50.0	ND	133	70-130			M1
1,1-Dichloroethene	30.7	1.00	ug/L	50.0	ND	61.4	70-130			M2
cis-1,2-Dichloroethene	64.8	1.00	ug/L	50.0	ND	130	70-130			
1,3-Dichloropropane	55.0	1.00	ug/L	50.0	ND	110	70-130			
1,2-Dichloropropane	60.7	1.00	ug/L	50.0	ND	121	70-130			
2,2-Dichloropropane	60.1	1.00	ug/L	50.0	ND	120	70-130			
trans-1,3-Dichloropropene	55.9	1.00	ug/L	50.0	ND	112	70-130			
cis-1,3-Dichloropropene	57.0	1.00	ug/L	50.0	ND	114	70-130			
1,1-Dichloropropene	66.0	1.00	ug/L	50.0	ND	132	70-130			M1
Diethyl ether	29.3	1.00	ug/L	50.0	ND	58.6	70-130			M2
1,4-Dioxane	52.7	20.0	ug/L	50.0	ND	105	70-130			
Ethylbenzene	54.8	1.00	ug/L	50.0	ND	110	70-130			
Hexachlorobutadiene	69.1	1.00	ug/L	50.0	ND	138	70-130			M1
2-Hexanone (MBK)	61.2	5.00	ug/L	50.0	ND	122	70-130			
Isopropylbenzene (Cumene)	52.7	1.00	ug/L	50.0	ND	105	70-130			
4-Isopropyltoluene (p-Isopropyltoluene)	56.6	1.00	ug/L	50.0	ND	113	70-130			
Methyl tert-butyl ether (MTBE)	51.4	1.00	ug/L	50.0	ND	103	70-130			
Methylene chloride (Dichloromethane)	51.1	1.00	ug/L	50.0	ND	102	70-130			
4-Methyl-2-pentanone (MIBK)	56.7	5.00	ug/L	50.0	ND	113	70-130			
Naphthalene	50.9	1.00	ug/L	50.0	ND	102	70-130			
n-Propylbenzene	52.5	1.00	ug/L	50.0	ND	105	70-130			
Styrene	55.8	1.00	ug/L	50.0	ND	112	70-130			
1,1,1,2-Tetrachloroethane	59.5	1.00	ug/L	50.0	ND	119	70-130			
1,1,2,2-Tetrachloroethane	49.4	1.00	ug/L	50.0	ND	98.8	70-130			
Tetrachloroethene	65.2	1.00	ug/L	50.0	ND	130	70-130			

Volatile Organic Compounds - GC/MS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch DL80684 - 5030C VOA W - EPA 8260C										
Matrix Spike (DL80684-MS1)	**Source: D8K2844-14**		Prepared & Analyzed: 12/10/2018							
Tetrahydrofuran (THF)	47.2	1.00	ug/L	50.0	ND	94.3	70-130			
Toluene	55.4	1.00	ug/L	50.0	ND	111	70-130			
1,2,4-Trichlorobenzene	57.0	1.00	ug/L	50.0	ND	114	70-130			
1,2,3-Trichlorobenzene	55.1	1.00	ug/L	50.0	ND	110	70-130			
1,1,1-Trichloroethane	64.4	1.00	ug/L	50.0	ND	129	70-130			
1,1,2-Trichloroethane	58.2	1.00	ug/L	50.0	ND	116	70-130			
Trichloroethene	68.5	1.00	ug/L	50.0	ND	137	70-130			M1
Trichlorofluoromethane (Freon 11)	29.3	1.00	ug/L	50.0	ND	58.7	70-130			M2
1,2,3-Trichloropropane	48.5	1.00	ug/L	50.0	ND	97.0	70-130			
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	28.7	1.00	ug/L	50.0	ND	57.4	70-130			M2
1,3,5-Trimethylbenzene	53.1	1.00	ug/L	50.0	ND	106	70-130			
1,2,4-Trimethylbenzene	52.8	1.00	ug/L	50.0	ND	106	70-130			
Vinyl chloride	54.7	1.00	ug/L	50.0	ND	109	70-130			
m,p-Xylene	58.8	1.00	ug/L	50.0	ND	118	70-130			
o-Xylene	55.8	1.00	ug/L	50.0	ND	112	70-130			
Surrogate: 4-Bromofluorobenzene	*54.8*		ug/L	*50.0*		*110*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*53.8*		ug/L	*50.0*		*108*	*70-130*			
Surrogate: Toluene-d8	*46.9*		ug/L	*50.0*		*93.8*	*70-130*			

Definitions

AC:	TPH Fingerprint is Motor Oil
D1:	Dilution was performed due to matrix interference.
I1:	Internal standard was below quality control acceptance limits.
M:	Matrix interference is present.
M1:	Matrix spike recovery is above acceptance limits.
M2:	Matrix spike recovery is below acceptance limits.
M3:	Matrix spike recovery is outside of acceptance limits. The post digestion spike recovery is acceptable.
Q2:	LCS recovery is above acceptance limits. Results may be bias high.
Q8:	CCV recovery is below acceptance limits. The reported value is estimated.
R1:	Duplicate RPD is outside acceptance criteria.
R3:	Duplicate RPD is outside of acceptance criteria. The difference between the results is less than 2x Method Reporting Limit.
RL:	Reporting Limit
RPD:	Relative Percent Difference
S1:	Surrogate recovery is above acceptance limits.
S2:	Surrogate recovery is below acceptance limits.
S3:	Surrogate is diluted out.
Y:	This analyte is not on the laboratory's current scope of accreditation.
Y1:	Accreditation is not offered by the accrediting body for this analyte.

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 1.5°C

Cooler Inspection Checklist

Ice Present or not required?	Yes	Shipping containers sealed or not required?	Yes
Custody seals intact or not required?	Yes	Chain of Custody (COC) Present?	Yes
COC includes customer information?	Yes	Relinquished and received signature on COC?	Yes
Sample collector identified on COC?	Yes	Sample type identified on COC?	Yes
Correct containers listed on COC?	Yes	Correct number of containers listed on COC?	Yes
Containers Intact?	Yes	COC includes requested analyses?	Yes
Enough sample volume for indicated tests received?	Yes	Sample labels match COC (Name, Date & Time?)	Yes
Samples arrived within hold time?	Yes	Correct preservatives on COC or not required?	Yes
Chemical preservations checked or not required?	Yes	Preservation checks meet method requirements?	Yes
VOA vials have zero headspace, or not recd.?	Yes	Trip Blank(s) Present or not required?	Yes

Project Requested Certification(s)

Microbac Laboratories, Inc. - Dayville

LAO00346	Rhode Island Department of Health

Report Comments

Samples were received in proper condition and the reported results conform to applicable accreditation standard unless otherwise noted.

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included.

Reviewed and Approved By:

M Montgomery

Melisa L. Montgomery
QA Officer
Reported: 01/08/2019 16:17

D 8 K 2 8 4 4

GZA

SUB

ESS Laboratory Microbac

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF

Turn Time: 5-day (R1) | Rush

Regulatory State

Is this project for any of the following?: ○CT RCP ○MA MCP ○RGP

Reporting Limits

Electonic Deliverables: ☒ Limit Checker ☒ Standard Excel ☒ Other (Please Specify →) PDF

Company Name	Project #	Project Name
GZA GeoEnvironmental	34502-07	Seaville Dyeing
Contact Person	**Address**	
Richard Carlone	189 Valley St. Suite 300	
City	**State**	**Zip Code** / **PO #**
Providence	Oregon R1	02909
Telephone Number	**FAX Number**	**Email Address**
(401) 427-2776		richard.carlone@gza.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis: VOC high	TPH	PAHs	PP13 Met.	PCBs	PAH (R1)
	11/27/18	1055	Grab	Soil	MW9-S2D	X	X	X	X	X	
	11/27/18	1200	Grab	Soil	MW8-S2B	X	X	X	X	X	
	11/27/18	1300	Grab	Soil	B11-S1	X	X	X	X	X	
	11/27/18	1345	Grab	Soil	B-10 (1)	X	X	X	X	X	
	11/27/18	1445	Grab	Soil	(R2) B7-S1	X	X	X	X	X	
	11/27/18	1500	Grab	Soil	B3-S2	X	X	X	X	X	
	11/27/18	1515	Grab	Soil	B2-S2	X	X	X	X	X	
	11/27/18	1530	Grab	Soil	B5-S2	X	X	X	X	X	
	11/27/18	1630	Grab	Soil	(R2) MW3 MW3-S1	X	X	X	X	X	
	11/27/18	0800			Trip Blank	X					
Container Type:	AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer G - Glass O-Other P-Poly S-Sterile V-Vial					V	AG	AG	AG	AG	
Container Volume:	1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*					7	10	10	10	10	
Preservation Code:	1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Ascorbic Acid 12-Other*					10	1	1	1	1	
					Number of Containers per Sample:	2	1	1	1	1	

Laboratory Use Only

Cooler Present: _____

Seals Intact: _____

Cooler Temperature: 1.5 °C

Sampled by: Rowan Hames

Comments: Please specify "Other" preservative and containers types in this space

(1) If not enough soil, sample for TPH first, then PAH, PP-13, PCBs)

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
11/29/18 0135	11/29/18 13:57		
Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
11/29/18 15:05	11-29-18 1505		

D 8 K 2 8 4 4

GZA

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston RI 02910
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

Regulatory State: RI

Is this project for any of the following?: ☐ MA-MCP ☐ CT-RCP ☐ RGP ☐ Remediation

ESS Lab #

Reporting Limits

Electonic Deliverables: ☐ Limit Checker ☒ Excel ☒ Other (Please Specifiy) → PDF

Company Name	Project #	Project Name
GZA GeoEnvironmental	34507.01	Saville Drilling

Contact Person	Address
Richard Carlone	188 Valley St. Suite 300

City	State	Zip Code	PO #
Providence	RI	02909	

Telephone Number	FAX Number	Email Address
401-427-2776		richard.carlone@gza.com

Analysis

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	VOC High	TPH	PAH	PP13 Metals	PCBs	TPH Fingerprint
	11/28/18	1515	composite	soil	MW-4 (0-2)	✓	✓	✓	✓	✓	
	11/28/18	1516		soil	BD 11/28/18	✓	✓	✓	✓	✓	
	11/28/18	1255	composite	soil	MW-7 (10-15')						✓
	11/28/18	1312	composite	soil	MW-6 (0-5')	✓	✓	✓	✓	✓	
	11/28/18	0800			Trip Blank	✓					
Container Type: AG-Amber Glass B-BOD Bottle G-Glass P-Poly S-Sterile V-Vial O-Other						ag	ag	AG	AG	AG	AG
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*						7	10	10	10	10	10
Number of Containers:						2	1	1	1	1	1

Laboratory Use Only

Cooler Present: ______

Seals Intact: ______

Cooler Temperature: 1.5 °C

Sampled by : Jaclyn Kaehler

Comments: Please specify "Other" preservative and containers types in this space

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
[signature] 11/29/18 1357	[signature] 11/29/18 13:57		
Relinquished by: (Signature, Date & Time)	**Received By: (Signature, Date & Time)**	**Relinquished By: (Signature, Date & Time)**	**Received By: (Signature, Date & Time)**
[signature] 11/29/18 15:05			

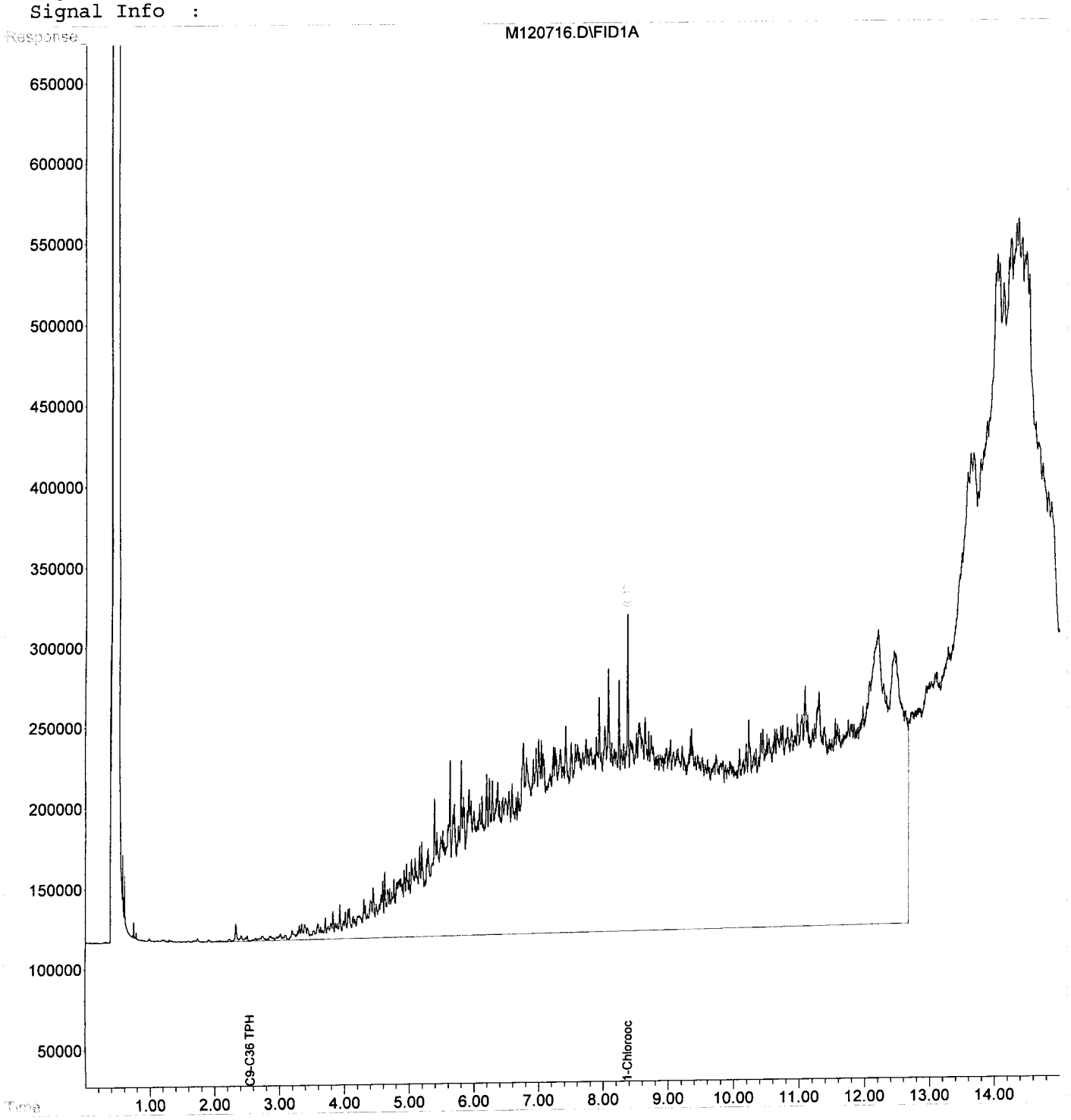
Quantitation Report (QT Reviewed)

Data File : E:\DATA\181207M.B\M120716.D
Acq On : 7 Dec 2018 7:35 pm
Sample : D8K2844-13RE1
Misc : 20
IntFile : EVENTS.E
Quant Time: Dec 10 10:57 2018 Quant Results File: 8100M.RES

Vial: 12
Operator: CDT
Inst : GC11
Multiplr: 1.00

Quant Method : C:\HPCHEM\1\METHODS\8100M.M (Chemstation Integrator)
Title :
Last Update : Mon Dec 10 10:54:05 2018
Response via : Multiple Level Calibration
DataAcq Meth : ETPH8100.M

Volume Inj. :
Signal Phase :
Signal Info :



APPENDIX F

INVESTIGATION DERIVED WASTE (IDW) SHIPPING RECORDS

print or type. (Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: N/A	2. Page 1 of: 01	3. Emergency Response Phone: 508-828-1005	4. Waste Tracking Number: 20191102-001

5. Generator's Name and Mailing Address
Rhode Island DEM
235 Promenade Street
Providence, RI 02880-5725
Generator's Phone: 401-427-2776

Generator's Site Address (if different than mailing address)
117 & 229 First Street
Woonsocket, RI 02895

6. Transporter 1 Company Name: Global Remediation Services Inc. — U.S. EPA ID Number: MAC300012903

7. Transporter 2 Company Name: — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
Northland Environmental, LLC
275 Allens Ave.
Providence, RI 02905 USA
Facility's Phone: 401-781-6340
U.S. EPA ID Number: RID040098352
12:30

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. Non DOT / Non RCRA Regulated Material (Soil / PPE)	002	DM	600	P	
	2.					5.C
	3. 5.5					
	4.					

13. Special Handling Instructions and Additional Information
1. Profile / Approval# 103720-00 (Non-Haz Soil/PPE) - R016 (LF01)

14. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: Mitchell Shelly Aman — Signature: [signature] — Month 02 Day 11 Year 19

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit: ______
Transporter signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials 12:30
Transporter 1 Printed/Typed Name: Arthur Perrault — Signature: [signature] — Month 02 Day 11 Year 19
Transporter 2 Printed/Typed Name: — Signature: — Month Day Year

17. Discrepancy
17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Carie Pickering — Signature: [signature] — Month 2 Day 11 Year 19

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	508-828-1005	20191102-002

GENERATOR

5. Generator's Name and Mailing Address
Rhode Island DEM
235 Promenade Street
Providence, RI 02890-5725
401-427-2778
Generator's Phone:

Generator's Site Address (if different than mailing address)
117 & 229 First Street
Woonsocket RI 02895

6. Transporter 1 Company Name: Global Remediation Services Inc.
U.S. EPA ID Number: MAC300012803

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Globalcycle, Inc.
700 Richmond Street
East Taunton, MA 02718
508-828-1005
Facility's Phone:
U.S. EPA ID Number: N/A

9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
	1. Non DOT / Non RCRA Regulated Liquid (Waste Water)	001	DM	27	G	
	2.					
	3.					
	4.					

13. Special Handling Instructions and Additional Information
1. Profile / Approval# R260-001 (Non-Haz Waste Water)
PH-7.5 Vis-OK
Profile# R-260-001 Plate# P44-660(MA)

14. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Generator's/Offeror's Printed/Typed Name: x Shelly Alcorn
Signature: x Salcorn
Month 02 Day 11 Year 19

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: ARTHUR JOURNEAU
Signature:
Month 02 Day 11 Year 19

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jodan Fernandes
Signature:
Month 2 Day 11 Year 19

APPENDIX G

FIELD SAMPLING LOGS

File No.	34502.01	Well ID:	MW-3
Project	Seville Dyeing Co.	Sample Date:	11/30/2018
Location	city: Woonsocket State: RI	Sampler's name:	ROH
Weather:	Cloudy, 30s		

WATER LEVEL OBSERVATIONS measurement date/time: 11/30/2018 8:35

Point of measurement	PVC Riser [X] Casing [ ] Ground [ ]		
Total well depth (feet)	19.50	Standing water in well (feet)	7.00
Depth to LNAPL (feet)	NP	Well Diamter (in.)	2
Depth to water (feet)	12.50	Sample Depth (feet bgs)	15
Depth to DNAPL (feet)	NP	Standpipe TPVC to Ground (feet)	1.17
Well Screen (feet bgs)	9 to 19	Roadbox TPVC to Ground (feet)	-

Well Condition: **Protective casing** [ ] poor [X] good **Expansion cap** [X] yes [ ] no **Well ID** [ ] yes [X] no

lock [ ] yes [X] no **Concrete Collar** [ ] yes [X] no **Well** [ ] poor [X] good

EQUIPMENT

Sample Method: [ ] Bailer [ ] Pump / [X] Low Flow

Pump Type: Geopump No. Rental

Meter Type: YSI No. Rental **Flow Thru Cell Vol (mL):** 300

INSTRUMENT MEASUREMENTS: Start time: 11:15 Stop time: 12:07

Time	Depth to water (ft) (drawdown <0.3 or stable)	ORP (mV) (±10)	pH (s.u.) (±0.1)	Spec. Cond (µS/cm) (±3%)	DO (mg/L) (±10% or 3 rds <0.5)	Temp. (°C) (±3%)	Turbidity (ntu) (±10% or <5 ntu)	Flow (mL/min) (<500)	Notes
11:45		67.4	6.54	472.7	3.71	14.2	10.44		
11:58		74.0	6.48	495.9	3.66	14.1	6.87		
12:01		75.5	6.47	500	3.65	14.2	4.83		
12:04		75.6	6.47	501	3.64	14.2	3.87		
21:07		75.7	6.47	503	3.63	14.2	3.45		

SAMPLE TESTING INFORMATION **Sample time:** 12:07

Analysis	Method	No. bottles	Bottle type	Volume	Preservation	Handling
VOC	8260B	3	VOA	40mL	HCl	on ice
TPH	8100	2	AG	1L	H2SO4	on ice

SAMPLE OBSERVATIONS

Color N/A Odor petroleum-like Clarity Clear **Purge Volume:** 3 gallons

Tubing Volume: gallons

Notes: NP = No Product NM = not measured

Slight sheen in purge water

File No.	34502.01	Well ID:	MW-4
Project	Seville Dyeing Co.	Sample Date:	11/30/2018
Location	city: Woonsocket State: RI	Sampler's name:	ROH
Weather:	Cloudy, 30s		

WATER LEVEL OBSERVATIONS measurement date/time: 11/30/2018 8:39

Point of measurement: PVC Riser [X] Casing [ ] Ground [ ]

Total well depth (feet)	16.30	Standing water in well (feet)	7.29
Depth to LNAPL (feet)	NP	Well Diamter (in.)	2
Depth to water (feet)	9.01	Sample Depth (feet bgs)	12
Depth to DNAPL (feet)	NP	Standpipe TPVC to Ground (feet)	-
Well Screen (feet bgs)	7 to 17	Roadbox TPVC to Ground (feet)	0.33

Well Condition: **Protective casing** [ ] poor [X] good **Expansion cap** [X] yes [ ] no **Well ID** [ ] yes [X] no

lock [ ] yes [X] no **Concrete Collar** [X] yes [ ] no **Well** [ ] poor [X] good

EQUIPMENT

Sample Method: [ ] Bailer [ ] Pump / [X] Low Flow

Pump Type: Geopump No. Rental

Meter Type: YSI No. Rental **Flow Thru Cell Vol (mL):** 300

INSTRUMENT MEASUREMENTS: Start time: 10:40 Stop time: 11:37

Time	Depth to water (ft) (drawdown <0.3 or stable)	ORP (mV) (±10)	pH (s.u.) (±0.1)	Spec. Cond (µS/cm) (±3%)	DO (mg/L) (±10% or 3 rds <0.5)	Temp. (°C) (±3%)	Turbidity (ntu) (±10% or <5 ntu)	Flow (mL/min) (<500)	Notes
11:16		94.3	7.06	425.3	4.50	14.2	2.16		
11:19		108.5	6.95	422.5	3.59	14.4	1.69		
11:22		118.8	6.91	419.5	3.43	14.3	1.55		
11:30		138.8	6.82	421.1	3.34	14.3	1.45		
11:33		140.1	6.82	420.7	3.32	14.3	1.47		
11:37		140.5	6.81	420.8	3.31	14.3	1.42		

SAMPLE TESTING INFORMATION **Sample time:** 11:37

Analysis	Method	No. bottles	Bottle type	Volume	Preservation	Handling
VOC	8260B	3	VOA	40mL	HCl	on ice
TPH	8100	2	AG	1L	H2SO4	on ice

SAMPLE OBSERVATIONS

Color N/A Odor petroleum-like Clarity Clear **Purge Volume:** 4.5 gallons

Tubing Volume: gallons

Notes: NP = No Product NM = not measured

Slight sheen in purge water

File No.	34502.01	Well ID:	MW-7
Project	Seville Dyeing Co.	Sample Date:	11/30/2018
Location	city: Woonsocket State: RI	Sampler's name:	ROH
Weather:	Cloudy, 30s		

WATER LEVEL OBSERVATIONS measurement date/time: 11/30/2018 8:43

Point of measurement	PVC Riser [X] Casing [ ] Ground [ ]		
Total well depth (feet)	16.90	Standing water in well (feet)	4.15
Depth to LNAPL (feet)	NP	Well Diamter (in.)	2
Depth to water (feet)	12.75	Sample Depth (feet bgs)	15
Depth to DNAPL (feet)	NP	Standpipe TPVC to Ground (feet)	2.83
Well Screen (feet bgs)	4 to 14	Roadbox TPVC to Ground (feet)	-

Well Condition: **Protective casing** [ ] poor [X] good **Expansion cap** [X] yes [ ] no **Well ID** [ ] yes [X] no

lock [ ] yes [X] no **Concrete Collar** [X] yes [ ] no **Well** [ ] poor [X] good

EQUIPMENT

Sample Method: [ ] Bailer [ ] Pump / [X] Low Flow

Pump Type: Geopump No. Rental

Meter Type: YSI No. Rental **Flow Thru Cell Vol (mL):** 300

INSTRUMENT MEASUREMENTS: Start time: 9:52 Stop time: 12:30

Time	Depth to water (ft) (drawdown <0.3 or stable)	ORP (mV) (±10)	pH (s.u.) (±0.1)	Spec. Cond (µS/cm) (±3%)	DO (mg/L) (±10% or 3 rds <0.5)	Temp. (°C) (±3%)	Turbidity (ntu) (±10% or <5 ntu)	Flow (mL/min) (<500)	Notes
10:30		NM	NM	NM	NM	NM	NM		Well went dry
12:30		NM	NM	NM	NM	NM	NM		3.70' standing water
									Well went dry after filling up sample bottles

SAMPLE TESTING INFORMATION **Sample time:** 12:30

Analysis	Method	No. bottles	Bottle type	Volume	Preservation	Handling
VOC	8260B	3	VOA	40mL	HCl	on ice
TPH	8100	2	AG	1L	H2SO4	on ice

SAMPLE OBSERVATIONS

Color N/A Odor petroleum-like Clarity Clear **Purge Volume:** 1 gallons

Tubing Volume: gallons

Notes: NP = No Product NM = not measured

Slight sheen in purge water

Well went dry, allowed to recharge two hours before taking sample

Well went dry immediately after filling sample bottles, unable to take YSI reading

File No. 34502.01 | Well ID: MW-8
Project Seville Dyeing Co. | Sample Date: 11/30/2018
Location city: Woonsocket State: RI | Sampler's name: ROH
Weather: Cloudy, 30s

WATER LEVEL OBSERVATIONS measurement date/time: 11/30/2018 8:46

Point of measurement	PVC Riser [X] Casing [ ] Ground [ ]		
Total well depth (feet)	15.00	Standing water in well (feet)	7.05
Depth to LNAPL (feet)	NP	Well Diamter (in.)	2
Depth to water (feet)	7.95	Sample Depth (feet bgs)	11
Depth to DNAPL (feet)	NP	Standpipe TPVC to Ground (feet)	-
Well Screen (feet bgs)	6 to 16	Roadbox TPVC to Ground (feet)	0.33

Well Condition: **Protective casing** [ ] poor [X] good **Expansion cap** [X] yes [ ] no **Well ID** [ ] yes [X] no
lock [ ] yes [X] no **Concrete Collar** [X] yes [ ] no **Well** [ ] poor [X] good

EQUIPMENT

Sample Method: [ ] Bailer [ ] Pump / [X] Low Flow

Pump Type: Geopump No. Rental

Meter Type: YSI No. Rental **Flow Thru Cell Vol (mL):** 300

INSTRUMENT MEASUREMENTS: Start time: 9:23 Stop time: 10:30

Time	Depth to water (ft) (drawdown <0.3 or stable)	ORP (mV) (±10)	pH (s.u.) (±0.1)	Spec. Cond (µS/cm) (±3%)	DO (mg/L) (±10% or 3 rds <0.5)	Temp. (°C) (±3%)	Turbidity (ntu) (±10% or <5 ntu)	Flow (mL/min) (<500)	Notes
9:57		-331.7	6.64	740	1.84	12.9	63.31		
10:10		-320.9	6.58	725	1.78	12.9	36.45		
10:16		-327.1	6.58	723	1.42	13.3	36.42		
10:21		-319.4	6.55	702	1.47	13.1	36.4		
10:25		-314.2	6.54	701	1.46	13.1	36.43		
10:30		-312.9	6.53	703	1.44	13.1	36.55		

SAMPLE TESTING INFORMATION **Sample time:** 10:30

Analysis	Method	No. bottles	Bottle type	Volume	Preservation	Handling
VOC	8260B	3	VOA	40mL	HCl	on ice
TPH	8100	2	AG	1L	H2SO4	on ice

SAMPLE OBSERVATIONS

Color N/A Odor petroleum-like Clarity Clear **Purge Volume:** 4 gallons
Tubing Volume: gallons

Notes: NP = No Product NM = not measured

Slight sheen in purge water

BD11302018 taken here

File No.	34502.01	Well ID:	MW-3
Project	Seville Dyeing Co.	Sample Date:	11/30/2018
Location	city: Woonsocket State: RI	Sampler's name:	ROH
Weather:	Cloudy, 30s		

WATER LEVEL OBSERVATIONS measurement date/time: 11/30/2018 8:35

Point of measurement: PVC Riser [X] Casing [ ] Ground [ ]

Total well depth (feet)	19.50	Standing water in well (feet)	7.00
Depth to LNAPL (feet)	NP	Well Diamter (in.)	2
Depth to water (feet)	12.50	Sample Depth (feet bgs)	15
Depth to DNAPL (feet)	NP	Standpipe TPVC to Ground (feet)	1.17
Well Screen (feet bgs)	9 to 19	Roadbox TPVC to Ground (feet)	-

Well Condition: **Protective casing** [ ] poor [X] good **Expansion cap** [X] yes [ ] no **Well ID** [ ] yes [X] no

lock [ ] yes [X] no **Concrete Collar** [ ] yes [X] no **Well** [ ] poor [X] good

EQUIPMENT

Sample Method: [ ] Bailer [ ] Pump / [X] Low Flow

Pump Type: Geopump No. Rental

Meter Type: YSI No. Rental **Flow Thru Cell Vol (mL):** 300

INSTRUMENT MEASUREMENTS: Start time: 11:15 Stop time: 12:07

Time	Depth to water (ft) (drawdown <0.3 or stable)	ORP (mV) (±10)	pH (s.u.) (±0.1)	Spec. Cond (µS/cm) (±3%)	DO (mg/L) (±10% or 3 rds <0.5)	Temp. (°C) (±3%)	Turbidity (ntu) (±10% or <5 ntu)	Flow (mL/min) (<500)	Notes
11:45		67.4	6.54	472.7	3.71	14.2	10.44		
11:58		74.0	6.48	495.9	3.66	14.1	6.87		
12:01		75.5	6.47	500	3.65	14.2	4.83		
12:04		75.6	6.47	501	3.64	14.2	3.87		
21:07		75.7	6.47	503	3.63	14.2	3.45		

SAMPLE TESTING INFORMATION **Sample time:** 12:07

Analysis	Method	No. bottles	Bottle type	Volume	Preservation	Handling
VOC	8260B	3	VOA	40mL	HCl	on ice
TPH	8100	2	AG	1L	H2SO4	on ice

SAMPLE OBSERVATIONS

Color N/A Odor petroleum-like Clarity Clear **Purge Volume:** 3 gallons

Tubing Volume: gallons

Notes: NP = No Product NM = not measured

Slight sheen in purge water

APPENDIX H

COST ESTIMATE

SUMMARY OF COSTS

DESCRIPTION	ITEMS	COST
ALT 1	NA. No Action Alternative.	**$0**
ALT 2	Institutional Controls	**$9,000**
ALT 3	Remedial Planning	$27,500
	Remediation (Design phase investigation, UST cleaning, biovent system and site fencing)	$176,000
	Long-Term Monitoring	$196,500
	Total Cost Plus %10 Contingency	**$440,000**
ALT 4A	Solar Array Cap Construction	$353,139
	Remedial Planning	$27,500
	Remediation	$176,000
	Long-Term Monitoring	$196,500
	Total Cost Plus %10 Contingency	**$828,453.30**
ALT 4B	Recreation Field Cap Construction	$527,673
	Sub-Slab Depressurization System	$5,000
	Remedial Planning	$27,500
	Remediation	$176,000
	Long-Term Monitoring	$196,500
	Total Cost Plus %10 Contingency	**$1,025,940**
ALT 4C	Industrial Redevelopment Cap Construction	$287,982
	Sub-Slab Depressurization System	$461,535
	Remedial Planning	$27,500
	Remediation	$176,000
	Long-Term Monitoring	$196,500
	Total Cost Plus %10 Contingency	**$1,264,468**

Notes

1. Cost developed from recent work on similar projects
2. Cost estimates subject to Remedial Cost Estimate Limitations in Appendix A.

ALT 1 - SEVILLE DYE
NO ACTION

DESCRIPTION	UNIT OF MEASURE	UNIT COST	QUANTITY	COST
NO ACTION	EA	$0.00	1	$0

SUBTOTAL $0

1. Cost estimates subject to Remedial Cost Estimate Limitations in Appendix A.

ALT 2 - SEVILLE DYE
INSTITUTIONAL CONTROLS

DESCRIPTION	UNIT OF MEASURE	UNIT COST	QUANTITY	COST
DEVELOP AND RECORD ELUR	EA	$2,000.00	1	$2,000
REMEDIAL ACTION WORK PLAN	EA	$5,000.00	1	$5,000
REMEDIAL ACTION COMPLETION REPORT	EA	$2,000.00	1	$2,000

SUBTOTAL $9,000

1. Cost estimates subject to Remedial Cost Estimate Limitations in Appendix A.

ALT 3 - SEVILLE DYE

LIMITED DESIGN INVESTIGATION, OIL UST CLEANING, BIOVENT SYSTEM, SITE FENCING AND LONG-TERM GROUNDWATER MONITORING

DESCRIPTION	UNIT OF MEASURE	UNIT COST	QUANTITY	COST
REMEDIAL PLANNING				
REMEDIAL ACTION WORK PLAN	EA	$25,000	1	$25,000
QAPP ADDENDUM/MODIFICATION	EA	$2,500	1	$2,500
REMEDIAL PLANNING SUBTOTAL				**$27,500**
REMEDIATION				
LIMITED DESIGN PHASE INVESTIGATION	EA	$25,000	1	$25,000
BIO-VENT PILOT TEST	EA	$15,000	1	$15,000
UST CLEANING (ASSUMING MINIMAL OIL REMAINS IN TANK)	LUMP	$10,000	1	$10,000
BIOVENT SYSTEM INSTALLATION	LUMP	$100,000	1	$100,000
PERIMETER FENCE EXTENSION (APPROXIMATELY 60 FEET)	LUMP	$5,000	1	$5,000
REMEDIAL ACTION COMPLETION REPORT	EA	$5,000	1	$5,000
CONSTRUCTION OVERSIGHT AND MANAGEMENT	TOTAL	10%		$16,000
REMEDIATION SUBTOTAL				**$176,000**
LONG-TERM MONITORING				
MONTHLY BIOVENT SYSTEM MONITORING (FIVE YEARS)	EA	$1,000	60	$60,000
ANNUAL REPORTING AND DATA EVALUATION (FIVE YEARS)	EA	$10,000	5	$50,000
ANNUAL BIOVENT SYSTEM MAINTENANCE (FIVE YEARS)	EA	$7,500	5	$37,500
LONG-TERM MONITORING OF FIVE WELLS (ASSUMES 2 YEARS OF QUARTERLY MONITORING AND THREE YEARS OF SEMI-ANNUAL MONITORING FOR VOCS ONLY)	EA	$3,500	14	$49,000

NOTES

1. COST DEVELOPED FROM RECENT WORK ON SIMILAR PROJECTS.
2. COST ESTIMATES SUBJECT TO REMEDIAL COST ESTIMATE LIMITATIONS IN APPENDIX A.

SUBTOTAL (WITHOUT LONG-TERM MONITORING) WITH 10% CONTINGENCY	$223,850
SUBTOTAL (WITH LONG-TERM MONITORING) WITH 10 PERCENT CONTINGENCY	$440,000

ALT 4A - SEVILLE DYE
SOLAR ARRAY

DESCRIPTION	UNIT OF MEASURE	UNIT COST	QUANTITY	COST
CAP CONSTRUCTION				
8-OUNCE NON-WOVEN GEOTEXTILE	SY	$1.50	26,620	$39,930
FURNISH AND PLACE 4-IN CRUSHED STONE	CY	$65	2,960	$192,409
ANALYTICAL TESTING FOR DISPOSAL	SAMPLE	$1,100	3	$3,300
SOIL LOADING	CY	$5	1,000	$5,000
SOIL DISPOSAL TO ESMI	TON	$75	1,500	$112,500
CAP CONSTRUCTION SUBTOTAL				**$353,139**
FROM ALT 3				
REMEDIAL PLANNING SUBTOTAL				$27,500
REMEDIATION SUBTOTAL				$176,000
LONG-TERM MONITORING SUBTOTAL				$196,500

NOTES

1. COST DEVELOPED FROM RECENT WORK ON SIMILAR PROJECTS.
2. COST ESTIMATES SUBJECT TO REMEDIAL COST ESTIMATE LIMITATIONS IN APPENDIX A.
3. ASSUMED WEIGHT OF SOIL IS 1.5 TONS PER CUBIC YARD

4. DISPOSAL CHARACTERIZATION SAMPLING ASSUMES SAMPLING FREQUENCY OF 1 SAMPLE PER 500 TONS FOR VOCS, TPH, SVOCS, PCBS, PP-13 METALS, TCLP LEAD, CORROSIVITY, FLASHPOINT AND REACTIVITY. FOR PURPOSES OF THIS COST ESTIMATE, UP TO THREE (3) SAMPLES WILL BE SUBMITTED FOR DISPOSAL CHARACTERIZATION.

SUBTOTAL (WITHOUT LONG-TERM MONITORING) WITH 10% CONTINGENCY	$612,303
SUBTOTAL (WITH LONG-TERM MONITORING) WITH 10 PERCENT CONTINGENCY	$828,453

ALT 4B - SEVILLE DYE
RECREATION FIELD

DESCRIPTION	UNIT OF MEASURE	UNIT COST	QUANTITY	COST
CAP CONSTRUCTION				
8-OUNCE NON-WOVEN GEOTEXTILE	SY	$1.50	26,620	$39,930
FURNISH AND PLACE 6 INCHES CLEAN TOPSOIL	CY	$52	4,432	$230,476
FURNISH AND PLACE 6 INCHES COMMON BORROW	CY	$30	4,432	$132,967
ANALYTICAL TESTING FOR DISPOSAL	SAMPLE	$1,100	3	$3,300
SOIL LOADING	CY	$5	1,000	$5,000
SOIL DISPOSAL TO ESMI	TON	$75	1,500	$112,500
ANALYTICAL TESTING FOR CLEAN FILL	SAMPLE	$700	5	$3,500
CAP CONSTURCTION SUBTOTAL				**$527,673**
SUB-SLAB DEPRESSURIZATION SYSTEM				
SUB-SLAB DEPRESSURIZATION SYSTEM	SF	$5	1,000	$5,000
SUB-SLAB DEPRESSURIZATION SYSTEM SUBTOTAL				**$5,000**
ALT 3				
REMEDIAL PLANNING SUBTOTAL				$27,500
REMEDIATION SUBTOTAL				$176,000
LONG-TERM MONITORING SUBTOTAL				$196,500

NOTES

1. COST DEVELOPED FROM RECENT WORK ON SIMILAR PROJECTS.
2. COST ESTIMATES SUBJECT TO REMEDIAL COST ESTIMATE LIMITATIONS IN APPENDIX A.
3. ASSUMED WEIGHT OF SOIL IS 1.5 TONS PER CUBIC YARD

4. IMPORTED SOIL CHARACTERIZATION SAMPLING ASSUMED SAMPLING FREQUENCY OF 1 SAMPLE PER 2,000 CY FOR VOCS, TPH, SVOCS, PCBS AND PP-13 METALS, AND 1 SAMPLE PER 500 CY FOR ARSENIC FOR CLEAN TOPSOIL IMPORTED TO THE SITE. FOR PURPOSES OF THIS COST ESTIMATE, UP TO FOUR (4) SAMPLES WILL BE SUBMITTED FOR FULL IMPORTED SOIL CHARACTERIZATION AND UP TO EIGHTEEN (18) WILL BE TESTED FOR ARSENIC ONLY. ARSENIC ONLY TESTING IS INCLUDED IN THE UNIT COST.

4. DISPOSAL CHARACTERIZATION SAMPLING ASSUMES SAMPLING FREQUENCY OF 1 SAMPLE PER 500 TONS FOR VOCS, TPH, SVOCS, PCBS, PP-13 METALS, TCLP LEAD, CORROSIVITY, FLASHPOINT AND REACTIVITY. FOR PURPOSES OF THIS COST ESTIMATE, UP TO THREE (3) SAMPLES WILL BE SUBMITTED FOR DISPOSAL CHARACTERIZATION.

SUBTOTAL (WITHOUT LONG-TERM MONITORING) WITH 10% CONTINGENCY	$809,790
SUBTOTAL (WITH LONG-TERM MONITORING) WITH 10 PERCENT CONTINGENCY	$1,025,940

ALT 4C - SEVILLE DYE
INDUSTRIAL REDEVELOPMENT

DESCRIPTION	UNIT OF MEASURE	UNIT COST	QUANTITY	COST
CAP CONSTRUCTION				
8-OUNCE NON-WOVEN GEOTEXTILE	SY	$1.50	8,809	$13,214
FURNISH AND PLACE 1-FT CLEAN TOPSOIL	CY	$52	2,934	$152,568
ANALYTICAL TESTING FOR DISPOSAL	SAMPLE	$1,100	3	$3,300
SOIL LOADING	CY	$5	1,000	$5,000
SOIL DISPOSAL TO ESMI	TON	$75	1,500	$112,500
ANALYTICAL TESTING FOR CLEAN TOPSOIL	SAMPLE	$700	2	$1,400
CAP CONSTURCTION SUBTOTAL				**$287,982**
SUB-SLAB DEPRESSURIZATION SYSTEM				
SUB-SLAB DEPRESSURIZATION SYSTEM	SF	$5	92,307	$461,535
SUB-SLAB DEPRESSURIZATION SYSTEM SUBTOTAL				**$461,535**
ALT 3				
REMEDIAL PLANNING SUBTOTAL				$27,500
REMEDIATION SUBTOTAL				$176,000
LONG-TERM MONITORING SUBTOTAL				$196,500

NOTES

1. COST DEVELOPED FROM RECENT WORK ON SIMILAR PROJECTS.
2. COST ESTIMATES SUBJECT TO REMEDIAL COST ESTIMATE LIMITATIONS IN APPENDIX A.
3. ASSUMED WEIGHT OF SOIL IS 1.5 TONS PER CUBIC YARD
4. IMPORTED SOIL CHARACTERIZATION SAMPLING ASSUMED SAMPLING FREQUENCY OF 1 SAMPLE PER 2,000 CY FOR VOCS, TPH, SVOCS, PCBS AND PP-13 METALS, AND 1 SAMPLE PER 500 CY FOR ARSENIC FOR CLEAN TOPSOIL IMPORTED TO THE SITE. FOR PURPOSES OF THIS COST ESTIMATE, UP TO TWO (2) SAMPLES WILL BE SUBMITTED FOR FULL IMPORTED SOIL CHARACTERIZATION AND UP TO SIX (6) WILL BE TESTED FOR ARSENIC ONLY. ARSENIC ONLY TESTING IS INCLUDED IN THE UNIT COST.
4. DISPOSAL CHARACTERIZATION SAMPLING ASSUMES SAMPLING FREQUENCY OF 1 SAMPLE PER 500 TONS FOR VOCS, TPH, SVOCS, PCBS, PP-13 METALS, TCLP LEAD, CORROSIVITY, FLASHPOINT AND REACTIVITY. FOR PURPOSES OF THIS COST ESTIMATE, UP TO THREE (3) SAMPLES WILL BE SUBMITTED FOR DISPOSAL CHARACTERIZATION.

SUBTOTAL (WITHOUT LONG-TERM MONITORING) WITH 10% CONTINGENCY	$1,048,318
SUBTOTAL (WITH LONG-TERM MONITORING) WITH 10 PERCENT CONTINGENCY	$1,264,468

APPENDIX I

ANALYSSI OF BROWNFIELDS CLEANUP ALTERANTIVES

SEVILLE DYE ABCA

Analysis of Brownfields Cleanup Alternatives – Preliminary Evaluation
Former Seville Dyeing Company, 117 and 229 First Avenue, Woonsocket, RI
RIDEM Case No.: SR-39-1211A&B

Prepared by the City of Woonsocket

*Please note that the draft Analysis of Brownfields Cleanup Alternatives (ABCA) submitted as part of the proposal is intended as a brief preliminary document. The format of this document is suitable for the purpose of grant proposal submission, but not for compliance with the Terms and Conditions of an awarded grant. In addition, this document may not meet state requirements for the evaluation of cleanup alternatives.**

I. Introduction & Background

a. Site Location (*address*)

The site is located at 117 and 229 First Avenue in Woonsocket, RI (herein referred to as "the Site").

a.1 Forecasted Climate Conditions

According to the US Global Change Research Program (USGCRP), climate trends for the northeast region of the United States include increased temperatures, increased precipitation with greater variability, increased extreme precipitation events, and rises in sea level. Some of these factors, most specifically increased precipitation that may affect flood waters and stormwater runoff, are most applicable to the cleanup of the Site.

The Site is adjacent to the Blackstone River. Based on a review of Federal Emergency Management Agency (FEMA) Map #44007C0069G dated March 2, 2009, the majority of the Site is located within Zone X. The Zone X designation is for areas with a 0.2% annual chance of flood; areas of 1% annual chance of flood with average depths of less than 1 foot or with drainage areas less than 1-square mile; and areas protected by levees from 1% annual chance of flood. The northeastern portion of the Site is located with an "AE, 0.2% Annual Chance Flood Hazard Zone. However, greater storm frequency and intensity in a changing climate may result in more frequent and more powerful flood waters within the Blackstone River, which may result in changes to the flood zone and increased risk of flooding of the Site.

Under current Site conditions, increased precipitation and extreme weather could result in additional stormwater runoff and potential erosion to the Site from the onsite concrete/asphalt areas.

Based on the nature of the Site and its proposed reuse, changing temperature, rising sea levels, wildfires, changing dates of ground thaw/freezing, changing ecological zone, saltwater intrusion and changing groundwater table are not likely to significantly affect the Site.

b. Previous Site Use(s) and any previous cleanup/remediation

The 229 First Avenue portion of the Site consists of 4.3 acres that was a textile/mercantile mill complex from 1903 until demolition in 2011. The 117 First Avenue portion of the Site consists of 1.08 acres that was previously utilized as a motor freight terminal from 1949 to 1997.

A series of documented releases and/or other episodes of environmental non-compliance associated with prior activities were identified on the 117 First Avenue parcel. Environmental investigations from the 1990s identified the storage of oil containers, 25 drums of gasoline and sludge, an empty 500-gallon above ground storage tank (former contents unknown), and soil staining. Soil testing indicated elevated levels of total petroleum hydrocarbons (TPH) and polyaromatic hydrocarbons (PAHs) in soil. This work culminated with the implementation of engineered and institutional controls.

An abandoned, suspected 20,000-gallon No. 6 heating oil underground storage tank (UST) is located within a concrete bunker on the western perimeter of the Site (229 First Avenue parcel).

c. Site Assessment Findings (*briefly summarize the environmental investigations that have occurred at the site, including what the Phase I and Phase II assessment reports revealed in terms of contamination present, if applicable*)

GZA completed a Phase I Environmental Site Assessment dated September 2018 for the Site, on behalf of the Rhode Island Department of Environmental Management (RIDEM), as part of a Target Brownfields Assessment. GZA's Phase I ESA identified three Recognized Environmental Conditions (RECs) and one Controlled Recognized Environmental Condition (CREC) in connection with the property:

- An abandoned, suspected 20,000-gallon No. 6 heating oil underground storage tank (UST) located within a concrete bunker on the western perimeter of the Site.
- The presence of solid waste and areas of soil staining observed in the northern portion of the Site.
- The former mill buildings were utilized for approximately 100 years for textile manufacturing which likely has resulted in impacts to soil and/or groundwater as a result of historic use and/or undocumented releases of oil and/or hazardous materials.
- A series of documented releases and/or other episodes of environmental non-compliance associated with prior activities were identified on the 117 First Avenue parcel. Environmental investigations from the 1990s identified the storage of oil containers, 25 drums of gasoline and sludge, an empty 500-gallon above ground storage tank (former contents unknown), and soil staining. Soil testing indicated elevated levels of TPH and PAHs in soil. This work culminated with the implementation of engineered and institutional controls identified as a CREC

consisting of an asphalt cap and an Environmental Land Use Restriction (ELUR) that was recorded on Lot 117.

To evaluate these RECs, GZA conducted a subsurface investigation at the Site in November/December 2018. GZA completed 14 soil test borings and the collected soil samples for field screening and laboratory analysis. The 14 borings (B-1 through B-3, B-5 through B-11, MW-3, MW-4, MW-7 and MW-8) were completed to depths of 8 to 20 feet below ground surface (bgs). Two of the borings were located directly downgradient of the #6 oil UST bunker. Four borings were completed as shallow overburden groundwater monitoring wells. Soil samples recovered during the boring program were observed to generally consist of fine to coarse sand with varying amounts of gravel and silt in all borings. A majority of the borings also had traces of asphalt, brick and concrete between 0-10 ft bgs, indicating that the area has been filled. Groundwater was encountered at a depth of 8 to 13 feet bgs. A layer of petroleum impacted soil was observed in borings MW-7 and MW-8 (located downgradient of the UST bunker) from 10 to 20 feet bgs.

Thirteen soil samples, including one blind duplicate, were submitted to the laboratory for testing; twelve samples (including one blind duplicate) were tested for volatile organic compounds (VOCs), PAHs, TPH, polychlorinated biphenyls (PCBs), PP-13 metals. The remaining sample was tested for TPH fingerprint only. I/C-DEC exceedences for metals and certain PAHs were noted in MW-3, MW-4,, B-3, B-5, B-6, B-7 and B-11 in samples collected from 0-5 feet and/or 5-10 feet bgs. TPH also exceeded the I/C-DEC and GB-Leachability Criteria in samples from MW-7 (10-15 feet), B-1 (5-10 feet) and B-10 (7.5-9 feet). MW-8 and B-1 are located immediately downgradient of the oil UST bunker.

One round of groundwater samples was collected from the four newly installed wells. Results showed exceedences of the GB Groundwater Objective for benzene and ethylbenzene in MW-8; concentrations were 3.41 and 14.5 mg/L, respectively. This well is located downgradient of the oil UST bunker. A VI screening indicates that VI risk may be present if a building were to be constructed onsite in the future; currently the VI pathway is incomplete, as no buildings are located at the Site.

d. Project Goal (*site reuse plan*)

The planned reuse for the Site is industrial/commercial. At this time the City does not have a specific reuse plan for the property.

II. Applicable Regulations and Cleanup Standards

a. Cleanup Oversight Responsibility (*identify the entity, if any, that will oversee the cleanup, e.g., the state, Licensed Site Professional, other required certified professional*)

The cleanup will be overseen by RIDEM. In addition, all documents prepared for this Site are submitted to the state environmental department under RIDEM Case No. SR-39-1211A&B.

b. Cleanup Standards for major contaminants (*briefly summarize the standard for cleanup e.g., state standards for residential or industrial reuse*)

The City currently anticipates that the RIDEM I/C DEC, GB Leachability Criteria and GB Groundwater Objectives will be used as the cleanup standards.

c. Laws & Regulations Applicable to the Cleanup (*briefly summarize any federal, state, and local laws and regulations that apply to the cleanup*)

Laws and regulations that are applicable to this cleanup include the Federal Small Business Liability Relief and Brownfields Revitalization Act, the Federal Davis-Bacon Act, Rhode Island environmental laws, and City by-laws. Federal, state, and local laws regarding procurement of contractors to conduct the cleanup will be followed.

In addition, all appropriate permits (*e.g.*, notify before you dig, wetlands/stormwater soil transport/disposal manifests) will be obtained prior to the work commencing.

III. Cleanup Alternatives

a. Cleanup Alternatives Considered (*minimum two different alternatives plus No Action*)

To address contamination at the Site, four different alternatives were considered, including: Alternative #1 - No Action; Alternative #2 - Institutional Controls; Alternative #3 - Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring; and Alternative #4 Site Capping (as part of Site redevelopment), Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring.

b. Evaluation of Cleanup Alternatives (*brief discussion of the effectiveness, implementability and a preliminary cost estimate for each alternative)*

To satisfy EPA requirements, the effectiveness, implementability, and cost of each alternative must be considered prior to selecting a recommended cleanup alternative.

<u>Effectiveness – Including Climate Change Considerations</u>

- Alternative #1: No Action is not effective in controlling or preventing the exposure of receptors to contamination at the Site.
- Alternative #2: Under this alternative, an ELUR could be placed on the property, prohibiting future groundwater use, requiring buildings constructed onsite to include a sub-slab depressurization system and limiting land use to industrial/commercial activities. However, this alternative would not address

VOC/TPH concentrations in groundwater, the presence of NAPL in soil (and potentially in groundwater) or direct exposure to soils exceeding the I/C DEC.
.

- Alternative #3: Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring is an effective way to mitigate risk at the Site, since soil TPH contamination will be removed, Site access will be restricted and residential use/groundwater use on the property will be prohibited through institutional controls.
- Alternative #4: Site Capping (as part of Site redevelopment), Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring is equally effective as Alternative #3

General Climate Consideration Notes:
Any future development of the Site will be completed in accordance with RIDEM stormwater regulations. Therefore, impacts from increased precipitation and stormwater discharge due to greater storm intensity is not expected to impact the Site with proper engineering, which is planned despite the selected remedial alternative.

Implementability

- Alternative #1: No Action is easy to implement since no actions will be conducted.
- Alternative #2: Institutional Controls is easy to implement as an ELUR can easily be filed on the property.
- Alternative #3: Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring will be moderately difficult and costly to implement. Some excavation will be required during installation of the bio-vent system and long-term monitoring will be required. Work will be planned to minimize impacts to the local community. The bio-vent system will be constructed to avoid climate change impacts, i.e., potential increase flooding of the Blackstone River.
- Alternative #4: Site Capping (as part of Site redevelopment), Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring will be moderately difficult and costly to implement. Excavation and Site grading will be required as part of Site capping. Work will be planned to minimize impacts to the local community. The proposed cap and any Site redevleopment will be constructed to avoid climate change impacts, i.e., potential increase flooding of the Blackstone River.

Cost

- There will be no costs under Alternative #1: No Action.
- It is estimated that Alternative #2: Institutional Controls will cost $9,000.
- Alternative #3: Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring is estimated to cost roughly $440,000, including long term monitoring for five years.
- Alternative #4: Site Capping (as part of Site redevelopment), Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional

Controls and Long-Term Monitoring is estimated to cost roughly between $828,000 and $1,300,000, long term monitoring for five years, depending on the type of cap/redevleopment (a solar array, recreation field and industrial redevelopment were considered).

c. Recommended Cleanup Alternative

The recommended cleanup alternative is Alternative #3: Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring. Alternative #1: No Action and Alternative #2: Institutional Controls cannot be recommended since they do not fully address site risks. Alterative #3: Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring will remediate observed TPH contamination and mitigate direct exposure risk until the Site is redeveloped. Alternative #4: Site Capping (as part of Site redevelopment), Limited Design Investigation, Oil UST Cleaning, Bio-vent System, Site Fencing, Institutional Controls and Long-Term Monitoring will remediate observed TPH contamination and mitigate long-term direct exposure risk. For these reasons, Alternative #4 is the recommended alternative.

Green and Sustainable Remediation Measures for Selected Alternative

To make the selected alternative greener, or more sustainable, several techniques are planned. The most recent Best Management Practices (BMPs) issued under ASTM Standard E-2893: *Standard Guide for Greener Cleanups* will be used as a reference in this effort. The City will require the cleanup contractor to follow an idle-reduction policy and use heavy equipment with advanced emissions controls operated on ultra-low sulfur diesel. The number of mobilizations to the Site would be minimized and erosion/sedimentation control measures will be used to minimize runoff into environmentally sensitive areas.