July 29, 2016

Ms. Antonia Beavers
Georgia Department of Natural Resources
Environmental Protection Division
Response and Remediation Program
2 Martin Luther King Dr., S.E., Suite 1054 East
Atlanta, Georgia, 30334

RE: **4th SEMI-ANNUAL PROGRESS REPORT**
OMNI SOURCE FACILITY (FORMER LOEF COMPANY SITE)
590 OLD HULL ROAD, ATHENS, GEORGIA
HSI SITE NO. 10376
VRP SITE NO. 802705980
Apex Project No.: 510393-002

Dear Ms. Beavers:

Apex Companies, LLC (Apex) is pleased to submit the 4th Semi-Annual Progress Report for the OmniSource Facility (Former Loef Company Site) located in Athens, Georgia. This report includes results from the April 2016 groundwater monitoring event.

OmniSource is currently reviewing and preparing the Uniform Environmental Covenant (UEC) document that was mentioned in the Division's letter dated March 9, 2016. Therefore, the draft UEC is not included with this Progress Report. OmniSource will submit the draft UEC under separate cover or with the next semi-annual progress report.

Should you have any questions concerning this, please do not hesitate to contact the undersigned.

Sincerely,

APEX COMPANIES, LLC

Kathleen Roush

Kathleen Roush, P.G.
Division Manager
GA Registration No. 1799

Enclosure
cc: Peter Pozzo – OmniSource Corporation
Brian Winters – OmniSource Corporation
David Hatchett – Hatchett & Hauck, LLP

4th SEMI-ANNUAL PROGRESS REPORT
OMNISOURCE FACILITY
(FORMER LOEF COMPANY SITE)
590 OLD HULL ROAD
ATHENS, GEORGIA
HSI SITE NO. 10376
VRP SITE NO. 802705980

Submitted to:

Georgia Department of Natural Resources
Environmental Protection Division
Response and Remediation Program
2 Martin Luther King Dr., S.E., Suite 1054 East
Atlanta, Georgia, 30334

Submitted by:

Apex Companies, LLC
10610 Metromont Parkway, Suite 206
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Apex Project No. 510393-002

July 29, 2016

Grant Watkins

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Kathleen Roush

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Division Manager

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1.0 INTRODUCTION

Apex Companies, LLC (Apex) has prepared this 4th Progress Report on behalf of OmniSource Athens Division LLC (OmniSource) for the Former Loef Company Site located on three parcels (0 Old Hull Road, 590 Old Hull Road and 305 Athena Drive) in Athens, Clarke County, Georgia (the "site"). The site is an active industrial scrap metals recycling facility that occupies 21.34 acres of land, inclusive of the three property parcels that are identified as the "VRP Property" under the Georgia Department of Natural Resources (DNR) Voluntary Remediation Program (VRP). The site was listed on the Georgia Hazardous Site Inventory (HSI) as a Class II site on June 9, 1995 (Site Number 10376) following discovery of soil and groundwater contamination at the facility. The site location on a regional topographic map is shown on **Figure 1**. A site plan that includes the facility layout and existing monitoring well locations is shown on **Figure 2**.

The primary objectives of this report are to document the tasks completed by OmniSource from July 2015 through July 2016 and to provide additional information as requested by the Georgia DNR, Environmental Protection Division (EPD) in their comments letter dated March 9, 2016. An updated schedule of VRP activities proposed for the site is also included in this report.

1.1 Site Background and Regulatory Summary

Hull Real Estate, LLC (Hull) was the prior owner of the site before OmniSource's acquisition of the property. On November 7, 2011 Peachtree Environmental (Peachtree) submitted a VRP application to the EPD on behalf of Hull, and EPD accepted the site into the VRP in May 2012. Hull had committed to completing the site remediation under the VRP after selling the property to OmniSource. However, Hull later reneged on that commitment and informed the EPD that they were no longer willing to complete site remediation work.

On March 12, 2015 OmniSource submitted a VRP application with the intent to complete regulatory closure at the site. The VRP application identified additional activities to be conducted for site closure. EPD accepted OmniSource as a participant in the VRP for the referenced property in a letter dated May 8, 2015.

Prior remedial activities at the site include excavation and off-site disposal of approximately 43,000 tons of soil impacted by volatile organic compounds (VOCs) and metals from 2002 through 2003. An in-situ groundwater treatment event was also completed in 2003. The groundwater treatment event included injection of Hydrogen Release Compound (HRC®) as a carbon substrate to promote enhanced anaerobic biodegradation of chlorinated volatile organic compounds (cVOCs) in groundwater. Both Hull and OmniSource have performed ongoing, routine groundwater sampling events to monitor migration of the VOC plume and the long-term effectiveness of the enhanced biodegradation treatment program combined with monitored natural attenuation as a groundwater cleanup remedy.

The most recent Progress Report previously submitted by OmniSource to EPD was the 3rd Semi-Annual Progress Report (Apex: July 30, 2015). Previous VRP site field activities and evaluations addressed by that report included the following:

- Repair of monitoring well MW-1;
- Resurveying of 11 existing site wells in January 2015;
- Sampling and permanent abandonment of former well MW-2A in May 2015;
- Installation and development of deep well MW-1D in May 2015;

- Aquifer slug testing in wells MW-4A, MW-11 and MW-12;
- Groundwater gauging and sampling at 11 existing site monitoring wells (MW-3A, MW-4A, MW-6, MW-7A, MW-8A, MW-9 and MW-10 through MW-14) in January 2015. The groundwater analyses included VOCs (Method 8260), lead and various bio-geochemical parameters such as dissolved gases, total organic carbon, and inorganic constituents;
- Groundwater sampling at repaired monitoring well MW-1 and new deep well MW-1D in June 2015 (analyses included VOCs and lead);
- Review and update of the Conceptual Site Model;
- Conducted a plume stability and degradation evaluation using existing data as primary lines of evidence, as well as a contaminant fate-and-transport evaluation using the one-dimensional BIOCHLOR model as an optional line of evidence for future plume migration.

1.2 Work Scope for Current Progress Report

In response to EPD's comment letter dated March 9, 2016, Apex submitted a letter to EPD on April 21, 2016 with an interim response to comments and notification of the proposed sampling plan and date for the next semi-annual groundwater monitoring event. This *4th Semi-Annual Progress Report* presents information regarding VRP activities performed since submittal of the last progress report, which includes the following work components:

1. Methods and results of the April 2016 semi-annual groundwater monitoring event;
2. Professional surveying of well MW-1 and MW-1D locations and elevations in July 2016;
3. Detailed responses to EPD's comments 1-7 from the agency's March 9, 2016 letter (if not already addressed by Apex's April 21, 2016 interim response letter to EPD), including detailed BIOCHLOR model input/output information and updated conceptual site model.
4. Supplemental plume stability evaluations using Mann-Kindell statistical tests; and
5. An updated VRP schedule and recommendations for the next groundwater sampling event and Progress Report.

2.0 GROUNDWATER MONITORING METHODS AND RESULTS

This section describes the methods and results of the most recent groundwater monitoring event conducted at the site in April 2016.

2.1 Groundwater Gauging and Sampling Methods

The groundwater monitoring event was conducted on April 25-26, 2016 by Apex Companies, LLC. Groundwater levels were gauged and water samples were collected from the 13 existing site monitoring wells (MW-1, MW-1D, MW-3A, MW-4A, MW-6, MW-7A, MW-8A, MW-9, and MW-10 through MW-14) as shown in Figure 2.

Prior to purging and sampling, each of the wells were opened and allowed to equilibrate. Groundwater levels in the wells were then gauged with a decontaminated electronic water level probe and were recorded to the nearest 0.01-foot. The wells were gauged in order of known degree of contamination, moving from wells which have historically not exhibited detectable concentrations of VOCs to those which have exhibited the highest levels. Historical groundwater

gauging and elevation measurements that include data from the April 2016 gauging event are provided in **Table 1.**

Each of the 13 wells were purged and sampled by low flow protocol in accordance with the U.S. EPA Region IV Science & Ecosystem Support Division (SESD) March 6, 2013 Operating Procedure for Groundwater Sampling (SESDPROC-301-R3). The wells were purged using a peristaltic pump equipped with Teflon tubing with the intake placed near the middle of the screened interval. The wells were sampled in order of least to greatest impacts of VOCs based on historical sampling results.

During low-flow well purging, groundwater water quality indicator parameters of pH, temperature, specific conductance, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity were recorded at three-minute intervals using a Horiba U-52 multi-probe water quality meter. Generally, groundwater samples are collected when water chemistry parameters are stable (e.g., pH values within 0.1 standard unit, specific conductance within 5% and turbidity <10 NTUs) for three consecutive three-minute intervals. Groundwater sampling forms documenting the monitored groundwater quality indicator parameters are provided in **Appendix A**. Historical water quality parameters, inorganic parameters and bio-geochemical measurements for site wells are included in **Table 2**. Several wells had stabilized turbidity that exceeded 10 NTUs.

Following purging, groundwater samples from each well were collected into laboratory supplied sample containers using the peristaltic pump. In accordance with SESDPROC-301-R3, samples for VOC analyses were collected using the "soda straw" method. The sample containers were labelled with a unique sample number, date and time of collection, sampler's initials and analyses required. Following collection, the samples were placed in a cooler with ice. Chain-of-custody documentation was maintained throughout the sampling event.

In addition to the groundwater samples, quality assurance/quality control (QA/QC) samples were collected in accordance with SESD Procedures. QA/QC samples included:

- One trip blank (one blank per shipping cooler for VOCs);
- Two field duplicates (one duplicate collected per 10 samples); and
- One field blank (one collected per 20 samples).

The field duplicates (DUP-1, DUP-2) were collected at wells MW-12 and MW-13. Samples were transported under chain-of-custody to Shealy Environmental Services, Inc. (Shealy) of Columbia, South Carolina (GADNR Certification #E87653) and analyzed for VOCs using EPA Method 8260B in accordance with the sampling program letter submitted to EPD on April 21, 2016.

Table 3 summarizes the VOC analytical results from the April 2016 event. The laboratory analytical report and chain-of-custody records are provided in **Appendix B**. Discussions of the April 2016 groundwater monitoring results are provided in Section 2.2 and Section 3.3 of this report.

2.1.1 Waste Management

Investigation derived wastes (IDW), including well purge water and decontamination fluids were containerized in a 55-gallon Department of Transportation (DOT)-approved drum. The drum was labelled with the site name and address, contents and date of accumulation. It was staged in a secure location pending transportation to an off-site disposal facility following the next semi-

annual sampling event. Liquid samples of IDW were previously characterized and profiled for disposal from past sampling events. Historical analyses to characterize IDW have included VOCs, RCRA metals, corrosivity, and ignitability. Because there are existing profiles for IDW from this site, additional IDW characterization samples were not collected from the small volume of purge water generated during the April 2016 sampling event. Purge water from the next semi-annual event will be placed in the same drum prior to off-site transport and disposal at a future date.

Waste manifests for IDW generated during the 2015 site investigation were not available at the time that the *3rd Semi-Annual Progress Report* was submitted. Disposal manifests from the 2015 site work are included in **Appendix C** of this report.

2.2 Groundwater Elevations and Flow Results

Groundwater elevation data from **Table 1** were used to construct a groundwater potentiometric map for April 25, 2016 as shown in **Figure 3**. The potentiometric map indicates that shallow groundwater was flowing generally toward the south-southeast over most of the site during the April 2016 event. The map also shows that groundwater flow becomes more radial and multi-directional near the southern property corner, where a south-southwest flow direction was observed in the vicinity of well MW-8A and a more easterly flow component was seen in the area between wells MW-9A and MW-4A. The April 2016 groundwater potentiometric flow results are consistent with historical groundwater flow maps.

Groundwater horizontal flow gradients in the surficial aquifer zone vary from the northern portion of the site, where the hydraulic gradient is lower, to the southern portion of the site where the gradient becomes steeper. Using three-point triangulation methods, a hydraulic gradient of 0.0128 ft/ft was calculated for the upgradient portion of the site between wells MW-12, MW-1 and MW-13. A steeper hydraulic gradient of 0.0263 ft/ft was calculated using triangulation methods for wells MW-11, MW-10 and MW-4A located near the east-southeastern property boundary. Additionally, a steeper gradient is evident in the vicinity of wells MW-14 and MW-7a near the southwest property boundary, where an approximate hydraulic gradient of 0.0417 ft/ft was estimated from equipotential contours on the potentiometric map in Figure 3.

Because there is not a multi-depth cluster of closely-spaced shallow and deep wells at the site, vertical hydraulic gradients could not be directly determined from groundwater elevation data at deep well MW-1D. Compared to the water level elevation of 688.90 feet mean sea level (ft MSL) at nearby shallow well MW-3A, the water level elevation at MW-1D (684.81 ft MSL) is 4.09 feet lower. This shows a downward vertical flow component between the shallow and deeper groundwater on this part of the site, indicative of a groundwater recharge zone. Another method to estimate the vertical gradient is to compare the potentiometric elevation at MW-1D with the shallow potentiometric contour value at that location. From Figure 3, the shallow groundwater potentiometric value is 687 ft MSL at the MW-1D well location and this value is assumed to represent both the water table elevation and the middle of the screen of a hypothetical shallow well at this location. The input values to calculate an estimated vertical gradient are:

- Ground elevation at MW-1D = 707.00 feet mean sea level (ft MSL)
- Depth to middle of well screen at MW-1D = 72.5 ft below land surface (bls)
- Middle-of-screen elevation at MW-1D = 634.5 ft MSL
- Vertical separation from water table to MW-1D mid-screen = (687-634.5) = 52.5 ft
- Change in potentiometric head at MW-1D location = (687-684.81) = 2.19 ft

The estimated vertical hydraulic gradient from these input values is 0.0417 ft/ft, and the flow direction is downward at the MW-1D well location.

Water level elevations for the April 2016 gauging event were generally higher across the site (but within 1.3 feet variation or less) compared to the May 2015 gauging event. Well MW-1 was repaired on May 21, 2015 by converting it from a stickup well to a flush-mount well. The larger differences in water levels following the May 18, 2015 gauging event at this well (see Table 1) are due to the repaired well casing being lowered by approximately three feet.

2.3 Groundwater Analytical Results

A summary of historical groundwater analytical results for VOCs is provided in Table 3**.** Laboratory analytical results are included in Appendix B. **Figure 4** is a site map that shows the concentrations of VOCs detected in groundwater at each well sampled.

Laboratory analytical results in Table 3 show that VOCs were detected at quantified or estimated (J-flagged) concentrations in ten of the thirteen wells sampled in April 2016. Only five of these wells (MW-1D, MW-3A, MW-11, MW-12 and MW-14) had one or more VOCs that exceeded their Type 1 Risk Reduction Standards (RRSs) for groundwater. The VOCs that exceeded their respective Type 1 RRS concentrations at various wells in April 2016 include the following:

- Trichloroethene (TCE): Wells MW-1D, MW-11;
- Tetrachlorethene (PCE): Well MW-11
- 1,1-Dichloroethene (1,1-DCE): Wells MW-11, MW-12 (and MW-12 duplicate);
- Vinyl Chloride (VC): Well MW-14
- Benzene: Wells MW-3A, MW-11

Seven VOCs that had previously not been tested or reported in site groundwater were detected at quantified or estimated (J-flagged) concentrations during the April 2016 event at one or more wells. These seven new VOCs included: 1,1,2-Trichloro-1,1,1-Trifluoroethane; Chloromethane; 1,2-Dichloroethane; Cyclohexane; Isopropylbenzene; Methylcyclohexane; and Methylene Chloride. None of these seven VOCs exceeded their Type 1 RRS, and three of the VOCs do not have assigned RRSs (see Table 3).

MW-11 (Source Area)

Laboratory analytical results indicate that monitoring well MW-11 continues to have the greatest concentrations of TCE and of total VOCs. A TCE concentration of 760 micrograms per liter (µg/L) was reported for the April 2016 event, which represents a 50 percent reduction of TCE since the last sampling event at MW-11 in January 2015. Well MW-11 also had the only exceedance of Type 1 RRS for PCE, with a detected concentration of 5.8 µg/L in April 2016.

Benzene (9.2 µg/L) and 1,1-DCE (9 µg/L) also exceeded their respective Type 1 RRSs at well MW-11 during the April 2016 event. The TCE degradation compound cis-1,2-Dichlorothene (cis-1,2-DCE) was detected in MW-11 at 7.5 µg/L, which is an order of magnitude below its Type 1 RRS and 37 percent less than its previous concentration in January 2015. Concentrations of each of the VOCs detected in MW-11 during the April 2016 event were 30 to 66 percent lower than their respective concentrations during the January 2015 event.

MW-1D (Deep Well)

TCE was detected at a concentration of 22 µg/L in deep monitoring well MW-1D, which is completed to a total depth of 75 feet bls and is located approximately 185 feet downgradient of source area well MW-11. TCE was previously detected at 17 µg/L during the June 3, 2015 sampling event. Deep well MW-1D also contained PCE (2.2 µg/L) and 1,1,2-Trichloro-1,1,1-Trifluoroethane (7.2 µg/L) during the April 2016 event but at concentrations below their respective Type 1 RRSs.

Dissolved Plume Distribution and Perimeter Wells

Figure 4 shows the detections of VOCs in groundwater at each well sampled. The only VOCs that were detected at concentrations above their Type 1 RRS in more than one site well were TCE, benzene and 1,1-DCE. The extent of dissolved TCE in groundwater for the April 2016 sampling event is illustrated in **Figure 5**. The TCE iso-concentration contours, which were drawn for the shallow aquifer zone only, show that the residual TCE source area is in the vicinity of well MW-11 and the TCE plume does not migrate off-site above the Type 1 RRS.

The extent of benzene and 1,1-DCE in groundwater are shown in **Figure 6** and in **Figure 7**, respectively, for the April 2016 event. Benzene is limited to the on-site shallow groundwater and was not detected in deep well MW-1D. Similarly, 1,1-DCE is limited to the on-site shallow groundwater and was not detected in deeper groundwater. Figure 7 shows two distinct areas of the site around wells MW-11 and MW-12 where the remaining 1,1-DCE concentrations are an order of magnitude higher than at any other wells. These two active wells and abandoned well MW-2A have historically been the only monitoring wells where the Type 1 RRS for 1,1-DCE has been exceeded.

No VOCs were detected in down-gradient monitoring wells MW-9A and MW-10. Down-gradient wells MW-4A, MW-7A and MW-8A contained one or more VOCs at estimated (J-flagged) concentrations below 1 µg/L and well below their Type 1 RRSs. Groundwater at well MW-14 contained 2.1 µg/L of vinyl chloride, which slightly exceeds its Type 1 RBBS of 2 µg/L. Well MW-14 is located hydraulically down-gradient at the site but is side-gradient to the historical source areas near MW-11 and MW-2A. Vinyl chloride was previously not detected in this well, and it is likely a biodegradation product of TCE.

No VOCs were detected in monitoring well MW-9A, previously designated as the site Point of Demonstration (POD) well by Hull. Well MW-4A, also proposed as a POD well by OmniSource, contained only TCE at an estimated (J-flagged) concentration of 0.35 µg/L. These results, supported by earlier findings and by current plume maps, indicate that groundwater impacts above the Type 1 RRSs do not extend off-site.

Duplicate samples were collected during the site wide groundwater sampling event to meet the quality assurance/quality control protocol in accordance with applicable standards. The analytical results for the duplicate samples did not significantly differ from those for their corresponding primary samples and fall within acceptable ranges for relative percent difference. Further, there were no VOCs detected in the trip blank or in the field blank.

2.4 Groundwater Geochemistry

Bio-geochemical, inorganic and water quality parameters in groundwater were historically collected to track the progress of remediation by enhanced reductive dechlorination (ERD) and to

determine the ongoing viability of monitored natural attenuation (MNA) as a remedial alternative for the remaining dissolved cVOCs present in groundwater. Previous semi-annual progress reports presented these results, and they are summarized along with current data in Table 2.

For the April 2016 semi-annual monitoring event, only the field water quality indicators were collected in groundwater. A brief summary of the trends for several indicator parameters that are key to track MNA progress are discussed below.

Dissolved Oxygen (DO)

DO concentrations ranged from 0.57 milligrams per liter (mg/L) in MW-14 to 5.7 mg/L in background (upgradient) well MW-6. Groundwater conditions are anoxic (i.e., low DO) and generally remain below 1 mg/L in the source area, which is favorable for continued reductive dechlorination of cVOCs.

Acidity (pH)

Groundwater pH values ranged from 4.33 at well MW-4A to 6.74 at MW-9A. In general, pH values are moderately acidic within the source area. Although some TCE dechlorinating bacteria can thrive at pH levels below 5.0, microbes that specifically degrade cis-1,2-DCE and vinyl chloride generally require higher pH values.

Lower groundwater pH in the source area is likely due to the buildup of biologically-generated metabolic acids and hydrogen from the ERD process. However, it is interesting to note that upgradient, background well MW-6 has a pH value (4.39) similar to that in the source area. The pH of the groundwater increases at the perimeter of the plume with well MW-8A and MW-9A. In these wells the dissolved oxygen levels are also reduced to anaerobic levels.

Oxidation-Reduction Potential (ORP)

Efficient anaerobic degradation requires suppressed ORP values generally less than -50 millivolts (mV) in groundwater. The ORP readings in groundwater were all positive (+40 mV or higher) and were elevated (>150 mV) in many wells across the site. Abandoned well MW-2A is the only well that has historically shown a reducing condition (i.e., negative ORP value) in the past six years, which was the result of ERD bioremediation treatment in the vicinity of that well. The current ORP values indicate that groundwater conditions are no longer reducing.

3.0 GROUNDWATER PLUME TRANSPORT AND STABILITY EVALUATION

3.1 General

The initial release of VOCs was assumed to have occurred several decades ago in the early 1990's when metals recycling operations first began at the site. Impacted soils were removed from the site in the early-2000s; therefore, the remaining contaminant mass consists of dissolved phase VOCs present in the saturated aquifer media. The elevated concentrations of cVOCs around MW-2A were addressed in 2003 with the injection of Hydrogen Release Compound (HRC®) to promote anaerobic biodegradation of the cVOCs. Concentrations of the TCE were reduced by 76% following the HRC® injections. The previous remedial activities were conducted to move the site toward a monitored natural attenuation (MNA) remedy for groundwater. As these remedial activities were successfully completed, the site data were evaluated to determine if MNA and the use of environmental covenants is an appropriate method to protect human health and the environment in the future.

TCE was addressed in 2003 using active soil and groundwater remediation methods at the area around MW-2A. The highest TCE concentrations are now observed at well MW-11. During the January 2015 sampling event, TCE was measured at 1,500 µg/L. The TCE concentration at well MW-11 has since declined to 760 µg/L in April 2016. The area in the vicinity of MW-11 is considered the residual source area for current evaluations.

Groundwater data have been evaluated by several methods to evaluate the risk that constituents of concern (COCs) in groundwater could pose a potential receptor within 1,000 feet of the down gradient extent of the plume, and to establish the time required to achieve compliance with applicable RRSs for groundwater. Using a MNA remedy, groundwater contaminants may be allowed to naturally degrade and attenuate over time. In order to consider this option, the following conditions must apply:

- The source of contamination must be controlled or remediated;
- The COCs must have the capacity to degrade or attenuate at the site;
- The time and direction of the contaminant travel must be able to be predicted; and,
- The continued migration of the COCs may not impact any foreseeable receptor at concentrations above applicable Standards.

Significant effort was made to remove impacted soils and address the source area at MW-2A. In addition, the horizontal limits of the plume have been delineated to the Type 1 RRSs and the vertical extent is delineated at MW-1D within one order of magnitude of the Type 1 RRS for TCE.

3.2 Plume Degradation Lines of Evidence

Three lines of evidence to evaluate plume stability and the potential for future impacts to receptors were previously discussed in the *3rd Semi-Annual Progress Report*. The three lines of evidence include:

- Primary lines of evidence - historical groundwater monitoring data;
- Secondary lines of evidence - geochemical characteristics of the groundwater; and,
- Optional lines of evidence - environmental fate and transport modeling results.

<u>Primary Lines of Evidence</u>

According to EPA guidance, the most reliable line of evidence to determine plume stability and if MNA is appropriate for a site is actual groundwater monitoring data (primary lines of evidence). The primary lines of evidence at this site indicate that the plume has reached steady state conditions and appears to be shrinking laterally. The *3rd Semi-Annual Progress Report* discussed long-term data trends for individual VOCs monitored through January 2015, including the accelerated reduction parent cVOCs (i.e., TCE and PCE) following injections of the HRC® organic substrate. Current data from the April 2016 monitoring event continue to show a stable or shrinking plume with respect to individual VOCs.

Over the last 23 years, the core of the TCE plume has been contained within the center of the OmniSource property. TCE had previously been detected at downgradient well MW-4A at concentrations up to 51 µg/L. The TCE concentration was 0.35J MW-4A during the April 2016

sampling event, and levels have remained below the Type I RRS for the past three years at this well. Historical TCE reductions at source area wells MW-2A and MW-11 illustrate the combined effects of active source area remediation and natural attenuation processes to significantly reduce TCE concentrations in the core of the plume. The daughter cVOCs initially produced by TCE biodegradation have also shown a decreasing trend.

As a result of contaminant mass reduction within the source area, a decreasing trend of total VOCs in groundwater is also observed. Compared to trends for individual VOCs, total VOC concentration trends can be used to account for changes in contaminant concentrations that may result from incomplete parent-daughter compound transformations (i.e. the conversion of TCE to cis-1,2-DCE to vinyl chloride). Monitoring the total VOC concentration trend allows a more accurate measurement of decreasing total contaminant mass in groundwater. The overall trends of total chlorinated and non-chlorinated VOCs in groundwater at several key wells are summarized in **Table 4**. These results show total VOC reductions in the source area that range from 41 percent at MW-11 (2013-2016 period) to 96 percent at MW-2A (2003-2015 period). Perimeter and downgradient wells showed similar total VOC reductions, which varied from 59 percent at MW-12 (2013-2105 period) to 99 percent at MW-4A (2004-2016 period). Mann-Kendall test were also performed on historical VOC data and is discussed in Section 3.2.1. of this report.

Secondary Lines of Evidence

Secondary lines of evidence consist of geochemical data used to evaluate if the conditions within the aquifer are suitable for biodegradation of the COCs present. Bio-geochemical data have been collected to evaluate the potential for continued reduction dechlorination of the cVOCs. Direct evidence of TCE reductive dechlorination in the groundwater include the presence of daughter compounds such cis-1,2-DCE, vinyl chloride, and ethene.

The current groundwater geochemistry suggests that the source area is becoming less reduced over time based on ORP, although DO levels remain suppressed. The most recent total organic carbon (TOC) concentrations from 2015 ranged from <1 milligram per liter (mg/L) to 12.2 mg/L. The organic carbon source likely includes both natural and anthropogenic sources, where the latter would include biomass and metabolic acids from the prior HRC® injections as well as aromatic hydrocarbons that are COCs in groundwater. The presence of organic carbon in the aquifer will continue to retard the migration of dissolved-phase VOCs in groundwater.

Strongly negative ORP values, TOC levels >20 mg/L, and pH >5.5 are considered ideal geochemical conditions for anaerobic reductive dechlorination of chlorinated ethenes in groundwater, which was the treatment goal of the HRC® injections. Although these ideal conditions for anaerobic reductive dechlorination of chlorinated ethenes do not exist uniformly throughout site groundwater at the present time, other biological TCE destruction pathways are possible under alternate geochemical conditions such as lower ph and higher ORP.

Optional Lines of Evidence

Peachtree Environmental and Apex previously utilized the one-dimensional screening groundwater contaminant transport model BIOCHLOR to help determine if natural attenuation is a feasible groundwater remedy for the site. BIOCHLOR was developed by Groundwater Services, Inc. (GSI) for the Air Force Center for Environmental Excellence. The model uses a combination of site-specific data and published literature values to determine the physical properties of the aquifer and plume. Since it is a one dimensional model it is not designed for a plume traveling in multiple directions, or estimating environmental fate within multiple groundwater zones.

BIOCHLOR modeling results were previously submitted to the GAEPD in historical reports, including the *3rd Semi-Annual Progress Report* (July 30, 2015) prepared by Apex. The GAEPD letter dated March 9, 2016 requested clarification of input and output values from the BIOCHLOR model submittal in that report. Those items are further addressed in Section 3.3 of this report.

3.2.1 Statistical Evaluation to Support Primary Lines of Evidence

Statistical analysis of groundwater contaminant trends is another important tool in the evaluation of primary lines of evidence. Two nonparametric statistical methods that are widely used are the Mann-Kendall and the Mann-Whitney tests. Both statistical tests can be used to demonstrate whether individual groundwater contaminants are decreasing, stable, or increasing over time. The Mann-Kendall test requires a minimum of four sets of sampling data that are not affected by large seasonal variations in concentrations. The Mann-Whitney test requires at least eight consecutive rounds of quarterly or semi-annual data, with the allowance that the data can show seasonal variations. Because large seasonal variations in VOC concentrations and changing groundwater flow directions are not evident at the site, Mann-Kendall tests were used to evaluate VOC data from several key wells in the source area, the mid-plume area, and the downgradient areas that have four or more sampling events. Software developed by GSI was used to perform the Mann-Kendall tests. Non-detect values were entered as one-half of their reporting limit.

Mann-Kendall statistical tests were run on post-2005 data for wells MW-2A, MW-3A, MW-4A, and MW-9A for the following most prevalent regulated VOCs in site groundwater: TCE; 1,1-DCE; cis-1,2-DCE, vinyl chloride; and benzene. **Appendix D** contains the GSI software output sheets for the tests. The statistical results by well and by VOC are summarized in the following table:

Mann-Kendall Statistical Tests Summary

TCE				
Well	**MW-2A**	**MW-3A**	**MW-4A**	**MW-9A**
M-K Statistic (S)	-18	-37	-27	-9
Confidence Factor	93.4%	>99.9%	99.2%	75.8%
Trend Result	Prob. Decreasing	Decreasing	Decreasing	Stable
1,1-DCE				
Well	**MW-2A**	**MW-3A**	**MW-4A**	**MW-9A**
M-K Statistic (S)	-22	-10	-10	-9
Confidence Factor	97.1%	75.3%	75.3%	75.8%
Trend Result	Decreasing	Stable	Stable	Stable
Cis 1,2-DCE				
Well	**MW-2A**	**MW-3A**	**MW-4A**	**MW-9A**
M-K Statistic (S)	-13	-10	-9	-9
Confidence Factor	85.4%	75.3%	72.9%	75.8%
Trend Result	Stable	Stable	Stable	Stable
Vinyl Chloride				
Well	**MW-2A**	**MW-3A**	**MW-4A**	**MW-9A**
M-K Statistic (S)	7	-10	-10	-9
Confidence Factor	70.0%	75.3%	75.3%	75.8%
Trend Result	No Trend	Stable	Stable	Stable
Benzene				
Well	**MW-2A**	**MW-3A**	**MW-4A**	**MW-9A**
M-K Statistic (S)	-19	7	-23	-9
Confidence Factor	94.6%	70.0%	97.7%	75.8%
Trend Result	Prob. Decreasing	No Trend	Decreasing	Stable

These statistical trend results indicate that TCE, the daughter products of TCE, and benzene are either decreasing, probably decreasing, or stable for source area and mid-plume wells where a trend could be established. Downgradient POD wells MW-4A and MW-9A show either decreasing or stable trend results for each of the five COCs evaluated. Only the data sets from 2006 to the present were evaluated to eliminate effects from potential concentration spikes in daughter compounds or enhanced dissolution anomalies that would most likely occur within the first few years following the HRC® injections in 2003. This 10-year data set best represents long term post-injection trends.

3.3 BIOCHLOR Model Discussion and Update

This section is provided to address items 5.A-D in the GAEPD March 9, 2016 response letter that were related to the BIOCHLOR model results presented in the *3rd Semi-Annual Progress Report*. Apex performed this current analysis using the 2015 data that were previously submitted, since those were the basis of the comments regarding model input values and calibration at that time. Additional information regarding the model, input parameters, aquifer characteristics, etc. is provided below and in **Appendix E.**

3.3.1 Site Environmental History for Model Development

The release was initially discovered in 1993 and groundwater monitoring activities have been conducted since 2000. Concentrations of TCE were historically the highest at well MW-2A, which exhibited 9,600 µg/L of TCE in 2003. This was also associated with elevated concentrations of associated TCE breakdown (daughter) products including cis-1,2-Dichloroethene (cis-1,2-DCE) (1,500 µg/L) and vinyl chloride (130 µg/L). Low concentrations of petroleum fuel related compounds including benzene, toluene, and xylenes were detected in wells MW-2A, MW-3A, and MW-4A through at least 2011. Petroleum fuels provide the necessary organic carbon necessary for the biodegradation of the cVOCs.

HRC® injections were conducted in the area around MW-2A in 2003. These injections decreased concentrations by a reported 76%. There has been little rebounding of concentrations since 2006. However, it should be noted that during the10-year period of 1993 to 2003, with concentrations of TCE as high as 9,600 µg/L, the plume did not migrate from the site. In fact, over the last 22 years, the TCE plume has remained relatively isolated within the center of the subject property. Further, low concentrations of TCE in MW-1D demonstrate that there was minimal vertical migration of cVOCs.

There were several suspected release areas, but as mentioned above, the area around MW-2A has been actively remediated and historical data indicates that remaining impacts will not result in off-site impacts. The secondary source area at MW-11, which is currently the most impacted well, was the focus of the modeling described below to evaluate current conditions at the site.

3.3.2 Model Overview and Rationale for Use

The BIOCHLOR model was selected as one of the optional lines of evidence to determine if MNA is a viable groundwater remedy and to predict downgradient receptor impacts. BIOCHLOR model is a Domenico analytical solute transport model. According to the USEPA website (https://www.epa.gov/water-research/biochlor-natural-attenuation-decision-support-system), the BIOCHLOR model can simulate one-dimensional advection, three-dimensional dispersion, linear adsorption, and biotransformation via reductive dechlorination. USEPA also states that the model utilizes three model types including solute transport without decay, solute transport with

biotransformation as a first-order decay process, and biotransformation modeled with two different reaction zones. Many of the input parameters were based on default values provided in the USEPA Users Manual (US EPA (March 2002) "BIOCHLOR, Natural Attenuation Decision Support System - User's Manual, Version 2.2, Users Manual Addendum." and BIOCHLOR, Natural Attenuation Decision Support System - User's Manual, Version 1.0 . (Publication No. EPA/600/R-00/008. January 2000), collectively referenced herein as the BIOCHLOR Users Manual.

The purpose of the modeling is to predict the migration pattern of a chlorinated solvent plume where no engineering controls have been implemented and MNA is deemed a feasible groundwater remedial option. BIOCHLOR was used to estimate environmental fate of the COCs in the shallow aquifer assuming an overall groundwater flow toward the southeast. Since it is a one dimensional model, it is not designed for plume traveling in several directions, or for estimating environmental fate within multiple groundwater zones.

BIOCHLOR was determined to be suitable for use at this site because the area to be modeled consists of the area downgradient of MW-11 where groundwater flow is directly toward MW-4A and modeling vertical migration is not warranted. Additional assessment activities conducted confirmed that the majority of the cVOCs are limited to the surficial aquifer system at depths less than 75 ft bls. The well installed at depth (MW-1D) contained TCE at 17 µg/L in June 2015, only slightly higher than the associated RRS. Although the TCE concentration at MW-1D was slightly higher in April 2016 (22 µg/L), this well will continue to be monitored to determine if this increase was a one-time occurrence.

The most reliable lines of evidence are historical monitoring data and these data, which were statistically analyzed herein, indicate that steady state conditions have been reached without additional active source area treatment over the last decade. Since the most dependable data indicate steady state conditions, a screening level model such as BIOCHLOR was deemed appropriate to evaluate this theory. One potential limitation of the model is simulating a declining source term that could be accelerated by remediation of the source area. In this case, the remaining 'slug' of high-concentration residual groundwater contamination may still be present even though the source of this contamination has been removed. Therefore, these results are more indicative of a "worst case scenario" where continuing source is present.

3.3.3 Model Calibration

The model was calibrated to the current trend of the plume extending to the southeast within the saprolite unit from wells MW-11 to MW-4A. Well MW-4A was assumed to be the Point of Demonstration (POD) well for modeling purposes since concentrations in the well are below laboratory quantitation limits, and this well would yield a more conservative result than MW-9A. Model input parameters are provided below and are included in Appendix E.

The source area was assumed to be located approximately 70 feet upgradient of MW-11 and approximately 40 feet wide. Placing the source directly at MW-11 did not create the biodegradation products in the model run that were present at this well in 2015. This indicated an upgradient source area. In evaluating the remedial activities conducted by Hull, soils contaminated with TCE were removed upgradient of MW-11. With this as the assumed source area, the model was more easily calibrated, including degradation products of cis-1,2-DCE and ethene. The cVOC concentrations upgradient of MW-11 were assumed to be more than an order of magnitude higher than what was observed in MW-11. For example, cVOC concentrations in MW-11 have been observed as high as 15 µg/L (PCE) and 1,500 µg/L (TCE). The values used

for the source area were estimated at 150 µg/L (PCE) and 13,000 µg/L (TCE) based on historical data and back-calculations to match the current cVOC concentrations observed in MW-11.

The GAEPD comment letter of March 9, 2016 requested that the source area be at a higher concentration than the values observed at MW-11. The model was indeed run with these types of values, as discussed above. Without having the concentrations higher at the source zone, calibration of the model was not possible. It should be noted that constituent concentrations shown in the BIOCHLOR model are referenced in milligrams per liter (mg/L), whereas concentrations in the attached tables and figures are reported in units of µg/L.

3.3.4 Input Parameters

A discussion of input parameters was initially included with the model runs. As requested the March 9, 2016 letter from GAEPD, a table summarizing the model input values is provided below.

BIOCHLOR Model Final Calibrated Input Values

Input Parameter	Result	Source of Input Value
Hydraulic Conductivity	2.3 x 10-4 cm/sec	Site-specific data. Average of slug test results from MW-4A & MW-11 is 0.6632 ft/day (2.3 x 10-4 cm/sec)
Hydraulic Gradient	0.023 ft/ft	Site-specific data. Measured on January 2015 potentiometric map, utilizing contours between MW-11 and MW-4A
Effective Porosity	18%	Literature value. Cannot be measured but is taken as equivalent to specific yield. Value based on average specific yield for silts. (Fetter, *Applied Hydrogeology*, Table 3.5, 2001)
Dispersion Coefficient	Dx = 29 Dy = 2.9 Dz = 0.29	Site-specific data. Utilized 1/10th the plume length, which is standard default value specified in the BIOCHLOR Users Manual. Plume assumed to be 290 feet long based on distance between MW-4A and assumed source located 70 feet upgradient of MW-11. Dy was assumed to be 1/10th of Dx and Dz was assumed to be 1/10th of Dy, also standard default values from BIOCHLOR Users Manual.
Soil Bulk Density (rho)	1.7 Kg/L	BIOCHLOR Users Manual default value.
Partitioning Coefficient (K_{oc})	PCE = 95 L/Kg TCE = 61 L/Kg DCE = 40 L/Kg VC = 22 L/Kg	From EPA Region 9 Screening Tables, Chemical Specific Parameters (https://www.epa.gov/sites/production/files/2016-06/documents/params_sl_table_run_may2016.pdf) The values are a conservative estimation of the retardation for the COCs. The model is sensitive to retardation.
Fraction Organic Carbon (f_{oc})	0.002	Literature default value is 0.001, but was adjusted upward to account for anthropogenic organic carbon in the aquifer.
Decay (Half-Life)	PCE to TCE = 1.6 TCE to DCE = 2.0 DCE to VC = 1.3 VC to Ethene = 1.0	Half-lives of COCs were used to calibrate the model to current conditions. Values are approximately double the standard default values provided in the BIOCHLOR Users Manual. This provides a more conservative estimate of plume degradation.

Calibration of the model requires an iterative approach where the various input parameters are adjusted upward and downward to match the current site conditions based on the site conceptual model. There were dozens of calibration runs where each parameter was adjusted. Calibration runs of each parameter have not been included as requested in Item 5.C of your letter of March 9, 2016. Creation of an output file for each iterative step would involve the submittal of hundreds of pages with little overall value. Alternatively, Apex has provided the input values above and final calibrated run for review (see Appendix E).

Fraction Organic Carbon (f_{oc})

The standard default value for f_{oc} is 0.001. However, for this model the value was adjusted slightly upward to 0.002 account for the anthropogenic organic carbon present in the aquifer. Petroleum hydrocarbons consisting of benzene and xylenes are present in many of the monitoring wells, including wells MW-2A, MW-3A, MW-4A, MW-10, TW-1, TW-2, and TW-5. Additionally, residual biomass and organic metabolic acids from the HRC® bioremediation process likely remain in the aquifer within the source area that was treated.

Using the standard f_{oc} default value of 0.001, the model could not be calibrated without increasing K_{oc} values much higher than default values established by EPA. Rather than adjusting the K_{oc} values upward, the f_{oc} value was adjusted slightly. However, an overall retardation factor of approximately 2.15 resulted in model calibration. Using BIOCHLOR, this can be achieved by modifying the f_{oc} or the K_{oc} for each compound. By utilizing an f_{oc} of 0.002 or utilizing the much higher K_{oc} values obtained from the BIOCHLOR User's Manual, either input adjustment will result in a retardation factor of approximately 2.15. For the reasons stated above, an f_{oc} value of 0.002 is appropriate as a model input.

Determining Source Concentrations

The following inputs and adjustments were considered in determined the source concentrations:

- Source area assumed to be 70 feet upgradient with concentrations of PCE and TCE an order of magnitude higher than what was observed at MW-11 in 2015 (150 µg/L (PCE) and 13,000 µg/L (TCE)).
- Model was calibrated to wells MW-11 (1,500 µg/L), MW-3A (10 µg/L) and MW-4A which ranged from BQL to 50 µg/L. MW-3A was measured as 85 feet downgradient and approximately 100 feet side gradient of MW-11.
- Model was initially calibrated with a release occurring 22 years ago, with anticipated spill and/or movement of COCs to groundwater in approximately 1993.
- Degradation was necessary to calibrate the model. Without any degradation, the model shows that the TCE should have extended approximately 300 feet off-site and have concentrations exceeding 100 µg/L at the property boundary, which are not the case.
- The model shows the generation of lower concentrations of ethene at MW-11 than what was observed. Ethene was present at concentrations of 330 µg/L in MW-11, but the model predicts concentrations of approximately 50 µg/L. Decreasing the half-life increases concentrations slightly but also results in higher predicted concentrations downgradient at MW-4A. Ethene was not observed in MW-4A.

3.3.5 Model Results

The model was calibrated to January 2015 site conditions and using groundwater gradients observed on the property. Based on the observed biodegradation rates, the modeling results confirm that if the current biodegradation rates are maintained the cVOC plume will remain steady. As requested in the EPD letter of March 9, 2016, a table of model output results is provided as **Table 5**. Output files show the final calibration run and predicted plume concentrations at time periods of 30, 40 and 50 years are provided in Appendix E. A map showing the progress of the plume after 30 years (Year 2022, or 5.5 years from the present) based on model results is included as **Figure 8.** The final output results of the BIOCHLOR model over-predict the future

downgradient extent of the TCE and vinyl chloride plumes compared to actual downgradient groundwater monitoring data and the statistical analyses of these data from wells along the center line of the plume. The model outputs are based on a continuing source being present. However, total VOC concentrations have been declining and the TCE concentrations observed in MW-11 have declined by nearly half over the last year. Therefore, even with a continuing source, the results indicate the plume is stable.

Once calibrated, the simulation was run for a 50-year period assuming a constant source. With no degradation, the plume will reach approximately 650 feet from the source area, or 400 feet from the property boundary. However, existing data show that significant degradation is occurring. The historical data and Mann Kendall statistical analyses indicate that the plume is already at steady state conditions based on the current biodegradation rates. If this degradation rate trend continues, the BIOCHLOR model indicates there will be little forward progression of the plume from its current location. These results were obtained despite using very conservative values for COC half-life and partitioning coefficients and assuming a constant source term.

The model is based on degradation and retardation rates remaining the same and on a continuing (non-depleted) source. The degradation and retardation rates are likely enhanced by the presence of petroleum fuel related compounds including benzene and xylenes. The ultimate degradation of the petroleum products could impact the retardation of the plume in the future.

Soil was excavated upgradient of well MW-11 during the remedial activities performed by Peachtree. The model results indicate that without removal of the source material, plume stability would still be achieved but with the lateral extent of the cVOCs slightly farther than the property boundary. However, based on the 2016 sampling results, concentrations of TCE have declined much further than what the model predicts indicating that the source was likely removed during the excavation activities. With these reductions, the overall length of the plume will also be reduced as well. Therefore, the BIOCHLOR model results obtained can be taken as “worst case scenario” results if the source area had not been addressed.

3.3.6 Model Sensitivity

The model was calibrated primarily utilizing source concentrations and degradation half-lives. Slight variations in K values have a significant impact on the predicted downgradient limit of the plume. Increases in K_{oc} values or reduction in the f_{oc} values will result in the plume being longer than currently observed. Modifications to dispersion values impact the shape of the concentration versus time output, but do not facilitate overall calibration. Modifications were not made to the default bulk density. Changes in bulk density have little overall impact on the final output results.

4.0 REVIEW OF CONCEPTUAL SITE MODEL

This section provides a review and update of the conceptual site model (CSM), including the current status of each exposure pathway. The initial VRP application submitted by Hull in 2011 included a description of the CSM developed by Peachtree Environmental, Inc. A CSM update was provided in the *2nd Semi-Annual Progress Report* (April 2013) prepared by Peachtree. With few exceptions described below, findings of the current monitoring period do not create any major changes to the prior CSM understanding of the site.

4.1 CSM Update

Site Hydrogeology

Based on groundwater gauging data obtained by Apex in January 2015, May 2015 and April 2016, groundwater consistently flows toward the southeast. The estimated vertical hydraulic gradient in groundwater is 0.0417 ft/ft, and the flow direction is downward at the MW-1D well location.

The upper 80 feet or more of the soil column consists of saprolitic regolith. Partially weathered rock (PWR) and/or consolidated bedrock was not encountered in well MW-1D drilled to approximately 74 feet deep. Well MW-1D sampling data from June 2015 and April 2016 verify that VOC concentrations in the deeper portions of the saprolite are one to two orders of magnitude lower than the VOC concentrations in the shallower zones. These results indicate that the plume attenuates rapidly with depth, before reaching the PWR hydrostratigrahic zone. This limits the potential seepage velocity of the plume.

Slug test data indicate that the saprolitic material has a hydraulic conductivity (K) ranging from 0.3843 ft/day (downgradient perimeter) to 2.299 ft/day (upgradient). Groundwater flows to the southeast at a gradient ranging from 0.014 ft/ft (side wide) to 0.023 ft/ft across the plume area as measured from the January 2015 potentiometric map. The April 2016 groundwater gradients ranged from 0.0128 ft/ft in the upgradient portion of the site to 0.0263 ft/ft near source area well MW-11. A steeper gradient of 0.0417 ft/ft was estimated near MW-14.

Using an effective porosity of 18%, an average K of 0.6632 ft/day (average of 2015 values from MW-4A and MW-11), and a gradient of 0.023 (measured in the plume area perpendicular to potentiometric lines between MW-11 to MW-4A), the seepage velocity of the plume would be approximately 30.4 feet per year. Across the site, the seepage velocity could range from 65 to 107 ft/year using the more conservative K value observed in well MW-12, gradients ranging from 0.014 ft/ft (site wide) to 0.023 ft/ft (plume area), and an effective porosity of 18%.

Regulated Constituents

The list of regulated constituents for soil and groundwater was established in previous reports. Seven VOCs that had previously not been tested or reported in site groundwater were detected at quantified or estimated (J-flagged) concentrations during the April 2016 event at one or more wells. These seven VOCs included:

- 1,1,2-Trichloro-1,1,1-Trifluoroethane
- Chloromethane
- 1,2-Dichloroethane
- Cyclohexane
- Isopropylbenzene
- Methylcyclohexane
- Methylene Chloride

The following three VOCs that were detected do not have an assigned Type 1 RRS for groundwater: Cyclohexane; Isopropylbenzene; and Methylcyclohexane. None of the other four

VOCs exceeded their Type 1 RRS. Detections of these VOCs were generally limited to the wells located near the source area and mid-plume areas.

Soil Exposure Pathway

Soil COCs were previously identified and delineated to background concentrations by Peachtree. Remedial activities were conducted in 2002 and 2003 to address soil and groundwater. Prior remedial activities at the site include excavation and off-site disposal of approximately 43,000 tons of impacted soil. Compliance with non-residential Type 3 and Type 4 RRSs for soil was demonstrated in prior submittals to GAEPD. Based on this work, the impacts to unsaturated soil have been addressed and there is no known exposure pathway that remains in soil.

Groundwater Exposure Pathway

Impacted groundwater above RRSs is limited to on-site areas within the core of the residual plume found near MW-11. The COCs are now limited to those VOCs listed in Table 3 that have a RRS. Delineation to the Type 1 RRS for these VOCs is now completed horizontally.

Vertical delineation is sufficiently complete at MW-1D, even though one constituent (TCE) slightly exceeds its RRS at a depth of 74 feet (633 ft MSL elevation) at this well in the mid-plume area. Sampling data from 2015 and 2016 confirm that the plume is attenuating vertically, with TCE concentrations in the deeper saprolite that are one to two orders of magnitude lower than the upper (shallow) saprolite zones.

The closest surface water body is more than 1,000 feet from the site and groundwater is not being utilized on or near the site for drinking water purposes. Subsurface storm water piping at the site is positioned at elevations above the water table in the areas containing the VOCs in groundwater. Thus, discharge of impacted groundwater to storm water piping is not a completed pathway for VOCs to enter surface waters near the property.

Subsurface Vapor Intrusion Exposure Pathway

There are no occupied structures which overlay the groundwater plume which could result in a vapor intrusion exposure hazard. Since the plume is limited to the subject site and the perimeter of the plume is more than 300 feet from any downgradient structure, the impacts do not pose a vapor intrusion hazard to off-site areas.

4.2 Point of Exposure (POE) Determination

Well MW-9A was the original POD well identified since it is hydraulically downgradient of the historical source area in the vicinity of well MW-2A. Well MW-4 was added as a POD well in 2015 since it was determined to be more directly downgradient from the secondary source area in the vicinity of MW-11. Both wells MW-9A and MW-4A can be used as POD wells.

The basis of establishing a POE for well MW-4A will be similar to that previously used for MW-9A since these two POD wells are positioned at similar distances downgradient of their respective source areas and those source areas are in close proximity near the center of the site. Thus, the POE for MW-4A will be a location similar to the POE established for well MW-9A, which is 1,000 feet downgradient of the current plume boundary. These areas are known to be on municipal water supplies and do not have any known water supply wells.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Additional groundwater monitoring was completed in April 2016 for all existing wells at the site. Statistical trend analyses of the historical groundwater VOC data were also completed using Mann Kendall tests to supplement the evaluations of primary lines of evidence for plume attenuation and stability. Surveying of well MW-1D was completed, which allowed a calculation of vertical hydraulic gradients and flow components.

5.1 Summary of Findings

Groundwater analytical results show that VOCs were detected at quantified or estimated concentrations in ten of the thirteen wells sampled in April 2016. However, only five of the wells (MW-1D, MW-3A, MW-11, MW-12 and MW-14) had one or more VOCs that exceeded their Type 1 Risk Reduction Standards (RRSs) for groundwater. The VOCs that exceeded their respective Type 1 RRS concentrations at one or more wells in April 2016 included TCE, PCE, 1,1-DCE; Vinyl Chloride, and Benzene.

Seven VOCs previously not tested or reported in site groundwater were detected at quantified or estimated concentrations during the April 2016 event at one or more wells. None of these seven VOCs exceeded their Type 1 RRS, and three of these VOCs do not have assigned RRSs.

Well MW-11 continues to have the greatest concentrations of TCE and of total VOCs. A TCE concentration of 760 micrograms per liter (µg/L) was reported for the April 2016 event, which represents a 50 percent reduction of TCE since the last sampling event at MW-11 in January 2015. Well MW-11 also had the only exceedance of Type 1 RRS for PCE, with a detected concentration of 5.8 µg/L in April 2016.

No VOCs were detected in down-gradient monitoring wells MW-9A and MW-10. Down-gradient wells MW-4A, MW-7A and MW-8A contained one or more VOCs at estimated concentrations below 1 µg/L and well below their Type 1 RRSs.

Current groundwater sampling analytical results indicate that:

- Groundwater impacts do not extend off-site;
- The TCE (and daughter products) plume is stable and is not migrating near POD wells MW-4A and MW-9A at concentrations above their Type 1 RRSs;
- Source area concentrations of PCE, TCE, cis-1,2-DCE, 1,1-DCE and benzene continue to decline in the vicinity of MW-11; and
- Total VOCs in groundwater continue to decline site wide.

The estimated vertical hydraulic gradient is 0.0417 ft/ft, with a downward flow direction at well MW-1D. This suggests that the center of the site lies within a groundwater recharge zone.

The Mann Kendall statistical trend results indicate that TCE, the daughter products of TCE, and benzene are either decreasing, probably decreasing, or stable for source area and mid-plume wells where a trend could be established. Downgradient POD wells MW-4A and MW-9A show either decreasing or stable trend results for each of the five COCs evaluated.

The BIOCHLOR model, which has been utilized as an optional line of evidence, demonstrates that the plume will remain stable at the current degradation rates. It provides a “worst case

scenario" for the environmental fate of site-related cVOCs because the model assumes a constant source term that is not depleted over time. Even though the model was calibrated to site conditions that existed in 2015, the results appear to over predict the extent of plume migration based on the actual site groundwater data trends that are the primary line of evidence. To this end, the model results also show that the plume will not migrate to the downgradient POE, located 1,000 feet downgradient of areas currently impacted above RSSs.

5.2 Recommendations for Future VRP Activities

Due to the quantity of data that has been collected at the site, one additional semi-annual groundwater sampling event is recommended to confirm the plume stability prior to site closure utilizing Uniform Environmental Covenants (UECs). The next scheduled semi-annual monitoring event will be in October 2016. OmniSource proposes to collect groundwater samples for laboratory analyses from all of the site wells except for MW-6, which will be gauged only. Each well will be analyzed for VOCs by Method 8260. A subset of the site wells may be selected for additional bio-geochemical analyses such as dissolved gases, TOC, metabolic acids, and alkalinity. The selection of various wells for further bio-geochemical analyses is discretionary and is not specified at this time.

Following the next round of semi-annual sampling, plume stability will be reassessed using updated Mann Kendall statistical analyses. Several additional wells, including MW-11, will be added to the statistical analyses list since the next semi-annual sampling event will be the fourth one conducted at those wells. These analyses are the most useful tool as a primary line of evidence to demonstrate plume stability trends.

Because the useful intent of the BIOCHLOR model has been achieved, additional or updated fate-and-transport modeling is not proposed at this time. Additionally, no further site assessment activities are recommended at this time. Draft UECs will be submitted under separate cover to GAEPD, or with the next progress report.

5.3 Updated VRP Schedule

An updated schedule of VRP activities is provided in **Appendix F**. Apex has included a monthly summary of hours invoiced as **Appendix G.**

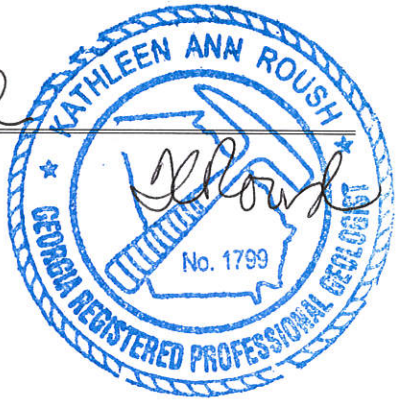
6.0 Registered Professional Supporting Documentation

CERTIFICATION

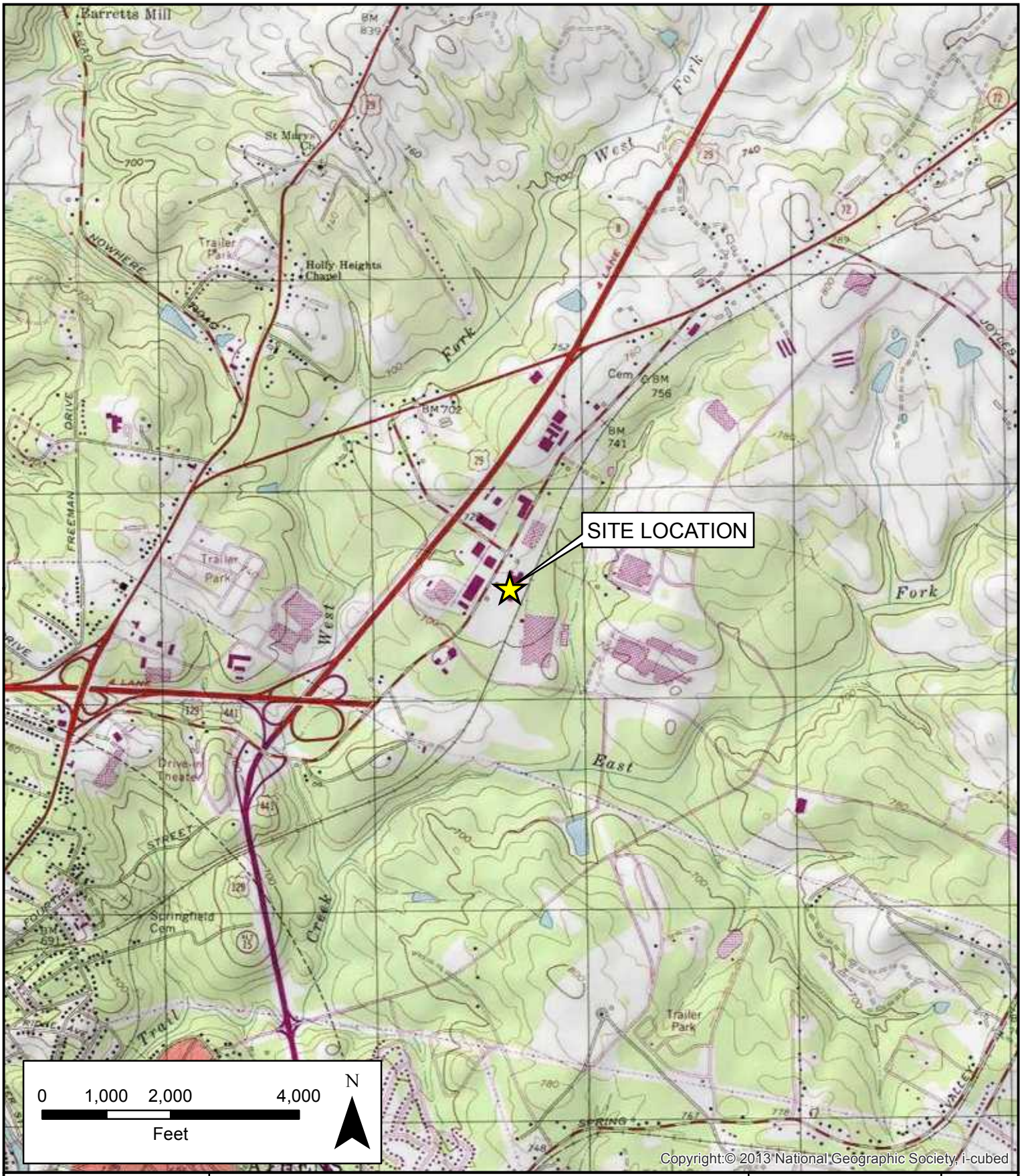
"I certify that I am a qualified groundwater scientist who has received a baccalaureate or post graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgements regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by me or by my subordinate working under my direction."

Kathleen Roush

Kathleen Roush, P.G.
Georgia Registration No. 1799



FIGURES



CHECK BY: GW	SITE LOCATION MAP	FIGURE
DRAWN BY: SP		
DATE: 6/21/16	FORMER LOEF COMPANY PROPERTY	1
SCALE: 1in = 2,000 ft	590 OLD HULL ROAD	
CAD NO.: 510393-002	ATHENS, GEORGIA	
PRJ NO.: 510393-002		

APEX

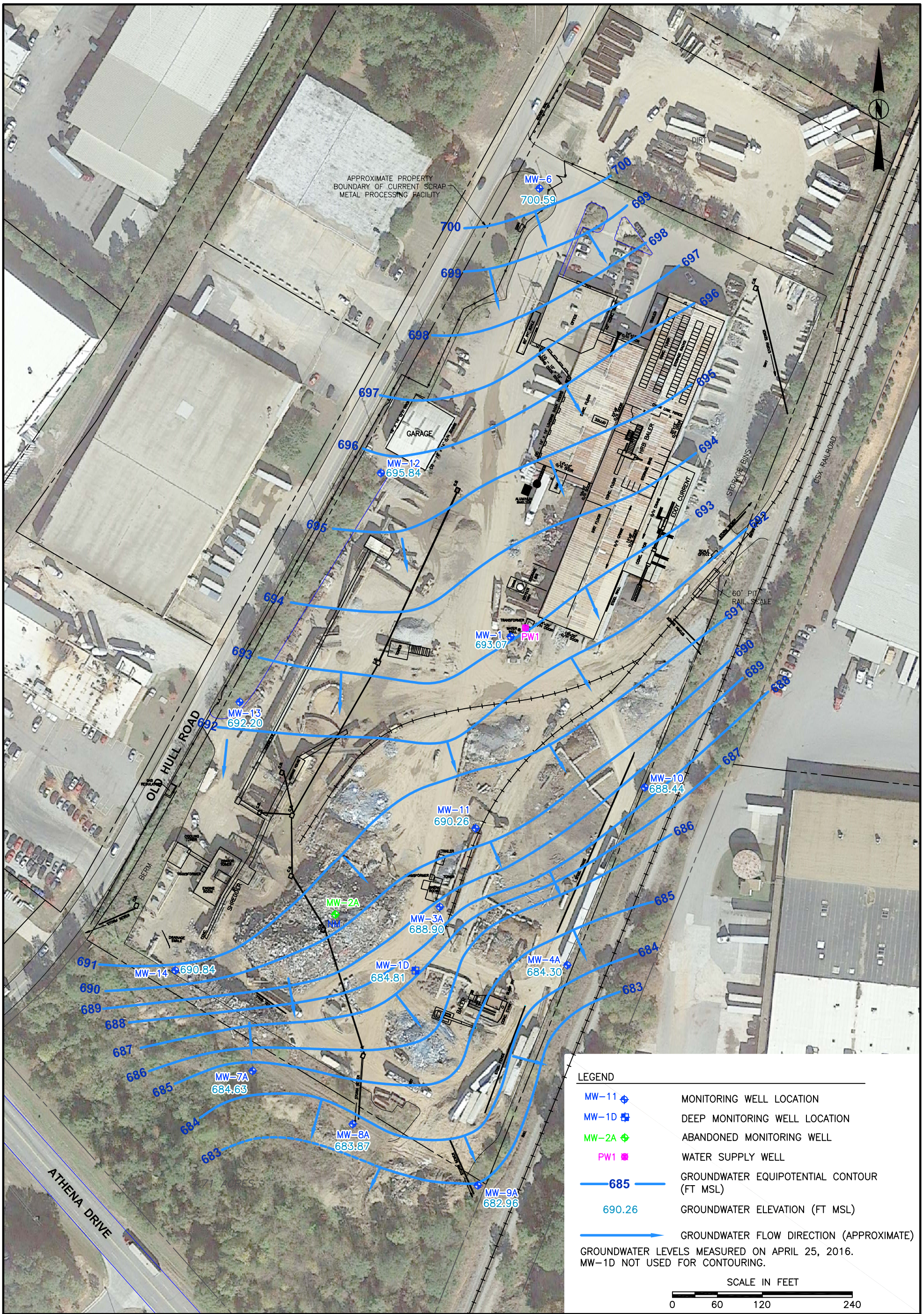
CHECK BY	SGW
DRAWN BY	SJP
DATE	7-21-16
SCALE	AS SHOWN
CAD NO.	510393.02A
PRJ NO.	510393.002

SITE PLAN WITH WELL LOCATIONS

FORMER LOEF FACILITY
590 OLD HULL ROAD
ATHENS, GEORGIA

APEX

FIGURE
2



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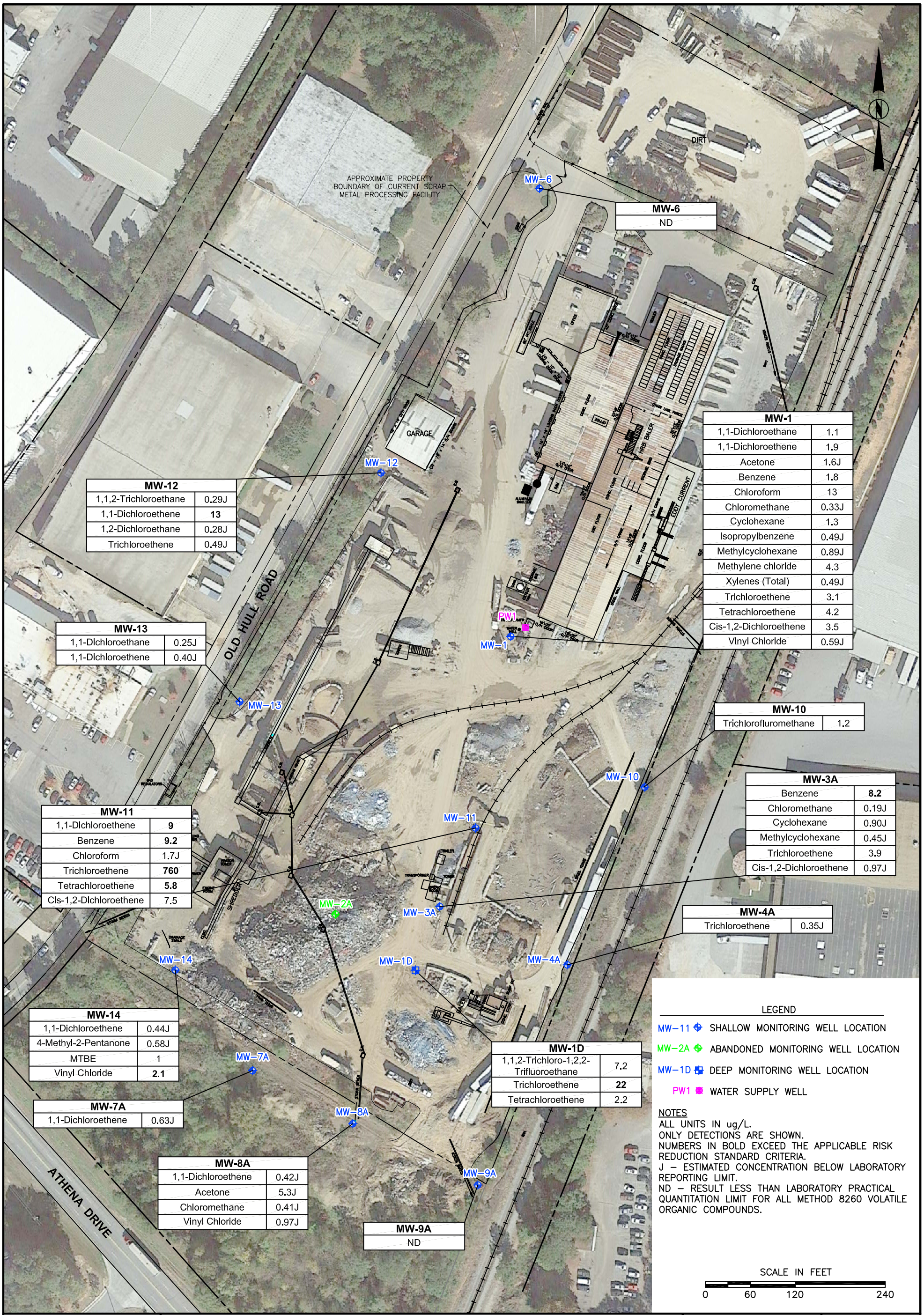
DRAWN BY	SP
DATE	7-21-16
SCALE	AS SHOWN
CAD NO.	510393-02B
PRJ NO.	510393-002

POTENTIOMETRIC MAP SURFICIAL AQUIFER ZONE
APRIL 2016

FORMER LOEF FACILITY
590 OLD HULL ROAD
ATHENS, GEORGIA

APEX

FIGURE
3



LEGEND

MW-11 SHALLOW MONITORING WELL LOCATION

MW-2A ABANDONED MONITORING WELL LOCATION

MW-1D DEEP MONITORING WELL LOCATION

PW1 WATER SUPPLY WELL

NOTES

ALL UNITS IN ug/L.
ONLY DETECTIONS ARE SHOWN.
NUMBERS IN BOLD EXCEED THE APPLICABLE RISK REDUCTION STANDARD CRITERIA.
J – ESTIMATED CONCENTRATION BELOW LABORATORY REPORTING LIMIT.
ND – RESULT LESS THAN LABORATORY PRACTICAL QUANTITATION LIMIT FOR ALL METHOD 8260 VOLATILE ORGANIC COMPOUNDS.

SCALE IN FEET

0 60 120 240

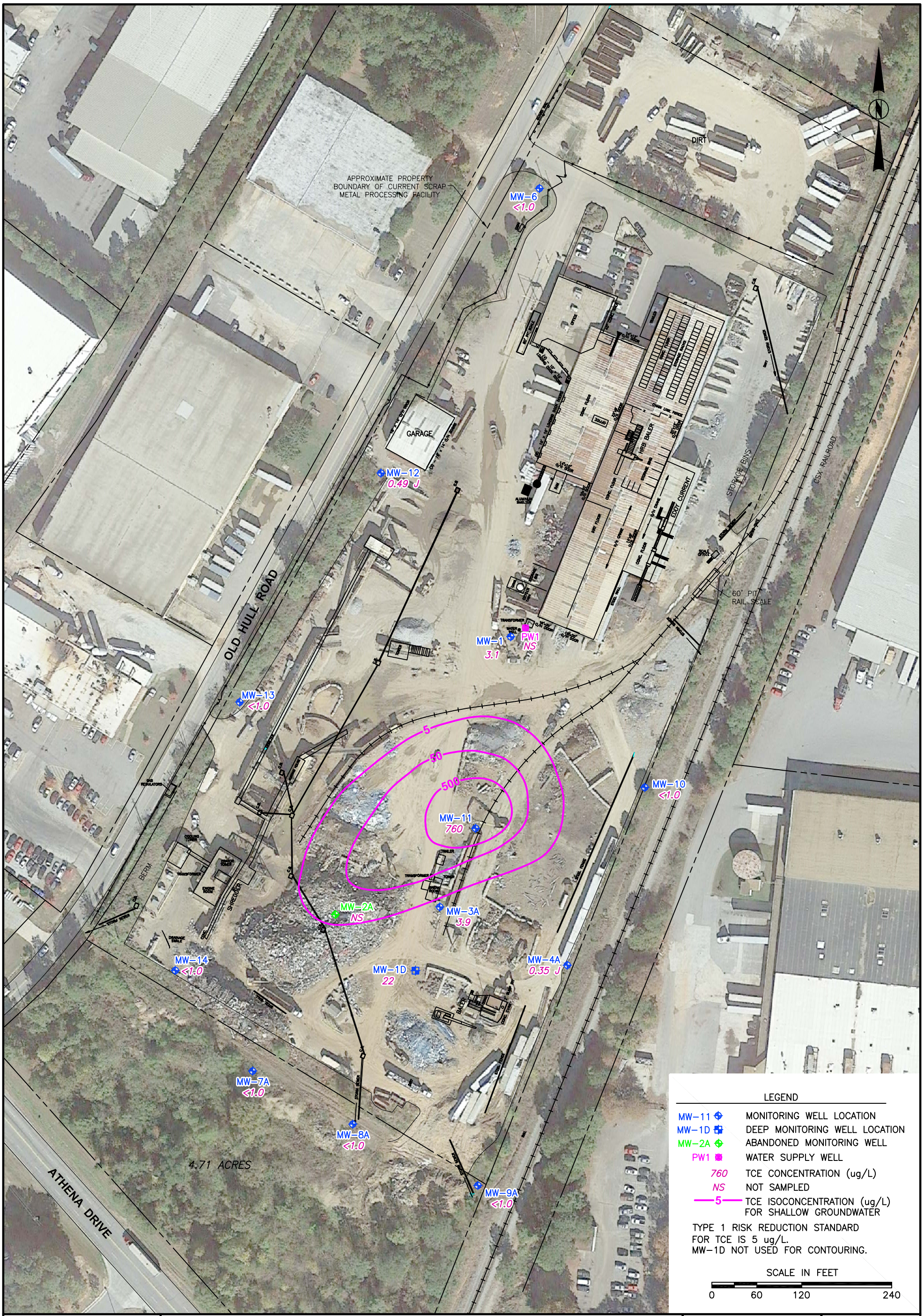
CHECK BY	SGW
DRAWN BY	SJP
DATE	7–21–16
SCALE	AS SHOWN
CAD NO.	510393.02A
PRJ NO.	510393.002

GROUNDWATER SAMPLING RESULTS – APRIL 2016

FORMER LOEF FACILITY
590 OLD HULL ROAD
ATHENS, GEORGIA

APEX

FIGURE
4

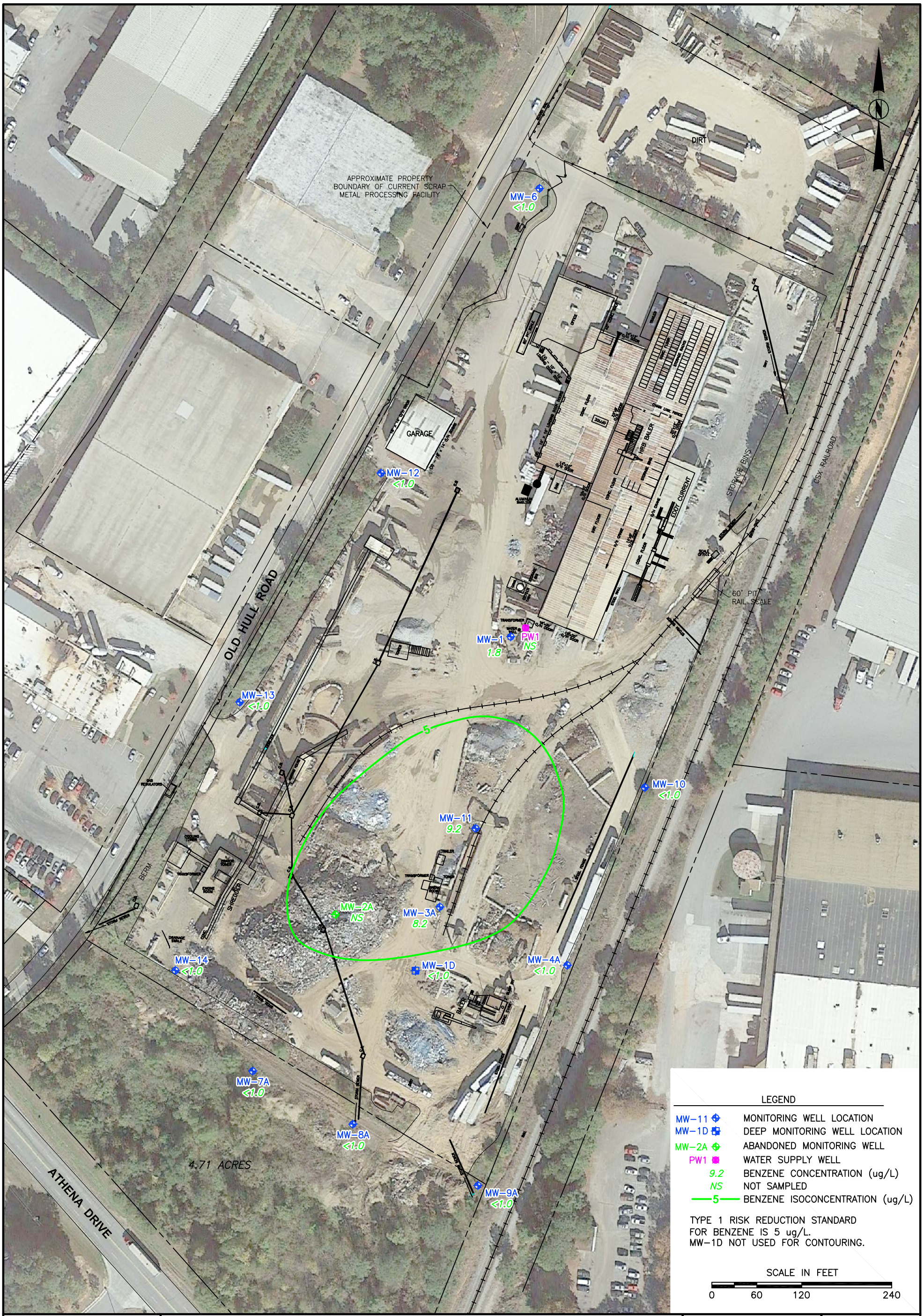


CHECK BY	SGW
DRAWN BY	SP
DATE	7-21-16
SCALE	AS SHOWN
CAD NO.	510393-02C
PRJ NO.	510393-002

TCE IN GROUNDWATER
APRIL 2016
FORMER LOEF FACILITY
590 OLD HULL ROAD
ATHENS, GEORGIA

APEX

FIGURE
5

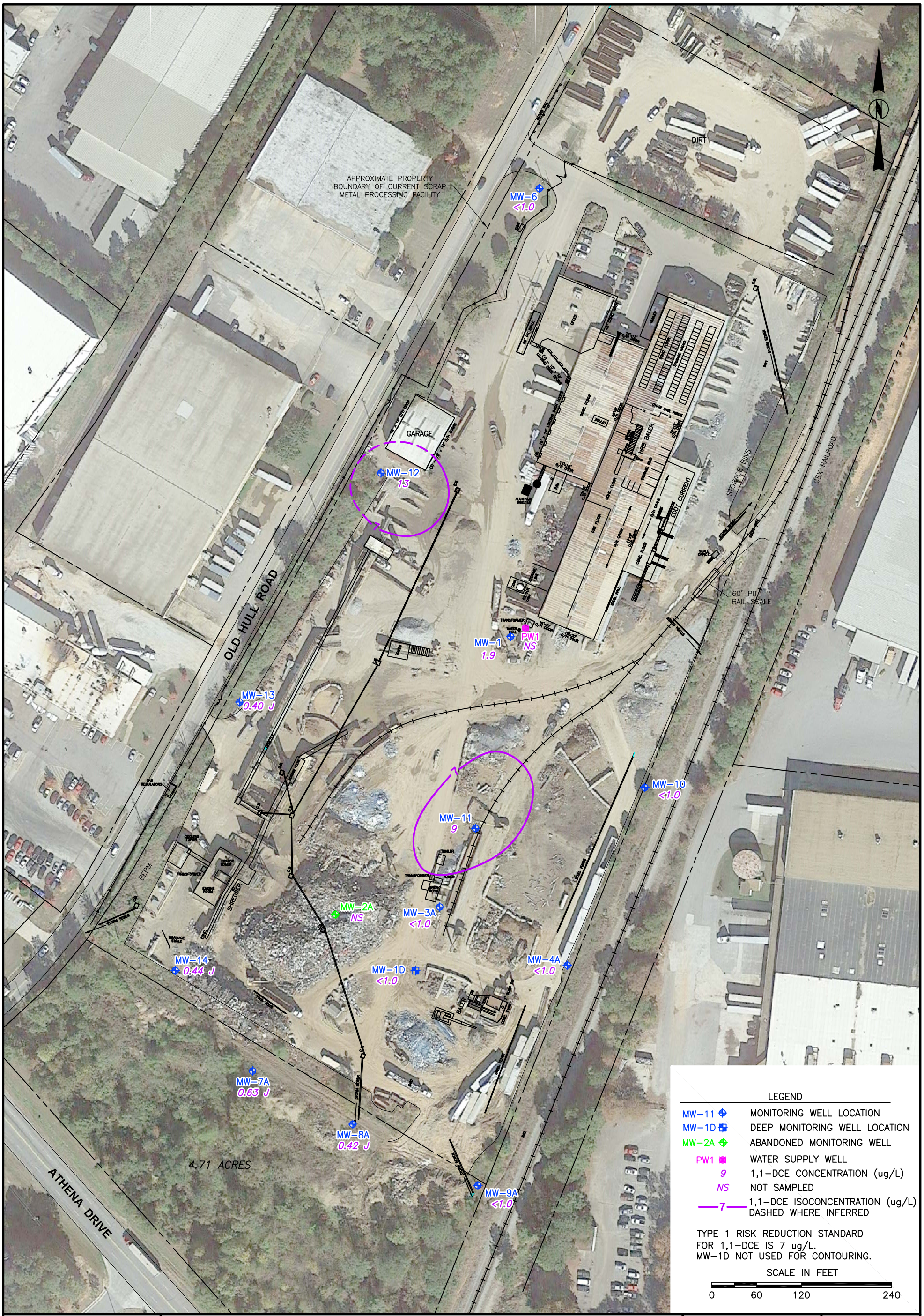


CHECK BY	SGW
DRAWN BY	SP
DATE	7-21-16
SCALE	AS SHOWN
CAD NO.	510393-02C
PRJ NO.	510393-002

BENZENE IN GROUNDWATER
APRIL 2016
FORMER LOEF FACILITY
590 OLD HULL ROAD
ATHENS, GEORGIA

APEX

FIGURE
6

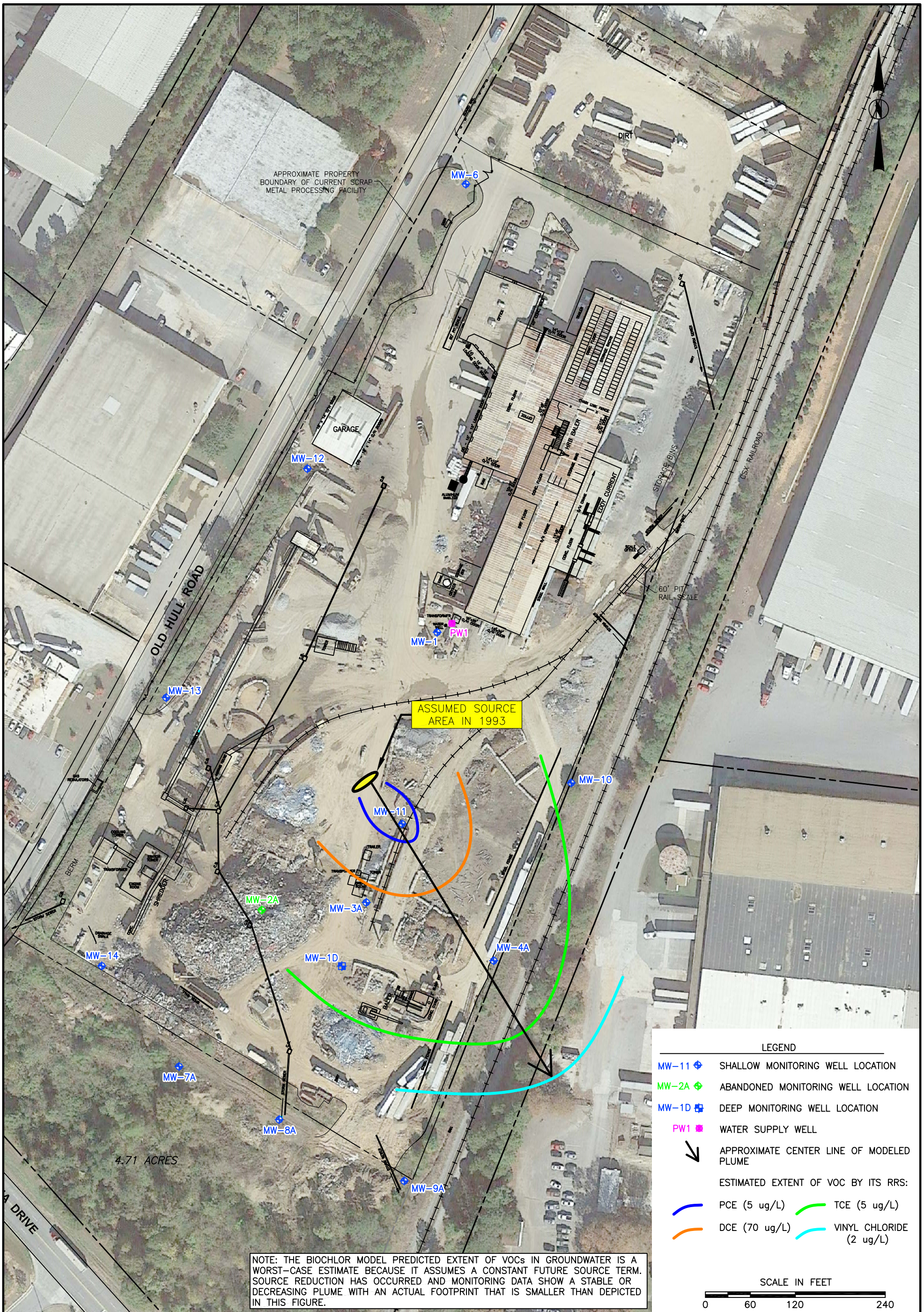


CHECK BY	SGW
DRAWN BY	SP
DATE	7–21–16
SCALE	AS SHOWN
CAD NO.	510393–02C
PRJ NO.	510393–002

1,1–DCE IN GROUNDWATER
APRIL 2016
FORMER LOEF FACILITY
590 OLD HULL ROAD
ATHENS, GEORGIA

APEX

FIGURE
7



NOTE: THE BIOCHLOR MODEL PREDICTED EXTENT OF VOCs IN GROUNDWATER IS A WORST-CASE ESTIMATE BECAUSE IT ASSUMES A CONSTANT FUTURE SOURCE TERM. SOURCE REDUCTION HAS OCCURRED AND MONITORING DATA SHOW A STABLE OR DECREASING PLUME WITH AN ACTUAL FOOTPRINT THAT IS SMALLER THAN DEPICTED IN THIS FIGURE.

CHECK BY	SGW
DRAWN BY	SJP
DATE	7-21-16
SCALE	AS SHOWN
CAD NO.	510393.02A
PRJ NO.	510393.002

BIOCHLOR 30-YEAR PLUME PREDICTION (2022)

FORMER LOEF FACILITY

590 OLD HULL ROAD
ATHENS, GEORGIA

APEX

FIGURE

8

TABLES

TABLE 1
SUMMARY OF HISTORICAL GROUNDWATER GAUGING AND ELEVATIONS
FORMER LOEF FACILITY
ATHENS, CLARK COUNTY, GEORGIA

Well Number	Date Measured	TOC Elevation (ft MSL)	Screen Interval (ft BGS)	Depth to Water (ft BTOC)	Water Table Elevation (ft MSL)
MW-1	5/18/2015	NS	14 to 24 ft	22.87	--
	5/21/2015	711.50		18.52	692.98
	6/3/2015			19.53	691.97
	4/25/2016			18.43	693.07
MW-1D	5/21/2015	710.17	70 to 75 ft	22.18	687.99
	6/3/2015			26.75	683.42
	4/25/2016			25.36	684.81
MW-2A*	6/17/2009	710.20	23.15 to 33.15 ft	22.87	687.33
	6/24/2010			21.00	689.20
	2/24/2011			18.05	692.15
	8/4/2011*	706.70	20 to 30 ft	18.00	688.70
	2/24/2012			19.13	687.57
	9/20/2012			18.89	687.81
	3/7/2013			NM	NM
	3/7/2013			NM	NM
	1/21/2015	706.26		18.15	688.11
	5/18/2015			16.86	689.40
MW-3A	6/17/2009	712.23	20 to 30 ft	26.79	685.44
	6/24/2010			24.82	687.41
	2/24/2011			25.15	687.08
	8/4/2011			26.15	686.08
	2/24/2012			26.83	685.40
	9/20/2012			26.76	685.47
	3/7/2013			25.72	686.51
	1/22/2015	712.20		25.59	686.61
	5/18/2015			24.31	687.89
	4/25/2016			23.30	688.90
MW-4A	6/17/2009	709.18	19.5 to 29.5 ft	24.76	684.42
	6/24/2010			23.21	685.97
	2/24/2011			22.94	686.24
	8/4/2011			25.49	683.69
	2/24/2012			24.77	684.41
	9/20/2012			24.84	684.34
	3/7/2013			22.96	686.22
	1/22/2015	706.08		23.34	682.74
	5/18/2015			22.21	683.87
	4/25/2016			21.78	684.30
MW-6	6/17/2009	720.15	20 to 30 ft	23.00	697.15
	6/24/2010			20.42	699.73
	2/24/2011			20.62	699.53
	8/4/2011			20.50	699.65
	2/24/2012			22.90	697.25
	9/20/2012			23.81	696.34
	3/7/2013			22.38	697.77
	1/22/2015	719.87		22.36	697.51
	5/18/2015			20.54	699.33
	4/25/2016			19.28	700.59
MW-7A	6/17/2009	696.08	9.5 to 19.5 ft	15.47	680.61
	6/24/2010			12.46	683.62
	2/24/2011			12.81	683.27
	8/4/2011			18.05	678.03
	2/24/2012			14.51	681.57
	9/20/2012			15.52	680.56
	3/7/2013			11.97	684.11
	1/22/2015	697.15		12.61	684.54
	5/18/2015			13.05	684.10
	4/25/2016			12.52	684.63

TABLE 1
SUMMARY OF HISTORICAL GROUNDWATER GAUGING AND ELEVATIONS
FORMER LOEF FACILITY
ATHENS, CLARK COUNTY, GEORGIA

Well Number	Date Measured	TOC Elevation (ft MSL)	Screen Interval (ft BGS)	Depth to Water (ft BTOC)	Water Table Elevation (ft MSL)
MW-8A	6/17/2009	695.23	9.5 to 19.5 Ft	14.02	681.21
	6/24/2010			11.30	683.93
	2/24/2011			11.54	683.69
	8/4/2011			16.87	678.36
	2/24/2012			12.93	682.30
	9/20/2012			13.89	681.34
	3/7/2013			10.91	684.32
	1/22/2015	695.26		11.39	683.87
	5/18/2015			11.75	683.51
	4/25/2016			11.39	683.87
MW-9A	6/17/2009	697.13	10 to 20 Ft	16.51	680.62
	6/24/2010			12.79	684.34
	2/24/2010			12.65	684.48
	8/4/2011			19.80	677.33
	2/24/2012			11.21	685.92
	9/20/2012			10.46	686.67
	3/7/2013			10.21	686.92
	1/22/2015	696.14		12.42	683.72
	5/18/2015			13.58	682.56
	4/25/2016			13.18	682.96
MW-10**	3/7/2013	NS	25 to 35 Ft	20.86	NS
	1/22/2015	708.16		21.28	686.88
	5/18/2015			20.23	687.93
	4/25/2016			19.72	688.44
MW-11	3/7/2013	NS	25 to 35 Ft	25.37	NS
	1/22/2015	713.32		25.30	688.02
	5/18/2015			24.14	689.18
	4/25/2016			23.06	690.26
MW-12	3/7/2013	NS	25 to 35 Ft	15.81	NS
	1/22/2015	712.70		18.61	694.09
	5/18/2015			17.53	695.17
	4/25/2016			16.86	695.84
MW-13	3/7/2013	NS	25 to 35 Ft	17.29	NS
	1/22/2015	707.45		17.49	689.96
	5/18/2015			16.30	691.15
	4/25/2016			15.25	692.20
MW-14	3/7/2013	NS	25 to 35 Ft	18.78	NS
	1/22/2015	707.07		19.18	687.89
	5/18/2015			NM	--
	4/25/2016			16.23	690.84

Notes:

TOC = Top of Casing

BTOC = Below Top of Casing

ft BGS = feet Below Ground Surface

ft MSL - feet Mean Sea Level

NM = MW-2A was inaccessible in March 2013, so groundwater was not gauged in the well during that event.

NS = Not Surveyed. Wells MW-10 thru MW-14 were installed in December 2013 and were surveyed in January 2015.

Apex resurveyed all wells in January 2015 except MW-1 and MW-1D, which were surveyed in July 2016.

* - MW-2A was reinstalled and surveyed on March 18, 2011 then permanently abandoned in May 2015

**- Top of casing cut by Apex prior to survey

TABLE 2
GROUNDWATER BIO-GEOCHEMICAL, INORGANIC AND WATER QUALITY PARAMETERS
FORMER LOEF FACILITY
ATHENS, CLARKE COUNTY, GEORGIA

Monitoing Well ID	Date	pH	Temperature (°C)	Conductivity (mS/cm)	Total Dissolved Solids (g/L)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)	Turbidity (NTU)	Methane	Ethane	Ethene	Total Organic Carbon	Iron II	Chloride	Nitrate	Sulfate	Sulfide
		FIELD-MEASURED PARAMETERS							LABORATORY-MEASURED ANALYTICAL RESULTS (mg/L)								
MW-1	6/3/2015	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	4/26/2016	5.17	22.93	0.07	NM	0.61	99	1.7	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-1D	6/3/2015	NM	NM	NM	NM	NM	NM		NM	NM	NM	NM	NM	NM	NM	NM	NM
	4/26/2016	5.54	24.78	0.079	NM	1.52	121	0.8	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-2A	6/24/2010	4.65	18.1	0.581	0.037	10.2	450		3.2	0.16	<0.007	8.2	7.25	NM	0.49	<1	<2
	8/4/2011	5.45	20.78	0.295	NM	0.54	10		3.1	0.78	<0.007	60.8	47	NM	0.25	<1	<2
	2/24/2012	6.05	19.54	0.903	NM	0	-67		NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/20/2012	5.25	22.42	0.91	NM	2.05	-9		NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/8/2013	5.25	22.42	0.91	NM	2.05	-9	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/22/2015	4.76	17.3	0.568	NM	0.58	73.5	6	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-3A	6/24/2010	4.63	19.2	0.852	0.054	9.64	398		4.2	0.36	<0.007	2.34	<0.1	NM	1.8	2	<2
	8/4/2011	4.4	20.94	0.57	NM	1.34	301		1.7	0.12	<0.007	1.42	<0.1	NM	1.7	<1	<2
	2/24/2012	5.13	20.01	0.06	NM	1.91	327		NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/20/2012	4.21	22.44	0.067	NM	1.57	349		NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/8/2013	4.21	22.44	0.067	NM	1.57	349	0.02	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/22/2015	4.63	19.51	0.075	NM	0.5	103.2	0.38	NM	NM	NM	NM	NM	NM	NM	NM	NM
	4/26/2016	5.11	23.08	0.133	NM	1.53	185	7.7	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-4A	6/24/2010	4.66	18.8	0.164	0.11	9.54	414		0.34	0.029	<0.007	2.98	<0.1	NM	0.88	1.9	<2
	8/4/2011	4.62	21.76	0.093	NM	2.1	330		0.44	0.026	<0.007	<5	<0.1	NM	0.84	1.7	<2
	2/24/2012	4.77	19.13	0.117	NM	0.00	377		NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/20/2012	4.16	22.98	0.134	NM	2.28	425		NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/7/2013	4.16	22.98	0.134	NM	2.28	425	0	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/22/2015	4.26	18.06	0.196	NM	0.96	126.3	1.61	<4	<9	<7	<1	NM	44	1	1.3	<2
	4/26/2016	4.33	21.26	0.339	NM	1.77	225	0.8	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-6*	6/24/2010	4.9	19.7	0.044	0.03	10.5	443		<0.004	<0.009	<0.007	1.79	<0.1	NM	0.44	<1	<2
	8/4/2011	4.25	19.7	0.03	NM	8.51	366		<0.004	<0.009	<0.007	<1	<0.1	NM	0.43	<1	<2
	2/24/2012	4.77	20.37	0.03	NM	3.75	354		NM	NM	NM	NM	NM	NM	NM	NM	NM
	9/20/2012	4.26	22.69	0.051	NM	4.72	681		NM	NM	NM	NM	NM	NM	NM	NM	NM
	3/7/2013	4.87	18.87	0.03	NM	5.51	359	0	<0.004	<0.009	<0.007	<1	NM	5.4	0.42	1.2	<2
	1/21/2015	4.48	19.5	0.048	NM	3.53	123.6	0.92	NM	NM	NM	NM	NM	NM	NM	NM	NM
	4/26/2016	4.39	20.12	0.049	NM	5.7	208	0.4	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-7A	3/8/2013	5.23	18.67	0.463	NM	3.44	301	7.23	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/22/2015	4.89	14.9	0.445	NM	0.61	195.3	3.13	NM	NM	NM	NM	NM	NM	NM	NM	
	4/25/2016	5.54	22.78	0.428	NM	0.8	201	0.1	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-8A	3/8/2013	5.37	18.33	0.83	NM	2.25	163	8.2	NM	NM	NM	NM	NM	NM	NM	NM	<2
	1/22/2015	5.72	16.6	0.714	NM	0.56	130.7	5.7	830	<9	<7	12.2	NM	23	<0.25	210	
	4/26/2016	6.57	19.3	0.737	NM	0.8	72	57	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-9A	3/8/2013	5.56	18.65	0.676	NM	4.3	82	6.88	NM	NM	NM	NM	NM	NM	NM	NM	<2
	1/22/2015	6.04	14.91	0.658	NM	0.71	14.3	0.24	11	<9	<7	8.69	NM	12	<0.25	97	
	4/26/2016	6.74	20.45	0.569	NM	0.65	40	36	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-10	3/7/2013	4.44	20.27	0.142	NM	1.45	503	0.62	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/22/2015	4.18	17.7	0.143	NM	1.06	106.3	4	NM	NM	NM	NM	NM	NM	NM	NM	
	4/25/2016	4.67	21.97	0.223	NM	2.3	547	2.1	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-11	3/8/2013	4.53	21.26	0.058	NM	1.09	414	1.28	NM	NM	NM	NM	NM	NM	NM	NM	<2
	1/22/2015	4.31	18.5	0.052	NM	1.85	120.6	0.65	3,600	330	<7	2.5	NM	4.8	2.1	<1	
	4/26/2016	4.75	24.28	0.06	NM	0.74	240	3.8	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-12	3/7/2013	4.95	21.73	0.046	NM	2.18	400	0.12	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/22/2015	4.9	17.63	0.048	NM	3.59	192.8	2.01	NM	NM	NM	NM	NM	NM	NM	NM	
	4/26/2016	5.14	23.5	0.051	NM	3.42	134	0.4	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-13	3/7/2013	4.82	22.29	0.05	NM	1.85	407	0.42	NM	NM	NM	NM	NM	NM	NM	NM	<2
	1/22/2015	4.48	18.71	0.049	NM	1.36	120.2	3.67	95	<9	<7	<1	NM	5	0.78	<1	
	4/26/2016	5.82	25.62	0.098	NM	2.6	225	0.9	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-14	3/7/2013	5.11	22.3	0.523	NM	1.5	362	1.12	NM	NM	NM	NM	NM	NM	NM	NM	NM
	1/21/2015	5.47	18.57	0.659	NM	0.51	109.9	1.66	NM	NM	NM	NM	NM	NM	NM	NM	
	4/26/2016	5.96	26.4	0.724	NM	0.57	103	28.9	NM	NM	NM	NM	NM	NM	NM	NM	NM

NOTES:

NM - Parameter was not measured
µg/L = Micrograms per liter
mg/L = Milligrams per liter
* Background Well
mV = Millivolts
SU = Standard Units
mS/cm = Millisiemens per centimeter
°C = Degrees centigrade
NTU = Nephelometric Turbidity Unit

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER LOEF FACILITY
ATHENS, CLARKE COUNTY, GEORGIA

Monitoing Well ID	Type 1 Risk Reduction Standard (µg/L)	1,1,2-Trichloro-1,2,2-Trifluoroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	4-Methyl-2-Pentanone (Methyl isobutyl ketone)	2-Butanone (Methyl ethyl ketone)	2-Hexanone (Methyl butyl ketone)	Acetone	Benzene	Carbon Disulfide	Chloroform	Chloromethane (Methyl Chloride)	Cyclohexane	Toluene	Ethylbenzene	Isopropylbenzene (Cumene)	Methylcyclohexane	Methylene chloride	Xylenes (o)	Xylenes (m,p)	Xylenes (Total)	MTBE	Trichloroethene	Tetrachloroethene	Trichlorofluoromethane	Cis-1,2-Dichloroethene	Vinyl Chloride
		1.00E6	200	5	4,000	7	5	2,000	2,000	NE	4,000	5	4,000	80	3	NE	1,000	700	NE	NE	5	NE	NE	10,000	NE	5	5	2,000	70	2
	DATE	Analytical Results (µg/L)																												
MW-1*	6/23/2000	--	<1	<1	1.5	<1	--	--	--	--	--	1.5	--	--	--	--	<1	<1	--	--	--	<3	--	--	<1	**8.2**	<1	--	<1	<3
	6/3/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	17	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	1.1	1.9	<1.0	<1.0	<10	<10	1.6 J	1.8	<1.0	13	0.33 J	1.3	<1.0	<1.0	0.49 J	0.89 J	4.3	-	-	0.49 J	<1.0	3.1	4.2	<1.0	3.5	0.59 J
MW-1D	6/3/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	**17**	<5.0	<5.0	<5.0	<2.0
	4/26/2016	7.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	**22**	2.2	<1.0	<1.0	<1.0
MW-2A**	6/23/2000	--	<10	<10	12	**26**	--	--	--	--	--	<10	--	--	--	--	<10	<10	--	--	--	<30	--	<30	42	**570**	<5	--	**100**	**31**
	6/26/2003	--	9.7	<5	30	**43**	--	--	--	--	--	**11**	--	--	--	--	<5	<5	--	--	--	11	--	11	150	**1800**	<5	--	**250**	**52**
	8/12/2003	--	32	<5	110	**78**	--	--	--	--	--	**18**	--	--	--	--	8.9	<5	--	--	--	17	--	17	250	**6500**	<5	--	**1300**	**170**
	9/19/2003	--	28	<5	70	**65**	--	--	--	--	--	**17**	--	--	--	--	9.3	<5	--	--	--	18	--	18	200	**4700**	<5	--	**700**	**98**
	10/22/2003	--	28	<5	90	**80**	--	--	--	--	--	**36**	--	--	--	--	13	6.4	--	--	--	26	--	26	250	**3000**	<5	--	**590**	**140**
	11/18/2003	--	21	<5	71	**58**	--	--	--	--	--	**18**	--	--	--	--	9.1	<5	--	--	--	17	--	17	250	**8100**	<5	--	**1000**	**110**
	12/24/2003	--	34	<5	91	**70**	--	--	--	--	--	**16**	--	--	--	--	9.4	<5	--	--	--	22	--	22	280	**9600**	<5	--	**1500**	**130**
	1/23/2004	--	<50	<5	55	**60**	--	--	--	--	--	<50	--	--	--	--	<50	<5	--	--	--	<50	--	<50	370	**4000**	<5	--	**560**	**130**
	3/29/2004	--	16	<5	54	**46**	--	--	--	--	--	**22**	--	--	--	--	6.9	<5	--	--	--	14	--	14	250	**4000**	<5	--	**790**	**83**
	5/7/2004	--	11	<5	34	**42**	--	--	--	--	--	**20**	--	--	--	--	<5	5.8	--	--	--	14	--	14	210	**2500**	<5	--	**420**	**54**
	7/15/2004	--	11	<5	38	**32**	--	--	--	--	--	**25**	--	--	--	--	7.1	8.5	--	--	--	18	--	18	280	**1900**	<5	--	**420**	**67**
	9/30/2004	--	<5	<5	10	**23**	--	--	--	--	--	**21**	--	--	--	--	130	46	--	--	--	58	--	58	190	**430**	<5	--	**130**	**32**
	5/9/2006	--	9.4	<5	54	**38**	--	--	--	--	--	**13**	--	--	--	--	<5	<5	--	--	--	10	--	10	77	**2600**	<5	--	**720**	**51**
	6/17/2009	--	<5	<5	<5	<5	--	--	--	--	--	**14**	--	--	--	--	<5	<5	--	--	--	<10	--	<10	<5	**70**	<5	--	31	**7**
	6/24/2010	--	<5	<5	23	**17**	--	--	--	--	--	**12**	--	--	--	--	<5	<5	--	--	--	1.9	--	1.9	15	**710**	<5	--	**300**	**54**
	2/24/2011	--	<5	<5	19	**14**	--	11	--	--	90	**7.2**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	20	**730**	<5	120	**370**	**33**
	3/18/2011**	--	<5	<5	6	**10**	--	11	--	--	<50	**7.8**	-	7	--	--	<5	<5	--	--	--	<5	--	<5	9.4	**210**	<5	<5	**120**	**19**
	8/4/2011	--	<5	<5	21	**19**	--	90	210	12	670	**13**	9	<5	--	--	13	<5	--	--	--	7.6	7.8	15.4	43	**810**	<5	<5	**390**	**61**
	8/4/2011(DUP)	--	<5	<5	21	**18**	--	79	150	10	630	**11**	7.2	<5	--	--	11	<5	--	--	--	6.8	7.1	13.9	38	**680**	<5	<5	**310**	**55**
	2/24/2012	--	<5	<5	<5	**7.7**	--	160	210	19	700	**11**	<5	<5	--	--	8.6	<5	--	--	--	7.3	9.8	17.1	32	**69**	<5	<5	**100**	**34**
	9/20/2012	--	<5	<5	9.1	**9.4**	--	96	150	22	530	**11**	8.3	<5	--	--	6.9	<5	--	--	--	5.9	8.3	14.2	34	**140**	<5	<5	**210**	**69**
	3/7/2013	--	NS	NS	NS	NS	--	NS	NS	NS	NS	NS	NS	NS	--	--	NS	NS	--	--	--	NS	NS	--	NS	NS	NS	NS	NS	NS
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	,10	5.4	**23**	<5.0	<5.0	21	**29**
	DUP (FD012215B) 1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	**5.2**	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	6	**43**	<5.0	<5.0	33	**29**
	5/20/2015	--	<5.0	<5.0	6.1	<5.0	--	<10	<50	<10	<50	**8.7**	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	7.6	**140**	<5.0	<5.0	**130**	**49**
MW-3A	6/23/2000	--	<1	<5	<1	<1	--	--	--	--	--	**36**	--	--	--	--	<1	<1	--	--	--	<3	--	<3	<1	**30**	<5	--	<1	<3
	5/7/2004	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**11**	<5	--	<5	<2
	5/9/2006	--	<5	<5	<5	<5	--	--	--	--	--	**7.4**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**22**	<5	--	<5	<2
	6/17/2009	--	<5	<5	<5	<5	--	--	--	--	--	**13**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**15**	<5	--	<5	<2
	6/24/2010	--	<5	<5	<5	<5	--	--	--	--	--	**16**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**17**	<5	--	<5	<2
	2/24/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**14**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**13**	<5	<5	<5	<2
	8/4/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**13**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**11**	<5	<5	<5	<2
	2/24/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**10**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**8**	<5	<5	<5	<2
	9/20/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**14**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**9.8**	<5	<5	<5	<2
	3/7/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**14**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**9.6**	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	**22**	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	**8.8**	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<20	**8.2**	<1.0	<1.0	0.19 J	0.90 J	<1.0	<1.0	<1.0	0.45 J	<1.0	--	--	<1.0	<1.0	3.9	<1.0	<1.0	0.97 J	<1.0
MW-4A	6/23/2000	--	<1	<5	<1	<1	--	--	--	--	--	**12**	--	--	--	--	<1	<1	--	--	--	<1	--	<1	<1	<1	2.7	--	<1	<1
	5/7/2004	--	<5	<5	<5	<5	--	--	--	--	--	**27**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**29**	<5	--	<5	<5
	5/9/2006	--	<5	<5	<5	<5	--	--	--	--	--	**37**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**51**	<5	--	<5	<2
	6/17/2009	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**7.2**	<5	--	<5	<2
	6/24/2010	--	<5	<5	<5	<5	--	--	--	--	--	4.9	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**6.1**	<5	--	<5	<2
	2/24/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**7**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**13**	<5	<5	<5	<2
	8/4/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**29**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**51**	<5	<5	9.5	<2
	2/24/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	9/20/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**6.3**	<5	<5	<5	<2
	3/7/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	0.35 J	<1.0	<1.0	<1.0	<1.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER LOEF FACILITY
ATHENS, CLARKE COUNTY, GEORGIA

Monitoing Well ID	Type 1 Risk Reduction Standard (µg/L)	1,1,2-Trichloro-1,2,2-Trifluoroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	4-Methyl-2-Pentanone (Methyl isobutyl ketone)	2-Butanone (Methyl ethyl ketone)	2-Hexanone (Methyl butyl ketone)	Acetone	Benzene	Carbon Disulfide	Chloroform	Chloromethane (Methyl Chloride)	Cyclohexane	Toluene	Ethylbenzene	Isopropylbenzene (Cumene)	Methylcyclohexane	Methylene chloride	Xylenes (o)	Xylenes (m,p)	Xylenes (Total)	MTBE	Trichloroethene	Tetrachloroethene	Trichlorofluoromethane	Cis-1,2-Dichloroethene	Vinyl Chloride
		1.00E6	200	5	4,000	7	5	2,000	2,000	NE	4,000	5	4,000	80	3	NE	1,000	700	NE	NE	5	NE	NE	10,000	NE	5	5	2,000	70	2
	DATE	Analytical Results (µg/L)																												
MW-5	6/23/2000	--	1.5	<1	<1	<1	--	--	--	--	--	<1	--	--	--	--	<1	<1	--	--	--	<1	--	--	<1	<1	<1	--	<1	<1
MW-6	11/5/2000	--	NA	<5	<1	NA	--	--	--	--	--	<1	--	--	--	--	NA	NA	--	--	--	NA	--	--	NA	<1	<1	--	<1	NA
	6/17/2009	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	6/24/2010	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	2/24/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	8/4/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	2/24/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	9/20/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	3/7/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/21/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-7A	11/5/2000	--	NA	NA	<1	NA	--	--	--	--	--	<1	--	--	--	--	NA	NA	--	--	--	NA	--	--	NA	**5.4**	<1	--	2.1	NA
	5/7/2004	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	5/9/2006	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	6/17/2009	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	6/24/2010	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	2/24/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	8/4/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	2/24/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	9/20/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	3/8/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	0.63 J	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-8A	11/5/2000	--	NA	NA	<1	NA	--	--	--	--	--	<1	--	--	--	--	NA	NA	--	--	--	NA	--	--	NA	**15**	<1	--	<1	NA
	5/7/2004	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	5/9/2006	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	6/17/2009	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	6/24/2010	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	2/24/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	8/4/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	2/24/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	9/20/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	3/8/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	0.42 J	<1.0	<10	<10	<10	5.3 J	<1.0	<1.0	<1.0	0.41 J	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.97 J
MW-9A	5/7/2004	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	5/9/2006	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	6/17/2009	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	6/24/2010	--	<5	<5	<5	<5	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<2
	2/24/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	8/4/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	2/24/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	9/20/2012	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	3/8/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-10	3/7/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	**5.3**	<5	<5	--	--	<5	<5	--	--	--	12	22	34	<5	<5	<5	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	8.6	<5.0	8.6	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0
MW-11	3/8/2013	--	<5	<5	<5	**8.5**	--	<10	<50	<10	<50	**16**	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	**1,300**	**10**	<5	12	<2
	1/22/2015	--	<5.0	<5.0	<5.0	**13**	--	<10	<50	<10	<50	**27**	<5.0	<5.0			<5.0	<5.0				<5.0	<5.0	<10	<5.0	**1,500**	**15**	<5.0	12	<2.0
	4/26/2016	<5.0	<5.0	<5.0	<5.0	**9**	<5.0	<50	<50	<50	<100	**9.2**	<1.0	1.7 J	<5.0	<5.0	<5.0	<5.0	<5.0	<25.0	<5.0	--	--	<5.0	<5.0	**760**	**5.8**	<5.0	7.5	<5.0

TABLE 3
HISTORICAL GROUNDWATER ANALYTICAL RESULTS
FORMER LOEF FACILITY
ATHENS, CLARKE COUNTY, GEORGIA

Monitoing Well ID	Type 1 Risk Reduction Standard (µg/L)	1,1,2-Trichloro-1,2,2-Trifluoroethane	1,1,1-Trichloroethane	1,1,2-Trichloroethane	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichloroethane	4-Methyl-2-Pentanone (Methyl isobutyl ketone)	2-Butanone (Methyl ethyl ketone)	2-Hexanone (Methyl butyl ketone)	Acetone	Benzene	Carbon Disulfide	Chloroform	Chloromethane (Methyl Chloride)	Cyclohexane	Toluene	Ethylbenzene	Isopropylbenzene (Cumene)	Methylcyclohexane	Methylene chloride	Xylenes (o)	Xylenes (m,p)	Xylenes (Total)	MTBE	Trichloroethene	Tetrachloroethene	Trichlorofluoromethane	Cis-1,2-Dichloroethene	Vinyl Chloride
		1.00E6	200	5	4,000	7	5	2,000	2,000	NE	4,000	5	4,000	80	3	NE	1,000	700	NE	NE	5	NE	NE	10,000	NE	5	5	2,000	70	2
	DATE	Analytical Results (µg/L)																												
MW-12	3/7/2013	--	<5	<5	<5	**30**	--	<10	<50	<10	<50	<5	<5	28	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	**45**	--	<10	<50	<10	<50	<5.0	<5.0	5	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	DUP (FD012215A) 1/22/2015	--	<5.0	<5.0	<5.0	**43**	--	<10	<50	<10	<50	<5.0	<5.0	5.4	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	0.29 J	<1.0	**13**	0.28 J	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	0.49 J	<1.0	<1.0	<1.0	<1.0
	DUP-2 4/26/2016	<1.0	<1.0	0.29 J	<1.0	**14**	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	0.43 J	<1.0	1.2	<1.0	<1.0
MW-13	3/7/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	0.25 J	0.40 J	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	DUP-1 4/26/2016	<1.0	<1.0	<1.0	0.25 J	0.44 J	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MW-14	3/7/2013	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	5.6	<5	<5	<5	<5	<2
	1/21/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	0.44 J	<1.0	0.58 J	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	1	<1.0	<1.0	<1.0	<1.0	**2.1**
TW-1	5/4/2006	--	<5	<5	<5	<5	--	--	--	--	--	**38**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**10**	<5	--	<5	<5
TW-2	5/4/2006	--	<5	<5	<5	<5	--	--	--	--	--	**100**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**15**	**6.6**	--	<5	<5
TW-3	5/4/2006	--	<5	<5	<5	**29**	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	**8.2**	<5	--	<5	<5
TW-4	5/4/2006	--	<5	5.9	<5	**150**	--	--	--	--	--	<5	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<5
TW-5	5/4/2006	--	<5	<5	<5	<5	--	--	--	--	--	**24**	--	--	--	--	<5	<5	--	--	--	<5	--	<5	<5	<5	<5	--	<5	<5
Equipment Blank	2/24/2011	--	<5	<5	<5	<5	--	<10	<50	<10	59	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
FB-1	4/26/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trip Blank	8/5/2011	--	<5	<5	<5	<5	--	<10	<50	<10	<50	<5	<5	<5	--	--	<5	<5	--	--	--	<5	<5	<10	<5	<5	<5	<5	<5	<2
	1/21/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	1/22/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	5/21/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	6/5/2015	--	<5.0	<5.0	<5.0	<5.0	--	<10	<50	<10	<50	<5.0	<5.0	<5.0	--	--	<5.0	<5.0	--	--	--	<5.0	<5.0	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<2.0
	4/26/2016	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<10	<10	<10	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	--	--	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

NOTES:

"760" - Numbers in bold exceed the applicable Type 1 Risk Reduction Standard criteria.

* - Casing for MW-1 was damaged. Sampling access was not available on this date.

**- MW-2A was overdrilled and replaced 3/18/11.

NE - Not Established (no Type 1 Groundwater Risk Reduction Standard is assigned).

NS - Not Sampled (MW-2A was inaccessible in March 2013 and was not sampled).

NA - Not Analyzed.

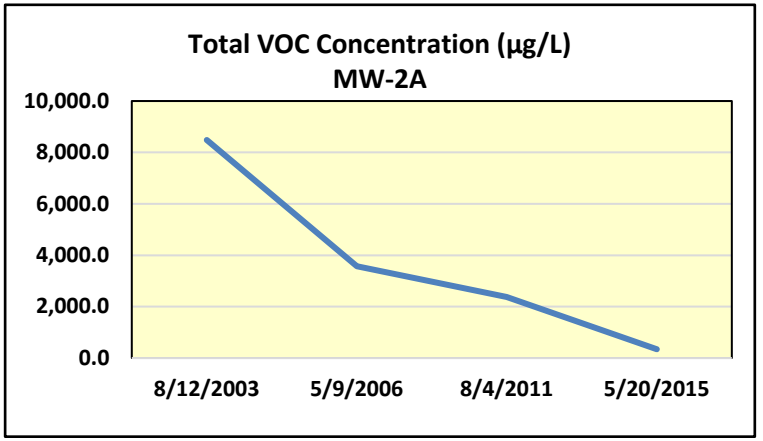
MW-10 thru MW-14 were installed December 19 - 21, 2013 .

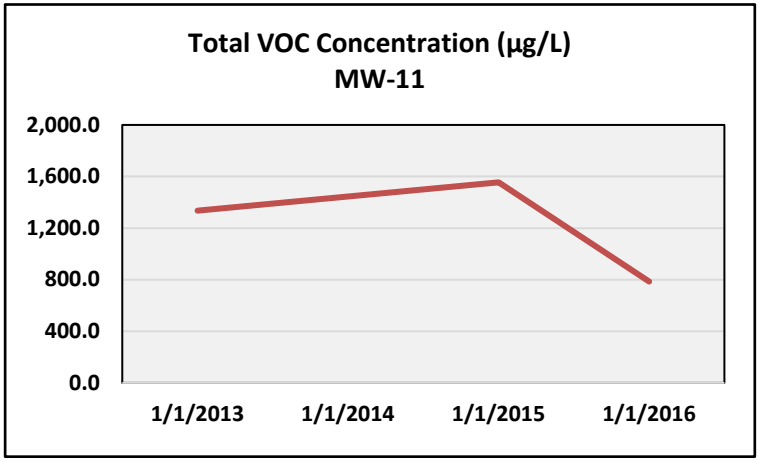
Shaded cell: VOC was previously not reported or tested by lab. First reporting for this compound was April 2016 sampling event.

TABLE 4
HISTORICAL TOTAL VOC CONCENTRATIONS IN GROUNDWATER
FORMER LOEF FACILITY
ATHENS, CLARKE COUNTY, GEORGIA

Monitoring Well	Date	Total VOC Concentration* (µg/L)	Reduction in Total VOC Concentration** (%)
Source Area Wells			
MW-2A	8/12/2003	8,483.9	
	5/9/2006	3,572.4	
	8/4/2011	2,376.4	
	5/20/2015	341.4	96%
MW-3A	6/23/2000	66.0	
	5/9/2006	29.4	
	8/4/2011	24.0	
	4/26/2016	14.61	78%
MW-11	3/8/2013	1,334.2	
	1/22/2015	1,555.0	
	4/26/2016	785.7	41%
Perimeter/Downgradient Wells			
MW-4A	5/7/2004	56.0	
	5/9/2006	88.0	
	8/4/2011	89.5	
	9/20/2012	6.3	
	4/26/2016	0.35	99%
MW-10	3/7/2013	39.3	
	1/22/2015	17.2	
	4/26/2016	1.2	97%
MW-12	3/7/2013	58.0	
	1/22/2015	50.0	
	4/26/2016	14.06	59%

Trend Graphs for Key Source Area Wells





Notes:

VOCs = Volatile Organc Compounds

*Total VOCs is the sum of all chlorinated and non-chlorinated Method 8260 VOCs detected, including estimated (J-flag) concentrations.

**Reduction compares total change between first date listed to last date listed. Intermediate reductions are not calculated.

TABLE 5
SUMMARY OF BIOCHLOR MODELING RESULTS
FORMER LOEF FACILITY
ATHENS, CLARKE COUNTY, GEORGIA

Compound	Modeled Date	Source Area Concentration (µg/L)	Maximum Plume Extent to 1 µg/L (ft)*	Approximate Maximum Plume Extent to RRS (ft)**	Type 1 RRS
PCE	22 Years (2015): Calibration	150	200	100	5
	30 Years (2022)	150	150	75	
	40 Years (2032)	150	150	75	
	50 Years (2042)	150	150	75	
TCE	22 Years (2015): Calibration	13,000	500	450	5
	30 Years (2022)	13,000	500	390	
	40 Years (2032)	13,000	500	390	
	50 Years (2042)	13,000	500	390	
DCE[†]	22 Years (2015): Calibration	<1	500	180	70[†]
	30 Years (2022)	<1	500	150	
	40 Years (2032)	<1	600	150	
	50 Years (2042)	<1	600	150	
VC	22 Years (2015): Calibration	<1	500	480	2
	30 Years (2022)	<1	500	450	
	40 Years (2032)	<1	500	450	
	50 Years (2042)	<1	500	450	

Notes:
µg/L = micrograms per liter
ft = feet
RRS = Risk Reduction Standard (Georgia EPD)
PCE = perchloroethene
TCE = trichloroethene
DCE = dichloroethene
VC = vinyl chloride
[†]DCE generated is assumed to be all cis-1,2-DCE isomer for comparison against a RRS.
*Maximum detected extent of plume along downgradient groundwater flow pathway, starting at source area located 70 feet upgradient of MW-11.
**Plume distance along downgradient groundwater flow pathway, starting from source area, that RRS concentration is met.

APPENDIX A

GROUNDWATER SAMPLING FORMS

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 1000
Apex Personnel: K. Schwarz
Location (Site/Facility Name): Omni Source

Monitor Well Number: MW-1
Purpose of Sampling Event: Annual
Weather/Temp: cloudy / 70°F

Circle

Measuring Point (MP): top of casing, top of ground
Depth to Product (MP):
Depth to Water (MP): 18.43
Total Depth of Well (MP): 24 (0.1')
Water Column thickness (ft): 5.57
Well Material: PVC, Stainless Steel, Other:
Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min
Well Cover Bolted: Yes No
Well Cap Condition: Good Replaced
Well Cap Locked: Yes, No, Replaced
Well Tag Present: Yes No
Well Info. On Tag: Yes No
Well Diameter (inches) 2

Well Type: surface completion, above grade
Well Screen Length: 5, 10, 15, 20 feet; 14-24
Pump Intake depth below water (MP): 20
Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos;
OTHER:
Noticeable Odor: none
Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	18.54	—	0.5	22.89	.090	5.19	152	0.96	3.2	
3	18.55	—	0.8	22.88	.079	5.15	114	0.85	2.5	
6	18.56	—	1.1	22.87	.075	5.16	104	0.74	2.3	
9	18.56	—	1.4	22.91	.073	5.17	101	0.70	2.0	
12	18.56	—	1.7	22.95	.071	5.16	99	0.67	1.7	
15	18.56	—	2.0	22.94	.072	5.19	97	0.61	1.8	
18	18.56	—	2.3	22.93	.070	5.17	99	0.61	1.7	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.:
Spec. cond - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other: Soda straw method used for VOC

Parameters Stabilized (circle): YES NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8200	40mL VOA	HCl	Shealy	4/26/16	1020

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 1130
Apex Personnel: K. Schwarz
Location (Site/Facility Name): Omni Source
Monitor Well Number: MW-1D
Purpose of Sampling Event: Annual
Weather/Temp: Sunny | 75F

Circle

Measuring Point (MP): top of casing, top of ground
Depth to Product (MP):
Depth to Water (MP): 25.36
Total Depth of Well (MP): 75 (0.1')
Water Column thickness (ft): 49.64
Well Material: (PVC) Stainless Steel, Other:
Well pad condition: (Good), Cracked, Replace

Low Flow purge rate: 100 mL/min
Well Cover Bolted: Yes No Stick up locked
Well Cap Condition: (Good) Replaced
Well Cap Locked: Yes, (No), Replaced
Well Tag Present: Yes (No)
Well Info. On Tag: Yes No
Well Diameter (inches) 2

Well Type: surface completion, (above grade)
Well Screen Length: 5, 10, 15, 20 feet: 70-75
Pump Intake depth below water (MP): 72
Purging/Sampling Device: Bailer, (Peristaltic), Monsoon, Grundfos
OTHER:
Noticeable Odor: none
Sample Color: Clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	25.58	—	0.5	24.38	.080	5.68	110	1.02	1.9	
3	25.61	—	0.8	24.85	.078	5.62	113	0.93	1.3	
6	25.62	—	1.1	24.72	.078	5.55	117	1.33	1.4	
9	25.62	—	1.4	24.79	.079	5.55	119	1.50	1.2	
12	25.62	—	1.7	24.73	.079	5.53	121	1.51	0.9	
15	25.62	—	2.0	24.80	.079	5.53	121	1.50	0.8	
18	25.62	—	2.3	24.78	.079	5.54	121	1.52	0.8	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond. - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, (Horiba U-52), Hanna turbidity; Other: soda straw method used for VOC

Parameters Stabilized (circle): (YES) NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8260	VOA	HCl	Shealy	4/26/16	1200

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 1005

Apex Personnel: T. Fisher

Location (Site/Facility Name): Omnisource, Athens, Ga

Monitor Well Number: MW-3A

Purpose of Sampling Event: Annual

Weather/Temp: P. Cloudy 70°F

Circle

Measuring Point (MP): (top of casing), top of ground

Depth to Product (MP): ~~23.17~~

Depth to Water (MP): 23.30

Total Depth of Well (MP): 30.0 (0.1')

Water Column thickness (ft): 6.7

Well Material: (PVC), Stainless Steel, Other:

Well pad condition: (Good), Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: Yes No NA

Well Cap Condition: (Good) Replaced

Well Cap Locked: (Yes), No, Replaced

Well Tag Present: Yes (No)

Well Info. On Tag: Yes (No)

Well Diameter (inches) 2

Well Type: surface completion, (above grade)

Well Screen Length: 5, (10), 15, 20 feet; 20-30

Pump Intake depth below water (MP): 25

Purging/Sampling Device: Bailer, (Peristaltic), Monsoon, Grundfos,

OTHER:

Noticeable Odor: None

Sample Color: Clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	~~m~~S/cm		mV	mg/L	NTU	
Initial	23.40	-	0.5	21.28	0,135	5.26	181	3.44	8.8	
3	23.40 ~~21.88~~	-	0.8	21.85	0,134	5.22	177	2.44	8.9	
6	23.40	-	1.1	22.26	0,133	5,19	178	1.71	8.3	
9	23.40	-	1.4	22.54	0,135	5.18	179	1,71	7.6	
12	23.40	-	1.7	23.08	0.133	5.11	185	1.53	7.7	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.:
Spec. Cond. - mS/cm

Purge Volume Conversions: 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, (Horiba U-52), Hanna turbidity; Other:

Parameters Stabilized (circle): (YES) NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
1	8260	40mL VOA	HCl	Shealy	4/26/16	1050

Soda straw method for collection

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 915

Apex Personnel: K. Schwarz

Location (Site/Facility Name): Omni Source

Monitor Well Number: MW-4A

Purpose of Sampling Event: Annual

Weather/Temp: Sunny / 75°F

Circle

Measuring Point (MP): top of casing, top of ground

Depth to Product (MP):

Depth to Water (MP): 21.78

Total Depth of Well (MP): 29.5 (0.1')

Water Column thickness (ft): 7.72

Well Material: PVC, Stainless Steel, Other:

Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: Yes No

Well Cap Condition: Good Replaced

Well Cap Locked: Yes, No, Replaced

Well Tag Present: Yes No

Well Info. On Tag: Yes No

Well Diameter (inches) 2

Well Type: surface completion, above grade

Well Screen Length: 5, 10, 15, 20 feet; 19.5-29.5

Pump Intake depth below water (MP): 23

Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos;

OTHER:

Noticeable Odor: none

Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	21.95	—	0.5	20.96	.340	4.36	217	2.12	1.1	
3	22.03	—	0.8	21.01	.339	4.33	220	1.98	1.0	
6	22.04	—	1.1	21.08	.339	4.34	222	1.86	0.9	
9	22.04	—	1.4	21.19	.339	4.32	225	1.79	1.0	
12	22.04	—	1.7	21.26	.339	4.33	225	1.77	0.8	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond - mS/cm

Purge Volume Conversions: 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other: Soda straw method used for VOC

Parameters Stabilized (circle): YES NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8260	40mL VOA	HCl	Shealy	4/26/16	940

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 830

Apex Personnel: K. Schwarz

Location (Site/Facility Name): Omni Source

Monitor Well Number: MW-6

Purpose of Sampling Event: Annual

Weather/Temp: Sunny/80°F

Circle

Measuring Point (MP): top of casing, top of ground

Depth to Product (MP): _____

Depth to Water (MP): 19.28

Total Depth of Well (MP): 30 (0.1')

Water Column thickness (ft): 10.72

Well Material: PVC, Stainless Steel, Other:

Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: Yes No

Well Cap Condition: Good Replaced

Well Cap Locked: Yes, No, Replaced

Well Tag Present: Yes No

Well Info. On Tag: Yes No

Well Diameter (inches) 2

Well Type: surface completion, above grade

Well Screen Length: 5, 10, 15, 20 feet; 20-30

Pump Intake depth below water (MP): 22

Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos;

OTHER:

Noticeable Odor: none

Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	19.26	—	0.5	19.67	.080	6.39	122	6.30	0.7	
3	19.45	—	0.8	19.92	.066	4.64	172	6.04	0.6	
6	~~20.01~~ 19.50	—	1.1	20.01	.056	4.46	192	5.89	0.4	
9	19.51	—	1.4	20.05	.053	4.43	198	5.79	0.5	
12	19.51	—	1.7	20.01	.050	4.41	205	5.75	0.5	
15	19.52	—	2.0	20.11	.050	4.39	209	5.76	0.5	
18	19.52	—	2.3	20.12	.049	4.39	208	5.70	0.4	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.
spec. Cond - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other: soda straw method used for VOC MS/MSD 845

Parameters Stabilized (circle): YES NO If no, why? _____

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8260	40mL VOA	HCl	Shealy	4/26/16	845

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/25/16 Time: 1715
Apex Personnel: K. Schwarz, T. Fisher
Location (Site/Facility Name): Omni Source
Monitor Well Number: MW-7A
Purpose of Sampling Event: Annual
Weather/Temp: Sunny / 70°F

Circle

Measuring Point (MP): top of casing, top of ground
Depth to Product (MP):
Depth to Water (MP): 12.52
Total Depth of Well (MP): 19.5 (0.1')
Water Column thickness (ft): 6.98
Well Material: (PVC) Stainless Steel, Other:
Well pad condition: (Good) Cracked, Replace

Low Flow purge rate: 100 mL/min
Well Cover Bolted: Yes No stick-up locked
Well Cap Condition: (Good) Replaced
Well Cap Locked: Yes, No, Replaced
Well Tag Present: Yes (No) well ID written on well
Well Info. On Tag: Yes No
Well Diameter (inches) 2

Well Type: surface completion, (above grade)
Well Screen Length: 5 (10) 15, 20 feet; 9.5-19.5
Pump Intake depth below water (MP): 14
Purging/Sampling Device: Bailer, (Peristaltic) Monsoon, Grundfos,
OTHER:
Noticeable Odor: none
Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	12.61	—	0.5	28.35	.473	6.14	152	7.01	15.0	
3	12.69	—	0.8	26.12	.444	5.94	167	1.11	13.0	
6	12.70	—	1.1	24.14	.436	5.70	192	1.04	1.5	
9	12.70	—	1.4	23.45	.431	5.58	204	0.90	0.5	
12	12.70	—	1.7	22.81	.429	5.55	207	0.82	0.2	
15	12.70	—	2.0	22.76	.428	5.54	201	0.80	0.1	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec Cond - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, (Horiba U-52) Hanna turbidity; Other: Soda straw Method used for VOC

Parameters Stabilized (circle): (YES) NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8200	40 mL VOA	HCl	Shealy	4/25/16	1745

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 830

Apex Personnel: T. Fisher

Location (Site/Facility Name): Omnisource, Athens, Ga

Monitor Well Number: MW-8A

Purpose of Sampling Event: Annual

Weather/Temp: Sunny 73°F

Circle

Measuring Point (MP): top of casing, top of ground

Depth to Product (MP):

Depth to Water (MP): 11.39

Total Depth of Well (MP): 19.5 (0.1')

Water Column thickness (ft): 8.11

Well Material: PVC, Stainless Steel, Other:

Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: Yes No

Well Cap Condition: Good Replaced

Well Cap Locked: Yes, No, Replaced

Well Tag Present: Yes No

Well Info. On Tag: Yes No well ID written on well

Well Diameter (inches) 2

Well Type: surface completion, above grade

Well Screen Length: 5, 10, 15, 20 feet: 9.5-19.5

Pump Intake depth below water (MP): 12.50

Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos

OTHER:

Noticeable Odor: None

Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	µS/cm		mV	mg/L	NTU	
Initial	11.58	—	0.5	18.62	0.743	6.45	103	2.52	618	
3	11.58	—	0.8	18.81	0.746	6.58	69	1.47	310	
6	11.59	—	1.1	19.02	0.741	6.57	70	1.09	179	
9	11.58	—	1.4	19.18	0.739	6.56	70	0.98	59	
12	11.58	—	1.7	19.22	0.738	6.56	71	0.90	58	
15	11.59	—	2.0	19.30	0.737	6.57	72	0.80	57	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.
Spec. Cond. - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other:

Parameters Stabilized (circle): YES NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
1	8260	40mL VOA	HCl	Shealy	4/26/16	910

Soda straw method for collection

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 930 Monitor Well Number: MW-9A

Apex Personnel: T. Fisher Purpose of Sampling Event: Annual

Location (Site/Facility Name): Omnisource, Athens, Ga Weather/Temp: Sunny 75°F

Circle

Measuring Point (MP): top of casing, top of ground

Depth to Product (MP): _____

Depth to Water (MP): 13.18

Total Depth of Well (MP): 20.0 (0.1')

Water Column thickness (ft): 6.82

Well Material: PVC, Stainless Steel, Other:

Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: Yes No NA

Well Cap Condition: Good Replaced

Well Cap Locked: Yes, No, Replaced

Well Tag Present: Yes No

Well Info. On Tag: Yes No Well id written on well

Well Diameter (inches) 2

Well Type: surface completion, above grade

Well Screen Length: 5, 10, 15, 20 feet: 10-20

Pump Intake depth below water (MP): 15

Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos,

OTHER:

Noticeable Odor: None

Sample Color: Clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	13.21	—	0.5	20.44	0.559	6.88	110	1.55	106	
3	13.23	—	0.8	20.42	0.564	6.74	99	0.86	56	
6	13.24	—	1.1	20.41	0.565	6.73	63	0.78	53	
9	13.26	—	1.4	20.42	0.567	6.73	50	0.70	39	
12	13.27	—	1.7	20.44	0.568	6.73	42	0.66	37	
15	13.28	—	2.0	20.45	0.569	6.74	40	0.65	36	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond - mS/cm

Purge Volume Conversions: 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other: _____

Parameters Stabilized (circle): YES NO If no, why? _____

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
1	8260	40mL VOA	HCl	Shealy	4/26/16	950

Side stream sample collection

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/25/16 Time: 1500

Apex Personnel: T. Fisher, K. Schwarz

Location (Site/Facility Name): OmniSource

Monitor Well Number: MW-10

Purpose of Sampling Event: Annual

Weather/Temp: Sunny 80°F

Circle

Measuring Point (MP): top of casing, top of ground

Depth to Product (MP): NA

Depth to Water (MP): 19.72

Total Depth of Well (MP): 35 (0.1')

Water Column thickness (ft): 15.28

Well Material: PVC, Stainless Steel, Other:

Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: Yes No

Well Cap Condition: Good Replaced

Well Cap Locked: Yes, No, Replaced

Well Tag Present: Yes No

Well Info. On Tag: Yes No

Well Diameter (inches) 2

Well Type: surface completion above grade

Well Screen Length: 5, 10, 15, 20 feet: 25-35

Pump Intake depth below water (MP): 27

Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos,

OTHER:

Noticeable Odor: None

Sample Color: Clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	~~µS~~ mS/cm		mV	mg/L	NTU	
Initial	19.95	—	0.5	23.48	.288	5.83	225	3.61	4.9	
3	19.92	—	0.8	23.02	.280	4.68	520	2.42	3.8	
6	19.80	—	1.1	22.68	.240	4.67	538	2.33	2.5	
9	19.86	—	1.4	22.50	.225	4.65	539	2.33	2.3	
12	19.88	—	1.7	22.18	.221	4.66	541	2.25	1.9	
15	19.88	—	2.0	21.97	.223	4.67	547	2.30	2.1	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond. - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other: Soda Straw method used for VOC

Parameters Stabilized (circle): YES NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
1	8260	40mL VOA	HCl	Shealy	4/25/16	1515

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 1115

Apex Personnel: T. Fisher

Location (Site/Facility Name): Omnisource

Monitor Well Number: MW-11

Purpose of Sampling Event: Annual

Weather/Temp: Sunny 70°F

Circle

Measuring Point (MP): top of casing, top of ground

Depth to Product (MP):

Depth to Water (MP): 23.06

Total Depth of Well (MP): 35.0 (0.1')

Water Column thickness (ft): 11.94

Well Material: PVC, Stainless Steel, Other:

Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: Yes No NA

Well Cap Condition: Good Replaced

Well Cap Locked: Yes, No, Replaced

Well Tag Present: Yes No

Well Info. On Tag: Yes No

Well Diameter (inches) 2

Well Type: surface completion, above grade

Well Screen Length: 5, 10, 15, 20 feet: 25-35

Pump Intake depth below water (MP): 27

Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos,

OTHER:

Noticeable Odor: None

Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	23.09	-	0.5	24.25	0.060	4.98	202	0.80	5.5	
3	23.12	-	0.8	24.63	0.060	4.74	235	0.80	3.5	
6	23.15	-	1.1	24.46	0.060	4.73	238	0.77	3.7	
9	23.18	-	1.4	24.38	0.060	4.74	239	0.76	3.6	
12	23.19	-	1.7	24.34	0.060	4.74	240	0.75	3.5	
15	23.21	-	2.0	24.28	0.060	4.75	240	0.74	3.8	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other:

Parameters Stabilized (circle): YES NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
1	8260	40mL VOA	HCl	Shealy	4/26/16	1145

Soda straw sample collection

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/26/16 Time: 1045 Monitor Well Number: MW-12

Apex Personnel: K. Schwarz Purpose of Sampling Event: Annual

Location (Site/Facility Name): Omni Source Weather/Temp: Sunny / 75°F

Circle

Measuring Point (MP): top of casing, top of ground

Depth to Product (MP):

Depth to Water (MP): 16.86

Total Depth of Well (MP): 35 (0.1')

Water Column thickness (ft): 18.14

Well Material: (PVC), Stainless Steel, Other:

Well pad condition: (Good), Cracked, Replace

Low Flow purge rate: 100 mL/min

Well Cover Bolted: (Yes) No

Well Cap Condition: (Good) Replaced

Well Cap Locked: (Yes), No, Replaced

Well Tag Present: Yes (No)

Well Info. On Tag: Yes No

Well Diameter (inches) 2

Well Type: surface completion, above grade

Well Screen Length: 5, (10), 15, 20 feet: 25-35

Pump Intake depth below water (MP): 27

Purging/Sampling Device: Bailer, (Peristaltic), Monsoon, Grundfos,

OTHER:

Noticeable Odor: slight odor

Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	17.00	—	0.5	23.72	.050	5.17	116	3.58	0.6	
3	17.02	—	0.8	23.67	.051	5.14	121	3.53	0.5	
6	17.02	—	1.1	23.34	.051	5.13	126	3.49	0.7	
9	17.02	—	1.4	23.48	.051	5.08	134	3.41	0.4	
12	17.02	—	1.7	23.48	.051	5.16	132	3.42	0.4	
15	17.02	—	2.0	23.50	.51	5.14	134	3.42	0.4	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond. - mS/cm

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, (Horiba U-52), Hanna turbidity; Other: Soda Straw method used for VOC

Parameters Stabilized (circle): (YES) NO If no, why?

DUP-2

FB-1 1045

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8260	40mL VOA	HCl	Shealy	4/26/16	1110

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/25/16 Time: 1750
Apex Personnel: K. Schwarz, T. Fisher
Location (Site/Facility Name): Omni Source
Monitor Well Number: MW-13
Purpose of Sampling Event: Annual
Weather/Temp: Sunny / 70°F

Circle

Measuring Point (MP): top of casing, top of ground
Depth to Product (MP):
Depth to Water (MP): 15.25
Total Depth of Well (MP): 35 (0.1')
Water Column thickness (ft): 19.75
Well Material: (PVC), Stainless Steel, Other:
Well pad condition: (Good), Cracked, Replace

Low Flow purge rate: 100 mL/min
Well Cover Bolted: (Yes) No
Well Cap Condition: (Good) Replaced
Well Cap Locked: (Yes), No, Replaced
Well Tag Present: Yes (No)
Well Info. On Tag: Yes No
Well Diameter (inches) 2

Well Type: (surface completion), above grade
Well Screen Length: 5, (10), 15, 20 feet: 25-35
Pump Intake depth below water (MP): 27
Purging/Sampling Device: Bailer, (Peristaltic), Monsoon, Grundfos,
OTHER:
Noticeable Odor: none
Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	15.39	—	0.5	26.08	.154	5.48	213	3.78	1.3	
3	15.50	—	0.8	25.55	.103	5.91	208	2.68	0.8	
6	15.50		1.1	25.57	.100	5.84	217	2.56	1.1	
9	15.50		1.4	25.61	.099	5.83	223	2.63	0.8	
12	15.50		1.7	25.62	.098	5.82	225	2.60	0.9	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond - mS/cm

Purge Volume Conversions: 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, (Horiba U-52), Hanna turbidity; Other: soda straw method used for VOC

Parameters Stabilized (circle): (YES) NO If no, why?

DUP-1

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8260	40mL VOA	HCl	Shealy	4/25/16	1815

APEX

APEX COMPANIES, LLC
GROUND-WATER SAMPLING LOG

Date: 4/25/16 Time: 1645
Apex Personnel: K. Schwarz, T. Fischer
Location (Site/Facility Name): Omni Source

Monitor Well Number: MW-14
Purpose of Sampling Event: Annual
Weather/Temp: sunny / 80°F

Circle

Measuring Point (MP): top of casing, top of ground
Depth to Product (MP):
Depth to Water (MP): 16.23
Total Depth of Well (MP): 35 (0.1')
Water Column thickness (ft): 18.77
Well Material: PVC, Stainless Steel, Other:
Well pad condition: Good, Cracked, Replace

Low Flow purge rate: 100 mL/min
Well Cover Bolted: Yes No stick up locked
Well Cap Condition: Good Replaced
Well Cap Locked: Yes, No, Replaced
Well Tag Present: Yes No well
Well Info. On Tag: Yes No ID labeled
Well Diameter (inches) 2

Well Type: surface completion, above grade
Well Screen Length: 5, 10, 15, 20 feet: 25-35
Pump Intake depth below water (MP): 27
Purging/Sampling Device: Bailer, Peristaltic, Monsoon, Grundfos;
OTHER:
Noticeable Odor: none
Sample Color: clear

Time	Depth to Water (MP)	Well volume Bailed	Low Flow Vol Purged	Temp.	Spec. Cond.	pH	ORP	DO	Turbidity	Water Quality Comments
min.	Feet	gallons	Liters	°C	mS/cm		mV	mg/L	NTU	
Initial	16.40	—	0.5	30.55	.630	5.18	141	3.35	35.9	
3	16.50	—	0.8	28.45	.703	6.01	99	0.97	33.3	
6	16.50	—	1.1	27.52	.710	5.92	98	0.72	33.1	
9	16.50	—	1.4	26.80	.720	5.93	102	0.59	31.0	
12	16.49	—	1.7	26.56	.723	5.94	103	0.56	29.2	
15	16.49		2.0	26.40	.724	5.96	103	0.57	28.9	
Criteria	0.33'	0.2-0.5 L/min			+/- 3%	+/- 0.1	+/- 10 mV	+/- 0.3mg/L	+/- 10%	

Field Comments/Site Conditions, etc.: Spec. Cond. - mS/cm

Sample Calculation of a single well purge volume:

18.77 × 0.17 = 3.19 gal

Purge Volume Conversions 1" = 0.04, 1.5" = 0.09, 2" = 0.17, 3" = 0.38, 4" = 0.66, 6" = 1.5, 8" = 2.6, 10" = 4.1

Water quality parameters Collected with: YSI 556, Horiba U-52, Hanna turbidity; Other: Soda straw method used for VOC

Parameters Stabilized (circle): YES NO If no, why?

Samples collected	Analysis	Bottle Type	Preservative	Lab	Sample date	Sample Time
3	8260	40mL VOA	HCl	Shealy	4/25/16	1710

APPENDIX B

LABORATORY ANALYTICAL REPORT AND CHAIN OF CUSTODY

SHEALY ENVIRONMENTAL SERVICES, INC.

Report of Analysis

Apex Companies, LLC
10610 Metromont Parkway
Suite 206
Charlotte, NC 28269
Attention: Grant Watkins

Project Name: **OmniSource**

Project Number: **510393-002**

Lot Number: **RD27083**

Date Completed: **05/04/2016**

Lucas Odom
Project Manager

The following non-paginated documents are considered part of this report: Chain of Custody Record and Sample Receipt Checklist.

Case Narrative
Apex Companies, LLC
Lot Number: RD27083

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved NELAC standards, the Shealy Environmental Services, Inc. ("Shealy") Quality Assurance Management Plan (QAMP), standard operating procedures (SOPs), and Shealy policies. Any exceptions to the NELAC standards, the QAMP, SOPs or policies are qualified on the results page or discussed below.

If you have any questions regarding this report please contact the Shealy Project Manager listed on the cover page.

VOCs by GC/MS

The Method Blank associated with batch 12245 yielded a "J" value detection for 1,2,3-Trichlorobenzene. No corrective action is required as this is an estimated value recovered below the PQL.

Sample Summary
Apex Companies, LLC
Lot Number: RD27083

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	MW-1	Aqueous	04/26/2016 1020	04/27/2016
002	MW-1D	Aqueous	04/26/2016 1200	04/27/2016
003	MW-3A	Aqueous	04/26/2016 1050	04/27/2016
004	MW-4A	Aqueous	04/26/2016 0940	04/27/2016
005	MW-6	Aqueous	04/26/2016 0845	04/27/2016
006	MW-7A	Aqueous	04/25/2016 1745	04/27/2016
007	MW-8A	Aqueous	04/26/2016 0910	04/27/2016
008	MW-9A	Aqueous	04/26/2016 0950	04/27/2016
009	MW-10	Aqueous	04/25/2016 1515	04/27/2016
010	MW-11	Aqueous	04/26/2016 1145	04/27/2016
011	MW-12	Aqueous	04/26/2016 1110	04/27/2016
012	MW-13	Aqueous	04/26/2016 1815	04/27/2016
013	MW-14	Aqueous	04/25/2016 1710	04/27/2016
014	DUP-1	Aqueous	04/25/2016	04/27/2016
015	DUP-2	Aqueous	04/26/2016	04/27/2016
016	FB-1	Aqueous	04/26/2016 1045	04/27/2016
017	TRIP BLANK	Aqueous	04/26/2016	04/27/2016

(17 samples)

Executive Summary

Apex Companies, LLC

Lot Number: RD27083

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	MW-1	Aqueous	Acetone	8260B	1.6	J	ug/L	6
001	MW-1	Aqueous	Benzene	8260B	1.8		ug/L	6
001	MW-1	Aqueous	Chloroform	8260B	13		ug/L	6
001	MW-1	Aqueous	Chloromethane (Methyl	8260B	0.33	J	ug/L	6
001	MW-1	Aqueous	Cyclohexane	8260B	1.3		ug/L	6
001	MW-1	Aqueous	1,1-Dichloroethane	8260B	1.1		ug/L	6
001	MW-1	Aqueous	cis-1,2-Dichloroethene	8260B	3.5		ug/L	6
001	MW-1	Aqueous	1,1-Dichloroethene	8260B	1.9		ug/L	6
001	MW-1	Aqueous	Isopropylbenzene	8260B	0.49	J	ug/L	6
001	MW-1	Aqueous	Methylcyclohexane	8260B	0.89	J	ug/L	6
001	MW-1	Aqueous	Methylene chloride	8260B	4.3		ug/L	6
001	MW-1	Aqueous	Tetrachloroethene	8260B	4.2		ug/L	6
001	MW-1	Aqueous	Trichloroethene	8260B	3.1		ug/L	7
001	MW-1	Aqueous	Vinyl chloride	8260B	0.59	J	ug/L	7
001	MW-1	Aqueous	Xylenes (total)	8260B	0.49	J	ug/L	7
002	MW-1D	Aqueous	Tetrachloroethene	8260B	2.2		ug/L	8
002	MW-1D	Aqueous	1,1,2-Trichloro-1,2,2-	8260B	7.2		ug/L	9
002	MW-1D	Aqueous	Trichloroethene	8260B	22		ug/L	9
003	MW-3A	Aqueous	Benzene	8260B	8.2		ug/L	10
003	MW-3A	Aqueous	Chloromethane (Methyl	8260B	0.19	J	ug/L	10
003	MW-3A	Aqueous	Cyclohexane	8260B	0.90	J	ug/L	10
003	MW-3A	Aqueous	cis-1,2-Dichloroethene	8260B	0.97	J	ug/L	10
003	MW-3A	Aqueous	Methylcyclohexane	8260B	0.45	J	ug/L	10
003	MW-3A	Aqueous	Trichloroethene	8260B	3.9		ug/L	11
004	MW-4A	Aqueous	Trichloroethene	8260B	0.35	J	ug/L	13
006	MW-7A	Aqueous	1,1-Dichloroethene	8260B	0.63	J	ug/L	16
007	MW-8A	Aqueous	Acetone	8260B	5.3	J	ug/L	18
007	MW-8A	Aqueous	Chloromethane (Methyl	8260B	0.41	J	ug/L	18
007	MW-8A	Aqueous	1,1-Dichloroethene	8260B	0.42	J	ug/L	18
007	MW-8A	Aqueous	Vinyl chloride	8260B	0.97	J	ug/L	19
009	MW-10	Aqueous	Trichlorofluoromethane	8260B	1.2		ug/L	23
010	MW-11	Aqueous	Benzene	8260B	9.2		ug/L	24
010	MW-11	Aqueous	Chloroform	8260B	1.7	J	ug/L	24
010	MW-11	Aqueous	cis-1,2-Dichloroethene	8260B	7.5		ug/L	24
010	MW-11	Aqueous	1,1-Dichloroethene	8260B	9.0		ug/L	24
010	MW-11	Aqueous	Tetrachloroethene	8260B	5.8		ug/L	24
010	MW-11	Aqueous	Trichloroethene	8260B	760		ug/L	25
011	MW-12	Aqueous	1,2-Dichloroethane	8260B	0.28	J	ug/L	26
011	MW-12	Aqueous	1,1-Dichloroethene	8260B	13		ug/L	26
011	MW-12	Aqueous	1,1,2-Trichloroethane	8260B	0.29	J	ug/L	27
011	MW-12	Aqueous	Trichloroethene	8260B	0.49	J	ug/L	27
012	MW-13	Aqueous	1,1-Dichloroethane	8260B	0.25	J	ug/L	28
012	MW-13	Aqueous	1,1-Dichloroethene	8260B	0.40	J	ug/L	28
013	MW-14	Aqueous	Acetone	8260B	1.7	J	ug/L	30
013	MW-14	Aqueous	Benzene	8260B	0.64	J	ug/L	30

Executive Summary (Continued)

Lot Number: RD27083

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
013	MW-14	Aqueous	1,1-Dichloroethene	8260B	0.44	J	ug/L	30
013	MW-14	Aqueous	Methyl tertiary butyl ether	8260B	1.0		ug/L	30
013	MW-14	Aqueous	4-Methyl-2-pentanone	8260B	0.58	J	ug/L	30
013	MW-14	Aqueous	Vinyl chloride	8260B	2.1		ug/L	31
014	DUP-1	Aqueous	1,1-Dichloroethane	8260B	0.25	J	ug/L	32
014	DUP-1	Aqueous	1,1-Dichloroethene	8260B	0.44	J	ug/L	32
015	DUP-2	Aqueous	1,1-Dichloroethene	8260B	14		ug/L	34
015	DUP-2	Aqueous	Trichloroethene	8260B	0.43	J	ug/L	35

(53 detections)

Client: **Apex Companies, LLC**
Description: **MW-1**
Date Sampled: **04/26/2016 1020**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-001**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1055	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**1.6**	**J**	**20**	**1.6**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**1.8**		**1.0**	**0.21**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	**67-66-3**	**8260B**	**13**		**1.0**	**0.21**	**ug/L**	**1**
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.33**	**J**	**1.0**	**0.19**	**ug/L**	**1**
Cyclohexane	**110-82-7**	**8260B**	**1.3**		**1.0**	**0.30**	**ug/L**	**1**
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	**75-34-3**	**8260B**	**1.1**		**1.0**	**0.19**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**3.5**		**1.0**	**0.20**	**ug/L**	**1**
1,1-Dichloroethene	**75-35-4**	**8260B**	**1.9**		**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	**98-82-8**	**8260B**	**0.49**	**J**	**1.0**	**0.14**	**ug/L**	**1**
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	**108-87-2**	**8260B**	**0.89**	**J**	**5.0**	**0.16**	**ug/L**	**1**
Methylene chloride	**75-09-2**	**8260B**	**4.3**		**1.0**	**0.42**	**ug/L**	**1**
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	**127-18-4**	**8260B**	**4.2**		**1.0**	**0.22**	**ug/L**	**1**
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC** Laboratory ID: **RD27083-001**

Description: **MW-1** Matrix: **Aqueous**

Date Sampled: **04/26/2016 1020**

Date Received: **04/27/2016**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1055	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**3.1**		**1.0**	**0.16**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**0.59**	**J**	**1.0**	**0.50**	**ug/L**	**1**
Xylenes (total)	**1330-20-7**	**8260B**	**0.49**	**J**	**1.0**	**0.32**	**ug/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		96	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		100	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-1D**
Date Sampled: **04/26/2016 1200**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-002**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1118	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	**127-18-4**	**8260B**	**2.2**		**1.0**	**0.22**	**ug/L**	**1**
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC** Laboratory ID: **RD27083-002**

Description: **MW-1D** Matrix: **Aqueous**

Date Sampled: **04/26/2016 1200**

Date Received: **04/27/2016**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1118	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	**76-13-1**	**8260B**	**7.2**		**1.0**	**0.30**	**ug/L**	**1**
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**22**		**1.0**	**0.16**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		95	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-3A**
Date Sampled: **04/26/2016 1050**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-003**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1141	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	**71-43-2**	**8260B**	**8.2**		**1.0**	**0.21**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.19**	**J**	**1.0**	**0.19**	**ug/L**	**1**
Cyclohexane	**110-82-7**	**8260B**	**0.90**	**J**	**1.0**	**0.30**	**ug/L**	**1**
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**0.97**	**J**	**1.0**	**0.20**	**ug/L**	**1**
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	**108-87-2**	**8260B**	**0.45**	**J**	**5.0**	**0.16**	**ug/L**	**1**
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-3A**
Date Sampled: **04/26/2016 1050**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-003**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1141	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**3.9**		**1.0**	**0.16**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
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Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-4A**
Date Sampled: **04/26/2016 0940**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-004**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1204	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-4A**
Date Sampled: **04/26/2016 0940**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-004**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1204	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**0.35**	**J**	**1.0**	**0.16**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		98	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-6**
Date Sampled: **04/26/2016 0845**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-005**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1228	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-6**
Date Sampled: **04/26/2016 0845**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-005**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1228	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		97	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-7A**
Date Sampled: **04/25/2016 1745**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-006**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1251	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.63**	**J**	**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-7A**
Date Sampled: **04/25/2016 1745**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-006**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1251	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		99	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-8A**
Date Sampled: **04/26/2016 0910**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-007**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1314	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**5.3**	**J**	**20**	**1.6**	**ug/L**	**1**
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	**74-87-3**	**8260B**	**0.41**	**J**	**1.0**	**0.19**	**ug/L**	**1**
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.42**	**J**	**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC** Laboratory ID: **RD27083-007**

Description: **MW-8A** Matrix: **Aqueous**

Date Sampled: **04/26/2016 0910**

Date Received: **04/27/2016**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1314	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**0.97**	**J**	**1.0**	**0.50**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
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N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-9A**
Date Sampled: **04/26/2016 0950**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-008**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1338	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-9A**
Date Sampled: **04/26/2016 0950**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-008**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1338	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-10**
Date Sampled: **04/25/2016 1515**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-009**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1401	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC** Laboratory ID: **RD27083-009**

Description: **MW-10** Matrix: **Aqueous**

Date Sampled: **04/25/2016 1515**

Date Received: **04/27/2016**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1401	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	**75-69-4**	**8260B**	**1.2**		**1.0**	**0.74**	**ug/L**	**1**
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		102	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-11**
Date Sampled: **04/26/2016 1145**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-010**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	5	05/02/2016 1801	RAG		12245

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		100	8.1	ug/L	2
Benzene	**71-43-2**	**8260B**	**9.2**		**5.0**	**1.1**	**ug/L**	**2**
Bromodichloromethane	75-27-4	8260B	ND		5.0	1.2	ug/L	2
Bromoform	75-25-2	8260B	ND		5.0	1.8	ug/L	2
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		10	0.95	ug/L	2
2-Butanone (MEK)	78-93-3	8260B	ND		50	9.1	ug/L	2
Carbon disulfide	75-15-0	8260B	ND		5.0	2.3	ug/L	2
Carbon tetrachloride	56-23-5	8260B	ND		5.0	1.6	ug/L	2
Chlorobenzene	108-90-7	8260B	ND		5.0	1.0	ug/L	2
Chloroethane	75-00-3	8260B	ND		10	1.4	ug/L	2
Chloroform	**67-66-3**	**8260B**	**1.7**	**J**	**5.0**	**1.1**	**ug/L**	**2**
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		5.0	0.95	ug/L	2
Cyclohexane	110-82-7	8260B	ND		5.0	1.5	ug/L	2
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		5.0	2.8	ug/L	2
Dibromochloromethane	124-48-1	8260B	ND		5.0	1.2	ug/L	2
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		5.0	0.85	ug/L	2
1,4-Dichlorobenzene	106-46-7	8260B	ND		5.0	0.95	ug/L	2
1,3-Dichlorobenzene	541-73-1	8260B	ND		5.0	0.95	ug/L	2
1,2-Dichlorobenzene	95-50-1	8260B	ND		5.0	2.3	ug/L	2
Dichlorodifluoromethane	75-71-8	8260B	ND		10	4.3	ug/L	2
1,2-Dichloroethane	107-06-2	8260B	ND		5.0	1.2	ug/L	2
1,1-Dichloroethane	75-34-3	8260B	ND		5.0	0.95	ug/L	2
trans-1,2-Dichloroethene	156-60-5	8260B	ND		5.0	1.7	ug/L	2
cis-1,2-Dichloroethene	**156-59-2**	**8260B**	**7.5**		**5.0**	**1.0**	**ug/L**	**2**
1,1-Dichloroethene	**75-35-4**	**8260B**	**9.0**		**5.0**	**1.6**	**ug/L**	**2**
1,2-Dichloropropane	78-87-5	8260B	ND		5.0	1.5	ug/L	2
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		5.0	1.1	ug/L	2
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		5.0	1.5	ug/L	2
Ethylbenzene	100-41-4	8260B	ND		5.0	1.1	ug/L	2
2-Hexanone	591-78-6	8260B	ND		50	1.3	ug/L	2
Isopropylbenzene	98-82-8	8260B	ND		5.0	0.70	ug/L	2
Methyl acetate	79-20-9	8260B	ND		5.0	1.2	ug/L	2
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		5.0	1.2	ug/L	2
4-Methyl-2-pentanone	108-10-1	8260B	ND		50	1.5	ug/L	2
Methylcyclohexane	108-87-2	8260B	ND		25	0.80	ug/L	2
Methylene chloride	75-09-2	8260B	ND		5.0	2.1	ug/L	2
Styrene	100-42-5	8260B	ND		5.0	0.65	ug/L	2
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		5.0	0.65	ug/L	2
Tetrachloroethene	**127-18-4**	**8260B**	**5.8**		**5.0**	**1.1**	**ug/L**	**2**
Toluene	108-88-3	8260B	ND		5.0	1.2	ug/L	2

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-11**
Date Sampled: **04/26/2016 1145**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-010**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
2	5030B	8260B	5	05/02/2016 1801	RAG		12245

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		5.0	1.5	ug/L	2
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		5.0	0.65	ug/L	2
1,1,2-Trichloroethane	79-00-5	8260B	ND		5.0	1.1	ug/L	2
1,1,1-Trichloroethane	71-55-6	8260B	ND		5.0	1.2	ug/L	2
Trichloroethene	**79-01-6**	**8260B**	**760**		**5.0**	**0.80**	**ug/L**	**2**
Trichlorofluoromethane	75-69-4	8260B	ND		5.0	3.7	ug/L	2
Vinyl chloride	75-01-4	8260B	ND		5.0	2.5	ug/L	2
Xylenes (total)	1330-20-7	8260B	ND		5.0	1.6	ug/L	2

Surrogate	Q	Run 2 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		106	70-130
Bromofluorobenzene		102	70-130
Toluene-d8		105	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-12**
Date Sampled: **04/26/2016 1110**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-011**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1424	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	**107-06-2**	**8260B**	**0.28**	**J**	**1.0**	**0.23**	**ug/L**	**1**
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**13**		**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-12**
Date Sampled: **04/26/2016 1110**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-011**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1424	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	**79-00-5**	**8260B**	**0.29**	**J**	**1.0**	**0.22**	**ug/L**	**1**
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**0.49**	**J**	**1.0**	**0.16**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
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H = Out of holding time
ND = Not detected at or above the MDL
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N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-13**
Date Sampled: **04/26/2016 1815**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-012**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1448	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.25**	**J**	**1.0**	**0.19**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.40**	**J**	**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC** Laboratory ID: **RD27083-012**

Description: **MW-13** Matrix: **Aqueous**

Date Sampled: **04/26/2016 1815**

Date Received: **04/27/2016**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1448	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		101	70-130
Bromofluorobenzene		94	70-130
Toluene-d8		102	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **MW-14**
Date Sampled: **04/25/2016 1710**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-013**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1511	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	**67-64-1**	**8260B**	**1.7**	**J**	**20**	**1.6**	**ug/L**	**1**
Benzene	**71-43-2**	**8260B**	**0.64**	**J**	**1.0**	**0.21**	**ug/L**	**1**
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.44**	**J**	**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	**1634-04-4**	**8260B**	**1.0**		**1.0**	**0.23**	**ug/L**	**1**
4-Methyl-2-pentanone	**108-10-1**	**8260B**	**0.58**	**J**	**10**	**0.29**	**ug/L**	**1**
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC** Laboratory ID: **RD27083-013**

Description: **MW-14** Matrix: **Aqueous**

Date Sampled: **04/25/2016 1710**

Date Received: **04/27/2016**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1511	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	**75-01-4**	**8260B**	**2.1**		**1.0**	**0.50**	**ug/L**	**1**
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		92	70-130
Toluene-d8		99	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **DUP-1**
Date Sampled: **04/25/2016**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-014**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1535	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	**75-34-3**	**8260B**	**0.25**	**J**	**1.0**	**0.19**	**ug/L**	**1**
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**0.44**	**J**	**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **DUP-1**
Date Sampled: **04/25/2016**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-014**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1535	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		100	70-130
Bromofluorobenzene		98	70-130
Toluene-d8		100	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **DUP-2**
Date Sampled: **04/26/2016**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-015**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1558	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	**75-35-4**	**8260B**	**14**		**1.0**	**0.31**	**ug/L**	**1**
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **DUP-2**
Date Sampled: **04/26/2016**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-015**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/29/2016 1558	RAG		12119

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	**79-01-6**	**8260B**	**0.43**	**J**	**1.0**	**0.16**	**ug/L**	**1**
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		93	70-130
Toluene-d8		100	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC** Laboratory ID: **RD27083-016**

Description: **FB-1** Matrix: **Aqueous**

Date Sampled: **04/26/2016 1045**

Date Received: **04/27/2016**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1222	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **FB-1**
Date Sampled: **04/26/2016 1045**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-016**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1222	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		94	70-130
Toluene-d8		102	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **TRIP BLANK**
Date Sampled: **04/26/2016**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-017**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1245	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
Acetone	67-64-1	8260B	ND		20	1.6	ug/L	1
Benzene	71-43-2	8260B	ND		1.0	0.21	ug/L	1
Bromodichloromethane	75-27-4	8260B	ND		1.0	0.23	ug/L	1
Bromoform	75-25-2	8260B	ND		1.0	0.35	ug/L	1
Bromomethane (Methyl bromide)	74-83-9	8260B	ND		2.0	0.19	ug/L	1
2-Butanone (MEK)	78-93-3	8260B	ND		10	1.8	ug/L	1
Carbon disulfide	75-15-0	8260B	ND		1.0	0.45	ug/L	1
Carbon tetrachloride	56-23-5	8260B	ND		1.0	0.31	ug/L	1
Chlorobenzene	108-90-7	8260B	ND		1.0	0.20	ug/L	1
Chloroethane	75-00-3	8260B	ND		2.0	0.28	ug/L	1
Chloroform	67-66-3	8260B	ND		1.0	0.21	ug/L	1
Chloromethane (Methyl chloride)	74-87-3	8260B	ND		1.0	0.19	ug/L	1
Cyclohexane	110-82-7	8260B	ND		1.0	0.30	ug/L	1
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	8260B	ND		1.0	0.57	ug/L	1
Dibromochloromethane	124-48-1	8260B	ND		1.0	0.23	ug/L	1
1,2-Dibromoethane (EDB)	106-93-4	8260B	ND		1.0	0.17	ug/L	1
1,4-Dichlorobenzene	106-46-7	8260B	ND		1.0	0.19	ug/L	1
1,3-Dichlorobenzene	541-73-1	8260B	ND		1.0	0.19	ug/L	1
1,2-Dichlorobenzene	95-50-1	8260B	ND		1.0	0.46	ug/L	1
Dichlorodifluoromethane	75-71-8	8260B	ND		2.0	0.85	ug/L	1
1,2-Dichloroethane	107-06-2	8260B	ND		1.0	0.23	ug/L	1
1,1-Dichloroethane	75-34-3	8260B	ND		1.0	0.19	ug/L	1
trans-1,2-Dichloroethene	156-60-5	8260B	ND		1.0	0.33	ug/L	1
cis-1,2-Dichloroethene	156-59-2	8260B	ND		1.0	0.20	ug/L	1
1,1-Dichloroethene	75-35-4	8260B	ND		1.0	0.31	ug/L	1
1,2-Dichloropropane	78-87-5	8260B	ND		1.0	0.29	ug/L	1
trans-1,3-Dichloropropene	10061-02-6	8260B	ND		1.0	0.22	ug/L	1
cis-1,3-Dichloropropene	10061-01-5	8260B	ND		1.0	0.30	ug/L	1
Ethylbenzene	100-41-4	8260B	ND		1.0	0.21	ug/L	1
2-Hexanone	591-78-6	8260B	ND		10	0.26	ug/L	1
Isopropylbenzene	98-82-8	8260B	ND		1.0	0.14	ug/L	1
Methyl acetate	79-20-9	8260B	ND		1.0	0.24	ug/L	1
Methyl tertiary butyl ether (MTBE)	1634-04-4	8260B	ND		1.0	0.23	ug/L	1
4-Methyl-2-pentanone	108-10-1	8260B	ND		10	0.29	ug/L	1
Methylcyclohexane	108-87-2	8260B	ND		5.0	0.16	ug/L	1
Methylene chloride	75-09-2	8260B	ND		1.0	0.42	ug/L	1
Styrene	100-42-5	8260B	ND		1.0	0.13	ug/L	1
1,1,2,2-Tetrachloroethane	79-34-5	8260B	ND		1.0	0.13	ug/L	1
Tetrachloroethene	127-18-4	8260B	ND		1.0	0.22	ug/L	1
Toluene	108-88-3	8260B	ND		1.0	0.24	ug/L	1

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Client: **Apex Companies, LLC**
Description: **TRIP BLANK**
Date Sampled: **04/26/2016**
Date Received: **04/27/2016**

Laboratory ID: **RD27083-017**
Matrix: **Aqueous**

Volatile Organic Compounds by GC/MS

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch
1	5030B	8260B	1	04/28/2016 1245	RAG		12025

Parameter	CAS Number	Analytical Method	Result	Q	PQL	MDL	Units	Run
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	8260B	ND		1.0	0.30	ug/L	1
1,2,4-Trichlorobenzene	120-82-1	8260B	ND		1.0	0.13	ug/L	1
1,1,2-Trichloroethane	79-00-5	8260B	ND		1.0	0.22	ug/L	1
1,1,1-Trichloroethane	71-55-6	8260B	ND		1.0	0.24	ug/L	1
Trichloroethene	79-01-6	8260B	ND		1.0	0.16	ug/L	1
Trichlorofluoromethane	75-69-4	8260B	ND		1.0	0.74	ug/L	1
Vinyl chloride	75-01-4	8260B	ND		1.0	0.50	ug/L	1
Xylenes (total)	1330-20-7	8260B	ND		1.0	0.32	ug/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
1,2-Dichloroethane-d4		97	70-130
Bromofluorobenzene		95	70-130
Toluene-d8		102	70-130

PQL = Practical quantitation limit
B = Detected in the method blank
E = Quantitation of compound exceeded the calibration range
H = Out of holding time
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

QC Summary

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12025-001
Batch: 12025
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Acetone	ND		1	20	1.6	ug/L	04/28/2016 1026
Benzene	ND		1	1.0	0.21	ug/L	04/28/2016 1026
Bromodichloromethane	ND		1	1.0	0.23	ug/L	04/28/2016 1026
Bromoform	ND		1	1.0	0.35	ug/L	04/28/2016 1026
Bromomethane (Methyl bromide)	ND		1	2.0	0.19	ug/L	04/28/2016 1026
2-Butanone (MEK)	ND		1	10	1.8	ug/L	04/28/2016 1026
Carbon disulfide	ND		1	1.0	0.45	ug/L	04/28/2016 1026
Carbon tetrachloride	ND		1	1.0	0.31	ug/L	04/28/2016 1026
Chlorobenzene	ND		1	1.0	0.20	ug/L	04/28/2016 1026
Chloroethane	ND		1	2.0	0.28	ug/L	04/28/2016 1026
Chloroform	ND		1	1.0	0.21	ug/L	04/28/2016 1026
Chloromethane (Methyl chloride)	ND		1	1.0	0.19	ug/L	04/28/2016 1026
Cyclohexane	ND		1	1.0	0.30	ug/L	04/28/2016 1026
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	1.0	0.57	ug/L	04/28/2016 1026
Dibromochloromethane	ND		1	1.0	0.23	ug/L	04/28/2016 1026
1,2-Dibromoethane (EDB)	ND		1	1.0	0.17	ug/L	04/28/2016 1026
1,4-Dichlorobenzene	ND		1	1.0	0.19	ug/L	04/28/2016 1026
1,3-Dichlorobenzene	ND		1	1.0	0.19	ug/L	04/28/2016 1026
1,2-Dichlorobenzene	ND		1	1.0	0.46	ug/L	04/28/2016 1026
Dichlorodifluoromethane	ND		1	2.0	0.85	ug/L	04/28/2016 1026
1,2-Dichloroethane	ND		1	1.0	0.23	ug/L	04/28/2016 1026
1,1-Dichloroethane	ND		1	1.0	0.19	ug/L	04/28/2016 1026
trans-1,2-Dichloroethene	ND		1	1.0	0.33	ug/L	04/28/2016 1026
cis-1,2-Dichloroethene	ND		1	1.0	0.20	ug/L	04/28/2016 1026
1,1-Dichloroethene	ND		1	1.0	0.31	ug/L	04/28/2016 1026
1,2-Dichloropropane	ND		1	1.0	0.29	ug/L	04/28/2016 1026
trans-1,3-Dichloropropene	ND		1	1.0	0.22	ug/L	04/28/2016 1026
cis-1,3-Dichloropropene	ND		1	1.0	0.30	ug/L	04/28/2016 1026
Ethylbenzene	ND		1	1.0	0.21	ug/L	04/28/2016 1026
2-Hexanone	ND		1	10	0.26	ug/L	04/28/2016 1026
Isopropylbenzene	ND		1	1.0	0.14	ug/L	04/28/2016 1026
Methyl acetate	ND		1	1.0	0.24	ug/L	04/28/2016 1026
Methyl tertiary butyl ether (MTBE)	ND		1	1.0	0.23	ug/L	04/28/2016 1026
4-Methyl-2-pentanone	ND		1	10	0.29	ug/L	04/28/2016 1026
Methylcyclohexane	ND		1	5.0	0.16	ug/L	04/28/2016 1026
Methylene chloride	ND		1	1.0	0.42	ug/L	04/28/2016 1026
Styrene	ND		1	1.0	0.13	ug/L	04/28/2016 1026
1,1,2,2-Tetrachloroethane	ND		1	1.0	0.13	ug/L	04/28/2016 1026
Tetrachloroethene	ND		1	1.0	0.22	ug/L	04/28/2016 1026
Toluene	ND		1	1.0	0.24	ug/L	04/28/2016 1026
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.30	ug/L	04/28/2016 1026
1,2,4-Trichlorobenzene	ND		1	1.0	0.13	ug/L	04/28/2016 1026
1,1,2-Trichloroethane	ND		1	1.0	0.22	ug/L	04/28/2016 1026
1,1,1-Trichloroethane	ND		1	1.0	0.24	ug/L	04/28/2016 1026

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12025-001
Batch: 12025
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Trichloroethene	ND		1	1.0	0.16	ug/L	04/28/2016 1026
Trichlorofluoromethane	ND		1	1.0	0.74	ug/L	04/28/2016 1026
Vinyl chloride	ND		1	1.0	0.50	ug/L	04/28/2016 1026
Xylenes (total)	ND		1	1.0	0.32	ug/L	04/28/2016 1026

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		95	70-130
1,2-Dichloroethane-d4		96	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12025-002
Batch: 12025
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acetone	100	76		1	76	60-140	04/28/2016 0919
Benzene	50	42		1	84	70-130	04/28/2016 0919
Bromodichloromethane	50	44		1	88	70-130	04/28/2016 0919
Bromoform	50	45		1	91	70-130	04/28/2016 0919
Bromomethane (Methyl bromide)	50	49		1	97	60-140	04/28/2016 0919
2-Butanone (MEK)	100	76		1	76	60-140	04/28/2016 0919
Carbon disulfide	50	34		1	68	60-140	04/28/2016 0919
Carbon tetrachloride	50	42		1	83	70-130	04/28/2016 0919
Chlorobenzene	50	46		1	92	70-130	04/28/2016 0919
Chloroethane	50	47		1	95	60-140	04/28/2016 0919
Chloroform	50	41		1	82	70-130	04/28/2016 0919
Chloromethane (Methyl chloride)	50	46		1	93	60-140	04/28/2016 0919
Cyclohexane	50	44		1	88	70-130	04/28/2016 0919
1,2-Dibromo-3-chloropropane (DBCP)	50	39		1	78	70-130	04/28/2016 0919
Dibromochloromethane	50	46		1	92	70-130	04/28/2016 0919
1,2-Dibromoethane (EDB)	50	46		1	92	70-130	04/28/2016 0919
1,4-Dichlorobenzene	50	44		1	89	70-130	04/28/2016 0919
1,3-Dichlorobenzene	50	46		1	92	70-130	04/28/2016 0919
1,2-Dichlorobenzene	50	47		1	93	70-130	04/28/2016 0919
Dichlorodifluoromethane	50	60		1	120	60-140	04/28/2016 0919
1,2-Dichloroethane	50	43		1	86	70-130	04/28/2016 0919
1,1-Dichloroethane	50	41		1	83	70-130	04/28/2016 0919
trans-1,2-Dichloroethene	50	42		1	85	70-130	04/28/2016 0919
cis-1,2-Dichloroethene	50	41		1	83	70-130	04/28/2016 0919
1,1-Dichloroethene	50	39		1	78	70-130	04/28/2016 0919
1,2-Dichloropropane	50	40		1	81	70-130	04/28/2016 0919
trans-1,3-Dichloropropene	50	43		1	86	70-130	04/28/2016 0919
cis-1,3-Dichloropropene	50	43		1	85	70-130	04/28/2016 0919
Ethylbenzene	50	48		1	95	70-130	04/28/2016 0919
2-Hexanone	100	110		1	108	60-140	04/28/2016 0919
Isopropylbenzene	50	44		1	88	70-130	04/28/2016 0919
Methyl acetate	50	42		1	84	15-128	04/28/2016 0919
Methyl tertiary butyl ether (MTBE)	50	37		1	74	70-130	04/28/2016 0919
4-Methyl-2-pentanone	100	100		1	101	60-140	04/28/2016 0919
Methylcyclohexane	50	42		1	84	70-130	04/28/2016 0919
Methylene chloride	50	35		1	71	70-130	04/28/2016 0919
Styrene	50	47		1	94	70-130	04/28/2016 0919
1,1,2,2-Tetrachloroethane	50	42		1	84	60-140	04/28/2016 0919
Tetrachloroethene	50	54		1	108	70-130	04/28/2016 0919
Toluene	50	46		1	93	70-130	04/28/2016 0919
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	41		1	82	70-130	04/28/2016 0919
1,2,4-Trichlorobenzene	50	41		1	82	70-130	04/28/2016 0919
1,1,2-Trichloroethane	50	44		1	89	70-130	04/28/2016 0919
1,1,1-Trichloroethane	50	46		1	92	70-130	04/28/2016 0919

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12025-002
Batch: 12025
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Trichloroethene	50	47		1	95	70-130	04/28/2016 0919
Trichlorofluoromethane	50	53		1	106	70-130	04/28/2016 0919
Vinyl chloride	50	48		1	96	70-130	04/28/2016 0919
Xylenes (total)	100	98		1	98	70-130	04/28/2016 0919

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		97	70-130
1,2-Dichloroethane-d4		93	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12119-001
Batch: 12119
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Acetone	ND		1	20	1.6	ug/L	04/29/2016 1017
Benzene	ND		1	1.0	0.21	ug/L	04/29/2016 1017
Bromodichloromethane	ND		1	1.0	0.23	ug/L	04/29/2016 1017
Bromoform	ND		1	1.0	0.35	ug/L	04/29/2016 1017
Bromomethane (Methyl bromide)	ND		1	2.0	0.19	ug/L	04/29/2016 1017
2-Butanone (MEK)	ND		1	10	1.8	ug/L	04/29/2016 1017
Carbon disulfide	ND		1	1.0	0.45	ug/L	04/29/2016 1017
Carbon tetrachloride	ND		1	1.0	0.31	ug/L	04/29/2016 1017
Chlorobenzene	ND		1	1.0	0.20	ug/L	04/29/2016 1017
Chloroethane	ND		1	2.0	0.28	ug/L	04/29/2016 1017
Chloroform	ND		1	1.0	0.21	ug/L	04/29/2016 1017
Chloromethane (Methyl chloride)	ND		1	1.0	0.19	ug/L	04/29/2016 1017
Cyclohexane	ND		1	1.0	0.30	ug/L	04/29/2016 1017
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	1.0	0.57	ug/L	04/29/2016 1017
Dibromochloromethane	ND		1	1.0	0.23	ug/L	04/29/2016 1017
1,2-Dibromoethane (EDB)	ND		1	1.0	0.17	ug/L	04/29/2016 1017
1,3-Dichlorobenzene	ND		1	1.0	0.19	ug/L	04/29/2016 1017
1,4-Dichlorobenzene	ND		1	1.0	0.19	ug/L	04/29/2016 1017
1,2-Dichlorobenzene	ND		1	1.0	0.46	ug/L	04/29/2016 1017
Dichlorodifluoromethane	ND		1	2.0	0.85	ug/L	04/29/2016 1017
1,1-Dichloroethane	ND		1	1.0	0.19	ug/L	04/29/2016 1017
1,2-Dichloroethane	ND		1	1.0	0.23	ug/L	04/29/2016 1017
trans-1,2-Dichloroethene	ND		1	1.0	0.33	ug/L	04/29/2016 1017
cis-1,2-Dichloroethene	ND		1	1.0	0.20	ug/L	04/29/2016 1017
1,1-Dichloroethene	ND		1	1.0	0.31	ug/L	04/29/2016 1017
1,2-Dichloropropane	ND		1	1.0	0.29	ug/L	04/29/2016 1017
cis-1,3-Dichloropropene	ND		1	1.0	0.30	ug/L	04/29/2016 1017
trans-1,3-Dichloropropene	ND		1	1.0	0.22	ug/L	04/29/2016 1017
Ethylbenzene	ND		1	1.0	0.21	ug/L	04/29/2016 1017
2-Hexanone	ND		1	10	0.26	ug/L	04/29/2016 1017
Isopropylbenzene	ND		1	1.0	0.14	ug/L	04/29/2016 1017
Methyl acetate	ND		1	1.0	0.24	ug/L	04/29/2016 1017
Methyl tertiary butyl ether (MTBE)	ND		1	1.0	0.23	ug/L	04/29/2016 1017
4-Methyl-2-pentanone	ND		1	10	0.29	ug/L	04/29/2016 1017
Methylcyclohexane	ND		1	5.0	0.16	ug/L	04/29/2016 1017
Methylene chloride	ND		1	1.0	0.42	ug/L	04/29/2016 1017
Styrene	ND		1	1.0	0.13	ug/L	04/29/2016 1017
1,1,2,2-Tetrachloroethane	ND		1	1.0	0.13	ug/L	04/29/2016 1017
Tetrachloroethene	ND		1	1.0	0.22	ug/L	04/29/2016 1017
Toluene	ND		1	1.0	0.24	ug/L	04/29/2016 1017
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.30	ug/L	04/29/2016 1017
1,2,4-Trichlorobenzene	ND		1	1.0	0.13	ug/L	04/29/2016 1017
1,1,1-Trichloroethane	ND		1	1.0	0.24	ug/L	04/29/2016 1017
1,1,2-Trichloroethane	ND		1	1.0	0.22	ug/L	04/29/2016 1017

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12119-001
Batch: 12119
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Trichloroethene	ND		1	1.0	0.16	ug/L	04/29/2016 1017
Trichlorofluoromethane	ND		1	1.0	0.74	ug/L	04/29/2016 1017
Vinyl chloride	ND		1	1.0	0.50	ug/L	04/29/2016 1017
Xylenes (total)	ND		1	1.0	0.32	ug/L	04/29/2016 1017

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		95	70-130
1,2-Dichloroethane-d4		97	70-130
Toluene-d8		103	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12119-002
Batch: 12119
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acetone	100	70		1	70	60-140	04/29/2016 0916
Benzene	50	47		1	95	70-130	04/29/2016 0916
Bromodichloromethane	50	51		1	101	70-130	04/29/2016 0916
Bromoform	50	51		1	102	70-130	04/29/2016 0916
Bromomethane (Methyl bromide)	50	46		1	93	60-140	04/29/2016 0916
2-Butanone (MEK)	100	84		1	84	60-140	04/29/2016 0916
Carbon disulfide	50	37		1	74	60-140	04/29/2016 0916
Carbon tetrachloride	50	50		1	99	70-130	04/29/2016 0916
Chlorobenzene	50	52		1	104	70-130	04/29/2016 0916
Chloroethane	50	43		1	86	60-140	04/29/2016 0916
Chloroform	50	46		1	92	70-130	04/29/2016 0916
Chloromethane (Methyl chloride)	50	44		1	87	60-140	04/29/2016 0916
Cyclohexane	50	51		1	102	70-130	04/29/2016 0916
1,2-Dibromo-3-chloropropane (DBCP)	50	46		1	92	70-130	04/29/2016 0916
Dibromochloromethane	50	51		1	103	70-130	04/29/2016 0916
1,2-Dibromoethane (EDB)	50	51		1	103	70-130	04/29/2016 0916
1,3-Dichlorobenzene	50	53		1	106	70-130	04/29/2016 0916
1,4-Dichlorobenzene	50	51		1	103	70-130	04/29/2016 0916
1,2-Dichlorobenzene	50	54		1	107	70-130	04/29/2016 0916
Dichlorodifluoromethane	50	57		1	113	60-140	04/29/2016 0916
1,1-Dichloroethane	50	47		1	94	70-130	04/29/2016 0916
1,2-Dichloroethane	50	50		1	100	70-130	04/29/2016 0916
trans-1,2-Dichloroethene	50	49		1	98	70-130	04/29/2016 0916
cis-1,2-Dichloroethene	50	48		1	95	70-130	04/29/2016 0916
1,1-Dichloroethene	50	47		1	93	70-130	04/29/2016 0916
1,2-Dichloropropane	50	46		1	92	70-130	04/29/2016 0916
cis-1,3-Dichloropropene	50	49		1	98	70-130	04/29/2016 0916
trans-1,3-Dichloropropene	50	49		1	97	70-130	04/29/2016 0916
Ethylbenzene	50	52		1	103	70-130	04/29/2016 0916
2-Hexanone	100	120		1	124	60-140	04/29/2016 0916
Isopropylbenzene	50	50		1	99	70-130	04/29/2016 0916
Methyl acetate	50	50		1	99	15-128	04/29/2016 0916
Methyl tertiary butyl ether (MTBE)	50	43		1	85	70-130	04/29/2016 0916
4-Methyl-2-pentanone	100	120		1	122	60-140	04/29/2016 0916
Methylcyclohexane	50	49		1	98	70-130	04/29/2016 0916
Methylene chloride	50	40		1	80	70-130	04/29/2016 0916
Styrene	50	53		1	105	70-130	04/29/2016 0916
1,1,2,2-Tetrachloroethane	50	44		1	89	60-140	04/29/2016 0916
Tetrachloroethene	50	64		1	128	70-130	04/29/2016 0916
Toluene	50	52		1	105	70-130	04/29/2016 0916
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	49		1	98	70-130	04/29/2016 0916
1,2,4-Trichlorobenzene	50	53		1	106	70-130	04/29/2016 0916
1,1,1-Trichloroethane	50	53		1	105	70-130	04/29/2016 0916
1,1,2-Trichloroethane	50	50		1	99	70-130	04/29/2016 0916

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12119-002
Batch: 12119
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Trichloroethene	50	57		1	113	70-130	04/29/2016 0916
Trichlorofluoromethane	50	52		1	103	70-130	04/29/2016 0916
Vinyl chloride	50	46		1	93	70-130	04/29/2016 0916
Xylenes (total)	100	110		1	110	70-130	04/29/2016 0916

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		94	70-130
1,2-Dichloroethane-d4		96	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MS

Sample ID: RD27083-005MS
Batch: 12119
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acetone	ND	100	64		1	64	60-140	04/29/2016 1840
Benzene	ND	50	48		1	96	72-127	04/29/2016 1840
Bromodichloromethane	ND	50	48		1	97	71-143	04/29/2016 1840
Bromoform	ND	50	38		1	77	65-131	04/29/2016 1840
Bromomethane (Methyl bromide)	ND	50	45		1	89	36-168	04/29/2016 1840
2-Butanone (MEK)	ND	100	75		1	75	60-140	04/29/2016 1840
Carbon disulfide	ND	50	32		1	64	60-140	04/29/2016 1840
Carbon tetrachloride	ND	50	50		1	101	37-166	04/29/2016 1840
Chlorobenzene	ND	50	53		1	105	78-129	04/29/2016 1840
Chloroethane	ND	50	44		1	87	60-140	04/29/2016 1840
Chloroform	ND	50	46		1	93	63-123	04/29/2016 1840
Chloromethane (Methyl chloride)	ND	50	46		1	92	20-158	04/29/2016 1840
Cyclohexane	ND	50	53		1	107	70-130	04/29/2016 1840
1,2-Dibromo-3-chloropropane (DBCP)	ND	50	41		1	83	70-130	04/29/2016 1840
Dibromochloromethane	ND	50	47		1	94	74-134	04/29/2016 1840
1,2-Dibromoethane (EDB)	ND	50	50		1	101	70-130	04/29/2016 1840
1,4-Dichlorobenzene	ND	50	51		1	101	70-130	04/29/2016 1840
1,3-Dichlorobenzene	ND	50	50		1	100	70-130	04/29/2016 1840
1,2-Dichlorobenzene	ND	50	52		1	104	70-130	04/29/2016 1840
Dichlorodifluoromethane	ND	50	58		1	115	10-158	04/29/2016 1840
1,2-Dichloroethane	ND	50	51		1	103	59-143	04/29/2016 1840
1,1-Dichloroethane	ND	50	46		1	92	69-132	04/29/2016 1840
trans-1,2-Dichloroethene	ND	50	49		1	98	67-141	04/29/2016 1840
cis-1,2-Dichloroethene	ND	50	46		1	92	70-130	04/29/2016 1840
1,1-Dichloroethene	ND	50	47		1	93	50-132	04/29/2016 1840
1,2-Dichloropropane	ND	50	45		1	90	71-126	04/29/2016 1840
trans-1,3-Dichloropropene	ND	50	42		1	85	73-131	04/29/2016 1840
cis-1,3-Dichloropropene	ND	50	42		1	85	69-130	04/29/2016 1840
Ethylbenzene	ND	50	53		1	106	79-132	04/29/2016 1840
2-Hexanone	ND	100	120		1	125	60-140	04/29/2016 1840
Isopropylbenzene	ND	50	50		1	101	70-130	04/29/2016 1840
Methyl acetate	ND	50	34		1	68	15-128	04/29/2016 1840
Methyl tertiary butyl ether (MTBE)	ND	50	40		1	80	60-140	04/29/2016 1840
4-Methyl-2-pentanone	ND	100	120		1	121	60-140	04/29/2016 1840
Methylcyclohexane	ND	50	49		1	98	70-130	04/29/2016 1840
Methylene chloride	ND	50	39		1	78	69-129	04/29/2016 1840
Styrene	ND	50	51		1	103	70-130	04/29/2016 1840
1,1,2,2-Tetrachloroethane	ND	50	43		1	86	60-155	04/29/2016 1840
Tetrachloroethene	ND	50	65		1	129	70-130	04/29/2016 1840
Toluene	ND	50	53		1	105	75-125	04/29/2016 1840
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	50		1	100	70-130	04/29/2016 1840
1,2,4-Trichlorobenzene	ND	50	53		1	105	70-130	04/29/2016 1840
1,1,2-Trichloroethane	ND	50	48		1	95	77-132	04/29/2016 1840
1,1,1-Trichloroethane	ND	50	56		1	111	77-132	04/29/2016 1840

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MS

Sample ID: RD27083-005MS
Batch: 12119
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Trichloroethene	ND	50	58		1	116	73-124	04/29/2016 1840
Trichlorofluoromethane	ND	50	54		1	108	41-173	04/29/2016 1840
Vinyl chloride	ND	50	47		1	94	29-159	04/29/2016 1840
Xylenes (total)	ND	100	110		1	111	70-130	04/29/2016 1840

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		96	70-130
Bromofluorobenzene		96	70-130
Toluene-d8		101	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MSD

Sample ID: RD27083-005MD
Batch: 12119
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Acetone	ND	100	63		1	63	1.7	60-140	20	04/29/2016 1902
Benzene	ND	50	48		1	97	0.94	72-127	20	04/29/2016 1902
Bromodichloromethane	ND	50	50		1	100	3.5	71-143	20	04/29/2016 1902
Bromoform	ND	50	38		1	75	2.2	65-131	20	04/29/2016 1902
Bromomethane (Methyl bromide)	ND	50	48		1	96	7.6	36-168	20	04/29/2016 1902
2-Butanone (MEK)	ND	100	73		1	73	1.8	60-140	20	04/29/2016 1902
Carbon disulfide	ND	50	35		1	70	8.8	60-140	20	04/29/2016 1902
Carbon tetrachloride	ND	50	51		1	101	0.72	37-166	20	04/29/2016 1902
Chlorobenzene	ND	50	50		1	101	4.2	78-129	20	04/29/2016 1902
Chloroethane	ND	50	45		1	90	2.9	60-140	20	04/29/2016 1902
Chloroform	ND	50	47		1	93	0.56	63-123	20	04/29/2016 1902
Chloromethane (Methyl chloride)	ND	50	47		1	94	2.1	20-158	20	04/29/2016 1902
Cyclohexane	ND	50	54		1	109	1.7	70-130	20	04/29/2016 1902
1,2-Dibromo-3-chloropropane (DBCP)	ND	50	40		1	81	2.6	70-130	20	04/29/2016 1902
Dibromochloromethane	ND	50	46		1	92	2.8	74-134	20	04/29/2016 1902
1,2-Dibromoethane (EDB)	ND	50	50		1	101	0.038	70-130	20	04/29/2016 1902
1,4-Dichlorobenzene	ND	50	49		1	98	2.7	70-130	20	04/29/2016 1902
1,3-Dichlorobenzene	ND	50	51		1	101	1.3	70-130	20	04/29/2016 1902
1,2-Dichlorobenzene	ND	50	51		1	103	1.2	70-130	20	04/29/2016 1902
Dichlorodifluoromethane	ND	50	58		1	116	0.53	10-158	20	04/29/2016 1902
1,2-Dichloroethane	ND	50	51		1	103	0.033	59-143	20	04/29/2016 1902
1,1-Dichloroethane	ND	50	47		1	93	1.6	69-132	20	04/29/2016 1902
trans-1,2-Dichloroethene	ND	50	49		1	98	0.092	67-141	20	04/29/2016 1902
cis-1,2-Dichloroethene	ND	50	46		1	93	1.1	70-130	20	04/29/2016 1902
1,1-Dichloroethene	ND	50	47		1	93	0.051	50-132	20	04/29/2016 1902
1,2-Dichloropropane	ND	50	45		1	89	0.81	71-126	20	04/29/2016 1902
trans-1,3-Dichloropropene	ND	50	43		1	85	0.60	73-131	20	04/29/2016 1902
cis-1,3-Dichloropropene	ND	50	44		1	88	3.4	69-130	20	04/29/2016 1902
Ethylbenzene	ND	50	53		1	106	0.23	79-132	20	04/29/2016 1902
2-Hexanone	ND	100	120		1	122	2.3	60-140	20	04/29/2016 1902
Isopropylbenzene	ND	50	51		1	101	0.28	70-130	20	04/29/2016 1902
Methyl acetate	ND	50	43	+	1	87	24	15-128	20	04/29/2016 1902
Methyl tertiary butyl ether (MTBE)	ND	50	41		1	82	2.9	60-140	20	04/29/2016 1902
4-Methyl-2-pentanone	ND	100	120		1	119	1.8	60-140	20	04/29/2016 1902
Methylcyclohexane	ND	50	50		1	100	1.6	70-130	20	04/29/2016 1902
Methylene chloride	ND	50	40		1	79	1.6	69-129	20	04/29/2016 1902
Styrene	ND	50	52		1	104	0.64	70-130	20	04/29/2016 1902
1,1,2,2-Tetrachloroethane	ND	50	42		1	83	3.4	60-155	20	04/29/2016 1902
Tetrachloroethene	ND	50	65		1	129	0.040	70-130	20	04/29/2016 1902
Toluene	ND	50	52		1	104	1.1	75-125	20	04/29/2016 1902
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	50	49		1	99	0.86	70-130	20	04/29/2016 1902
1,2,4-Trichlorobenzene	ND	50	54		1	107	1.7	70-130	20	04/29/2016 1902
1,1,2-Trichloroethane	ND	50	47		1	95	0.67	77-132	20	04/29/2016 1902
1,1,1-Trichloroethane	ND	50	55		1	109	2.0	77-132	20	04/29/2016 1902

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MSD

Sample ID: RD27083-005MD
Batch: 12119
Analytical Method: 8260B

Matrix: Aqueous
Prep Method: 5030B

Parameter	Sample Amount (ug/L)	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% RPD	% Rec Limit	% RPD Limit	Analysis Date
Trichloroethene	ND	50	58		1	115	0.61	73-124	20	04/29/2016 1902
Trichlorofluoromethane	ND	50	53		1	107	0.73	41-173	20	04/29/2016 1902
Vinyl chloride	ND	50	49		1	97	3.8	29-159	20	04/29/2016 1902
Xylenes (total)	ND	100	110		1	111	0.26	70-130	20	04/29/2016 1902

Surrogate	Q	% Rec	Acceptance Limit
1,2-Dichloroethane-d4		99	70-130
Bromofluorobenzene		97	70-130
Toluene-d8		102	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12245-001
Batch: 12245
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Acetone	ND		1	20	1.6	ug/L	05/02/2016 1032
Benzene	ND		1	1.0	0.21	ug/L	05/02/2016 1032
Bromodichloromethane	ND		1	1.0	0.23	ug/L	05/02/2016 1032
Bromoform	ND		1	1.0	0.35	ug/L	05/02/2016 1032
Bromomethane (Methyl bromide)	ND		1	2.0	0.19	ug/L	05/02/2016 1032
2-Butanone (MEK)	ND		1	10	1.8	ug/L	05/02/2016 1032
Carbon disulfide	ND		1	1.0	0.45	ug/L	05/02/2016 1032
Carbon tetrachloride	ND		1	1.0	0.31	ug/L	05/02/2016 1032
Chlorobenzene	ND		1	1.0	0.20	ug/L	05/02/2016 1032
Chloroethane	ND		1	2.0	0.28	ug/L	05/02/2016 1032
Chloroform	ND		1	1.0	0.21	ug/L	05/02/2016 1032
Chloromethane (Methyl chloride)	ND		1	1.0	0.19	ug/L	05/02/2016 1032
Cyclohexane	ND		1	1.0	0.30	ug/L	05/02/2016 1032
1,2-Dibromo-3-chloropropane (DBCP)	ND		1	1.0	0.57	ug/L	05/02/2016 1032
Dibromochloromethane	ND		1	1.0	0.23	ug/L	05/02/2016 1032
1,2-Dibromoethane (EDB)	ND		1	1.0	0.17	ug/L	05/02/2016 1032
1,4-Dichlorobenzene	ND		1	1.0	0.19	ug/L	05/02/2016 1032
1,3-Dichlorobenzene	ND		1	1.0	0.19	ug/L	05/02/2016 1032
1,2-Dichlorobenzene	ND		1	1.0	0.46	ug/L	05/02/2016 1032
Dichlorodifluoromethane	ND		1	2.0	0.85	ug/L	05/02/2016 1032
1,1-Dichloroethane	ND		1	1.0	0.19	ug/L	05/02/2016 1032
1,2-Dichloroethane	ND		1	1.0	0.23	ug/L	05/02/2016 1032
trans-1,2-Dichloroethene	ND		1	1.0	0.33	ug/L	05/02/2016 1032
cis-1,2-Dichloroethene	ND		1	1.0	0.20	ug/L	05/02/2016 1032
1,1-Dichloroethene	ND		1	1.0	0.31	ug/L	05/02/2016 1032
1,2-Dichloropropane	ND		1	1.0	0.29	ug/L	05/02/2016 1032
trans-1,3-Dichloropropene	ND		1	1.0	0.22	ug/L	05/02/2016 1032
cis-1,3-Dichloropropene	ND		1	1.0	0.30	ug/L	05/02/2016 1032
Ethylbenzene	ND		1	1.0	0.21	ug/L	05/02/2016 1032
2-Hexanone	ND		1	10	0.26	ug/L	05/02/2016 1032
Isopropylbenzene	ND		1	1.0	0.14	ug/L	05/02/2016 1032
Methyl acetate	ND		1	1.0	0.24	ug/L	05/02/2016 1032
Methyl tertiary butyl ether (MTBE)	ND		1	1.0	0.23	ug/L	05/02/2016 1032
4-Methyl-2-pentanone	ND		1	10	0.29	ug/L	05/02/2016 1032
Methylcyclohexane	ND		1	5.0	0.16	ug/L	05/02/2016 1032
Methylene chloride	ND		1	1.0	0.42	ug/L	05/02/2016 1032
Styrene	ND		1	1.0	0.13	ug/L	05/02/2016 1032
1,1,2,2-Tetrachloroethane	ND		1	1.0	0.13	ug/L	05/02/2016 1032
Tetrachloroethene	ND		1	1.0	0.22	ug/L	05/02/2016 1032
Toluene	ND		1	1.0	0.24	ug/L	05/02/2016 1032
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		1	1.0	0.30	ug/L	05/02/2016 1032
1,2,4-Trichlorobenzene	**0.48**	**J**	**1**	**1.0**	**0.13**	**ug/L**	**05/02/2016 1032**
1,1,1-Trichloroethane	ND		1	1.0	0.24	ug/L	05/02/2016 1032
1,1,2-Trichloroethane	ND		1	1.0	0.22	ug/L	05/02/2016 1032

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - MB

Sample ID: RQ12245-001
Batch: 12245
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Result	Q	Dil	PQL	MDL	Units	Analysis Date
Trichloroethene	ND		1	1.0	0.16	ug/L	05/02/2016 1032
Trichlorofluoromethane	ND		1	1.0	0.74	ug/L	05/02/2016 1032
Vinyl chloride	ND		1	1.0	0.50	ug/L	05/02/2016 1032
Xylenes (total)	ND		1	1.0	0.32	ug/L	05/02/2016 1032

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		102	70-130
1,2-Dichloroethane-d4		104	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12245-002
Batch: 12245
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Acetone	100	63		1	63	60-140	05/02/2016 0940
Benzene	50	51		1	101	70-130	05/02/2016 0940
Bromodichloromethane	50	53		1	107	70-130	05/02/2016 0940
Bromoform	50	49		1	99	70-130	05/02/2016 0940
Bromomethane (Methyl bromide)	50	51		1	103	60-140	05/02/2016 0940
2-Butanone (MEK)	100	84		1	84	60-140	05/02/2016 0940
Carbon disulfide	50	59		1	117	60-140	05/02/2016 0940
Carbon tetrachloride	50	60		1	120	70-130	05/02/2016 0940
Chlorobenzene	50	49		1	98	70-130	05/02/2016 0940
Chloroethane	50	53		1	106	60-140	05/02/2016 0940
Chloroform	50	53		1	105	70-130	05/02/2016 0940
Chloromethane (Methyl chloride)	50	45		1	89	60-140	05/02/2016 0940
Cyclohexane	50	57		1	114	70-130	05/02/2016 0940
1,2-Dibromo-3-chloropropane (DBCP)	50	42		1	85	70-130	05/02/2016 0940
Dibromochloromethane	50	51		1	103	70-130	05/02/2016 0940
1,2-Dibromoethane (EDB)	50	47		1	94	70-130	05/02/2016 0940
1,4-Dichlorobenzene	50	46		1	92	70-130	05/02/2016 0940
1,3-Dichlorobenzene	50	47		1	94	70-130	05/02/2016 0940
1,2-Dichlorobenzene	50	49		1	97	70-130	05/02/2016 0940
Dichlorodifluoromethane	50	46		1	92	60-140	05/02/2016 0940
1,1-Dichloroethane	50	55		1	111	70-130	05/02/2016 0940
1,2-Dichloroethane	50	49		1	99	70-130	05/02/2016 0940
trans-1,2-Dichloroethene	50	53		1	107	70-130	05/02/2016 0940
cis-1,2-Dichloroethene	50	52		1	103	70-130	05/02/2016 0940
1,1-Dichloroethene	50	55		1	111	70-130	05/02/2016 0940
1,2-Dichloropropane	50	50		1	101	70-130	05/02/2016 0940
trans-1,3-Dichloropropene	50	51		1	102	70-130	05/02/2016 0940
cis-1,3-Dichloropropene	50	54		1	108	70-130	05/02/2016 0940
Ethylbenzene	50	50		1	100	70-130	05/02/2016 0940
2-Hexanone	100	110		1	108	60-140	05/02/2016 0940
Isopropylbenzene	50	51		1	102	70-130	05/02/2016 0940
Methyl acetate	50	52		1	104	15-128	05/02/2016 0940
Methyl tertiary butyl ether (MTBE)	50	46		1	93	70-130	05/02/2016 0940
4-Methyl-2-pentanone	100	100		1	105	60-140	05/02/2016 0940
Methylcyclohexane	50	54		1	109	70-130	05/02/2016 0940
Methylene chloride	50	54		1	107	70-130	05/02/2016 0940
Styrene	50	50		1	101	70-130	05/02/2016 0940
1,1,2,2-Tetrachloroethane	50	45		1	90	60-140	05/02/2016 0940
Tetrachloroethene	50	53		1	105	70-130	05/02/2016 0940
Toluene	50	51		1	101	70-130	05/02/2016 0940
1,1,2-Trichloro-1,2,2-Trifluoroethane	50	57		1	114	70-130	05/02/2016 0940
1,2,4-Trichlorobenzene	50	47		1	93	70-130	05/02/2016 0940
1,1,1-Trichloroethane	50	56		1	112	70-130	05/02/2016 0940
1,1,2-Trichloroethane	50	46		1	93	70-130	05/02/2016 0940

PQL = Practical quantitation limit
P = The RPD between two GC columns exceeds 40%
N = Recovery is out of criteria
ND = Not detected at or above the MDL
J = Estimated result < PQL and ≥ MDL
+ = RPD is out of criteria
Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Volatile Organic Compounds by GC/MS - LCS

Sample ID: RQ12245-002
Batch: 12245
Analytical Method: 8260B
Matrix: Aqueous
Prep Method: 5030B

Parameter	Spike Amount (ug/L)	Result (ug/L)	Q	Dil	% Rec	% Rec Limit	Analysis Date
Trichloroethene	50	51		1	102	70-130	05/02/2016 0940
Trichlorofluoromethane	50	58		1	117	70-130	05/02/2016 0940
Vinyl chloride	50	56		1	112	70-130	05/02/2016 0940
Xylenes (total)	100	100		1	104	70-130	05/02/2016 0940

Surrogate	Q	% Rec	Acceptance Limit
Bromofluorobenzene		99	70-130
1,2-Dichloroethane-d4		100	70-130
Toluene-d8		104	70-130

PQL = Practical quantitation limit
ND = Not detected at or above the MDL
P = The RPD between two GC columns exceeds 40%
J = Estimated result < PQL and ≥ MDL
N = Recovery is out of criteria
+ = RPD is out of criteria

Where applicable, all soil sample analysis are reported on a dry weight basis unless flagged with a "W"

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.

Chain of Custody Record

106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Number 60185

Client: APEX COMPANIES, LLC	Report to Contact: GRANT WATKINS	Telephone No. / E-mail: Grant.Watkins@apexcos.com	Quote No. 18831
Address: 10610 METROMONT PKY	Sampler's Signature: Katie Schwarz	Analysis (Attach list if more space is needed)	Page 1 of 2
City: CHARLOTTE State: NC Zip Code: 28269	Printed Name: Katie Schwarz		RD27083
Project Name: Omni Source			
Project No.: 510393-002	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab / Composite	Matrix: Aqueous	Matrix: Solid	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	HCl	HNO3	H2SO4	NaOH	5035 kit	8260	Remarks / Cooler I.D.
MW-1	4/26/16	1020	G	X				3					X	
MW-1D	4/26/16	1200											X	
MW-3A	4/26/16	1050											X	
MW-4A	4/26/16	940											X	
MW-6	4/26/16	845											X	MS/MS DUP
MW-7A	4/25/16	1745											X	
MW-8A	4/26/16	910											X	
MW-9A	4/26/16	950											X	
MW-10	4/25/16	1515											X	
MW-11	4/26/16	1145											X	

Turn Around Time Required (Prior lab approval required for expedited TAT.) ☒ Standard ☐ Rush (Specify)

Sample Disposal ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Katie Schwarz	4/27/16	1055	1. Received by: [signature]	4.27.16	1055
2. Relinquished by: [signature]	4.27.16	16:20	2. Received by: [signature]	4-27-16	16:20
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by: [signature]	4-27-16	17:20	4. Laboratory received by: [signature]	4/27/16	1720

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY
Received on Ice (Circle) (Yes) No Ice Pack Receipt Temp. 2.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.shealylab.com

SHEALY ENVIRONMENTAL SERVICES, INC.
106 Vantage Point Drive • West Columbia, SC 29172
Telephone No. 803-791-9700 Fax No. 803-791-9111
www.shealylab.com

Chain of Custody Record

Number 60186

Client: APEX COMPANIES, LLC	Report to Contact: GRANT WATKINS	Telephone No. / E-mail: Grant.Watkins@apexcos.com	Quote No. 18831
Address: 10610 METROMONT PKWY	Sampler's Signature: x Katie Schwarz	Analysis (Attach list if more space is needed)	Page 2 of 2
City: CHARLOTTE State: NC Zip Code: 28269	Printed Name: Katie Schwarz		RD27083
Project Name: Omni Source			
Project No.: 510393-002	P.O. No.		

Sample ID / Description (Containers for each sample may be combined on one line.)	Date	Time	Grab/Composite	Matrix: Aqueous	Matrix: Soil	Matrix: Non-Aqueous	No of Containers by Preservative Type: Unpres.	H2SO4	HNO3	HCl	NaOH	SAS KI	8260	Remarks / Cooler I.D.
MW-12	4/26/16	1110	G	X						3			X	
MW-13	4/26/16	1815											X	
MW-14	4/25/16	1710											X	
DUP-1	4/25/16												X	
DUP-2	4/26/16												X	
FB-1	4/21/16	1045											X	
rip ~~Field~~ Blank										2			X	

Turn Around Time Required (Prior lab approval required for expedited TAT.): ☒ Standard ☐ Rush (Specify)

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab

Possible Hazard Identification: ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison ☐ Unknown

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished by: Katie Schwarz	4/27/16	1055	1. Received by:	4.27.16	1055
2. Relinquished by:	4.27.16	16:20	2. Received by:	4-27-16	16:20
3. Relinquished by:	Date	Time	3. Received by:	Date	Time
4. Relinquished by:	4-27-16	17:20	4. Laboratory received by:	4/27/16	1720

Note: All samples are retained for four weeks from receipt unless other arrangements are made.

LAB USE ONLY — Received on ice (Circle) (Yes) No Ice Pack — Receipt Temp 2.0 °C

DISTRIBUTION: WHITE & YELLOW-Return to laboratory with Sample(s); PINK-Field/Client Copy

Document Number: F-AD-133 Effective Date: 08-01-2014

SHEALY ENVIRONMENTAL SERVICES, INC.

Shealy Environmental Services, Inc.
Document Number: ME0018C-04

Page 1 of 1
Effective Date: 02/05/2016
Expiry Date: 02/05/2021

Sample Receipt Checklist (SRC)

Client: APEX Cooler Inspected by/date: JW / 4/27/16 Lot #: RD27083

Means of receipt: ☑ SESI ☐ Client ☐ UPS ☐ FedEx ☐ Other			
Yes ☐	No ☑		1. Were custody seals present on the cooler?
Yes ☐	No ☐	NA ☑	2. If custody seals were present, were they intact and unbroken?
pH strip ID: NA Cl strip ID: NA Cooler ID/Original temperature upon receipt/Derived (corrected) temperature upon receipt: 12.0/2.0 °C / / °C / / °C / / °C Method: ☑ Temperature Blank ☐ Against Bottles IR Gun ID: 6 IR Gun Correction Factor: 0 °C Method of coolant: ☑ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ None			
Yes ☐	No ☐	NA ☑	3. If temperature of any cooler exceeded 6.0°C, was Project Manager notified? PM was notified by: phone / email / face-to-face (circle one).
Yes ☐	No ☐	NA ☑	4. Is the commercial courier's packing slip attached to this form?
Yes ☑	No ☐		5. Were proper custody procedures (relinquished/received) followed?
Yes ☑	No ☐		6. Were sample IDs listed on the COC?
Yes ☑	No ☐		7. Were sample IDs listed on all sample containers?
Yes ☑	No ☐		8. Was collection date & time listed on the COC?
Yes ☑	No ☐		9. Was collection date & time listed on all sample containers?
Yes ☑	No ☐		10. Did all container label information (ID, date, time) agree with the COC?
Yes ☑	No ☐		11. Were tests to be performed listed on the COC?
Yes ☑	No ☐		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
Yes ☑	No ☐		13. Was adequate sample volume available?
Yes ☐	No ☑		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
Yes ☐	No ☑		15. Were any samples containers missing/excess (circle one) samples not listed on COC?
Yes ☐	No ☑	NA ☐	16. Were bubbles present >"pea-size" (¼"or 6mm in diameter) in any VOA vials?
Yes ☐	No ☐	NA ☑	17. Were all metals/O&G/HEM/nutrient samples received at a pH of <2?
Yes ☐	No ☐	NA ☑	18. Were all cyanide and/or sulfide samples received at a pH >12?
Yes ☐	No ☐	NA ☑	19. Were all applicable NH3/TKN/cyanide/phenol (<0.2mg/L) samples free of residual chlorine?
Yes ☐	No ☐	NA ☑	20. Were collection temperatures documented on the COC for NC samples?
Yes ☐	No ☐	NA ☑	21. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
Yes ☐	No ☑		22. Was the quote number used taken from the container label?

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) _____ were received incorrectly preserved and were adjusted accordingly in sample receiving with _____ (H_2SO_4, HNO3, HCl, NaOH) using SR # _____.

Sample(s) _____ were received with bubbles >6 mm in diameter.

Samples(s) _____ were received with TRC >0.2 mg/L (If #21 is No) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with Shealy ID: _____

SC Drinking Water Project Sample(s) pH verified to be ≤2 by _____ Date: _____

Sample(s) _____ were not received at a pH of <2 and were adjusted accordingly using SR# _____

Sample labels applied by: JW Verified by: _____ Date: 4/27/16

Comments: _____

APPENDIX C

IDW WASTE MANIFESTS (2015 SITE WORK)

A&D Environmental Services (GA) LLC
4943 Austin Park Avenue
Buford, GA 30518
Phone: (678)714-8420

www.adenviro.com

INVOICE

Invoice Number 027853
Invoice Date July 31, 2015

Due Date 09/29/2015
Terms 60
PO No

Bill To:

Apex Companies, LLC
Attn: Accounts Payable
7744 Garland Circle
Roanoke, VA 24019

Customer # 1015

Ship To:

Tommy Fisher
Omni Source
590 Hull Rd
Athens, GA 30601

A&D Job # 150497

Page 1 of 1

Description	QTY	Unit	Rate	Amount
Manifest#16084				
Transportation - LTL Stop Fee	1.00	LS	265.00	265.00
Disposal of Non-Regulated Soil	12.00	DM	92.00	1,104.00
Disposal of Non-Regulated Water	4.00	DM	92.00	368.00
Fuel & Energy Recovery Fee	1.00	EA	69.48	69.48

Remit Payment to:
P.O. Box 484
High Point, NC 27261

Electronic Payments made to:
The Private Bank
120 S. LaSalle St., Chicago, IL 60602
(312) 564-2000
Routing # 071006486 Acct # 2248890

Past due amounts are subject to finance charges of 1.5% per month, plus all costs of collection. Mastercard and Visa accepted, subject to an additional charge of 3%.

Total $1,806.48

NON-HAZARDOUS WASTE MANIFEST

1 Generator ID Number: GA CESQG | 2 Page 1 of | 3 Emergency Response Phone: 800-255-3924 | 4 Waste Tracking Number

GENERATOR

5. Generator's Name and Mailing Address: Omnisource, 590 Hull Road, Athens, GA 30601 | Generator's Phone: 706-799-6390 | Generator's Site address (if different than mailing address): 6084

6. Transporter 1 Company Name: A&D Environmental Services (SC), LLC | U.S. EPA ID Number: SCD987598331

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

8. Designated Facility Name and Site Address: A&D Environmental Services (GA) LLC, 100 Waste Research Drive, Macon, GA 31206 | Facility's Phone: 478-788-0899 | U.S. EPA ID Number: GAR000007484

9 Waste Shipping Name and Description	10. Containers: No	Type	11. Total Quantity	12. Unit Wt./Vol.
1. Non-Regulated Material, Solid (Soil) Approval # 16911	012	DM	9600	P
2. Non-Regulated Material, Liquid (Water) Approval # 16910	004 ~~005~~	DM	220 ~~275~~	G
3.				
4.				

13. Special Handling Instructions and Additional Information

Job # 15-0497

100288

AD 150474

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Peter Pozzo | Signature | Month: 7 | Day: 1 | Year: 15

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: Greg Thorpe | Signature | Month: 7 | Day: 8 | Year: 15

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 this manifest except as noted in Item 17a

Printed/Typed Name: Marc A Ruiz | Signature | Month: 07 | Day: 17 | Year: 15

169-BLC-O 6 10498 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

Aqua-Terra
Recycling and Treatment

710 Moore Street • P.O. Box 98
Oxford, Georgia 30054
Phone: (678) 625-4025
Fax: (678) 625-4944

№ 8864

Section I — GENERATOR (Generator completes all of Section 1)

a. Generator Name: Omni Source
b. Address: 590 old Hull Rd.
Athens, GA 30601
c. Phone No.: 706-613-5201

If owner generating facility differs from the generator, provide:
d. Owner's Name:
e. Description of Waste: Purge Water

g. Generating Location: Monitoring Wells
h. Address: Sec B
i. Phone No.: 706-613-5201
j. Owner's Phone No.:

Quantity	Gallons	Type
55	X	DM

TYPE
DM - METAL DRUM
DP - PLASTIC DRUM
T - TRUCK

I hereby certify that the above named material is not a hazardous waste as defined by 40 CFR Part 261 or any applicable state law, has been properly described, classified and packaged, and is in proper condition for transportation according to applicable regulations.

Nicole Laskoski
Generator Authorized Agent Name

Signature

Shipping Date

Section II — TRANSPORTER (Generator completes a-d: Transporter I completes e-g: Transporter II completes h-n)

a. Name: Aqua-Terra
b. Address: 710 Moore Street
Oxford, Georgia 30054
c. Drive Name/Title:
d. Phone No.: (678) 625-4025 e: Truck No.:
f. Vehicle License No/State:
Acknowledgment of Receipt of Materials.
g. Driver Signature — Shipping Date

h. Name:
i. Address:
j. Drive Name/Title:
k. Phone No.: l: Truck No.:
m. Vehicle License No/State:
Acknowledgment of Receipt of Materials.
n. Driver Signature — Shipping Date

Section III — DESTINATION

a. Site Name: Aqua-Terra
b. Physical Address: 710 Moore Street
Oxford, Georgia 30054
e. Discrepancy Indication Space:

c. Phone No.: (678) 625-4025
d. Mailing Address: P.O. Box 98
Oxford, Georgia 30054

I hereby certify that the above material has been accepted and to the best of my knowledge the foregoing is true and accurate.

Name of Authorized Agent — Signature — Shipping Date

WHITE - DESTINATION

YELLOW - TRANSPORTERS

APPENDIX D

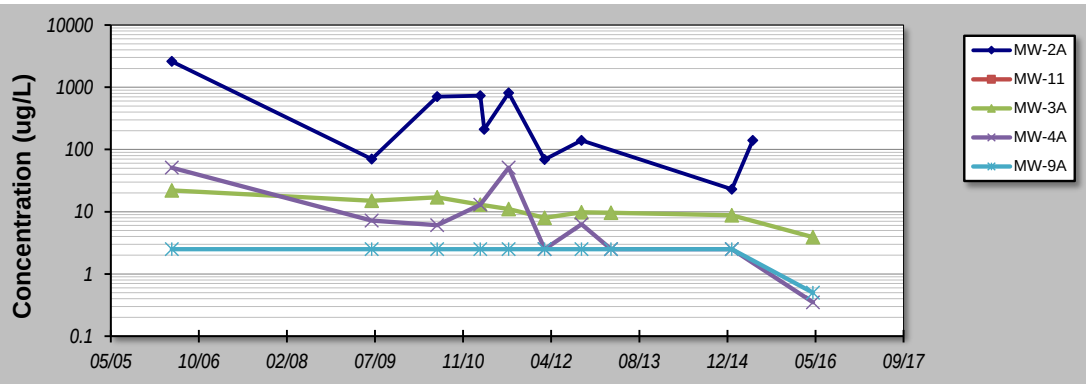
MANN KENDALL STATISTICAL ANALYSES WORKSHEETS

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Jun-16
Facility Name: OmniSource (Former Loef)-Athens, GA
Conducted By: Apex Companies

Job ID: 510393-002
Constituent: TCE
Concentration Units: ug/L

Sampling Point ID:	MW-2A	MW-11	MW-3A	MW-4A	MW-9A		
Sampling Event	Sampling Date	TCE CONCENTRATION (ug/L)						
1	5/9/2006	2600		22	51	2.5		
2	6/17/2009	70		15	7.2	2.5		
3	6/24/2010	710		17	6.1	2.5		
4	2/24/2011	730		13	13	2.5		
5	3/18/2011	210						
6	8/4/2011	810		11	51	2.5		
7	2/24/2012	69		8	2.5	2.5		
8	9/20/2012	140		9.8	6.3	2.5		
9	3/7/2013			9.6	2.5	2.5		
10	1/22/2015	23		8.8	2.5	2.5		
11	5/20/2015	140						
12	4/26/2016			3.9	0.35	0.5		
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		1.42		0.44	1.38	0.27		
Mann-Kendall Statistic (S):		-18		-37	-27	-9		
Confidence Factor:		93.4%		>99.9%	99.2%	75.8%		
Concentration Trend:		Prob. Decreasing		Decreasing	Decreasing	Stable		



Notes:

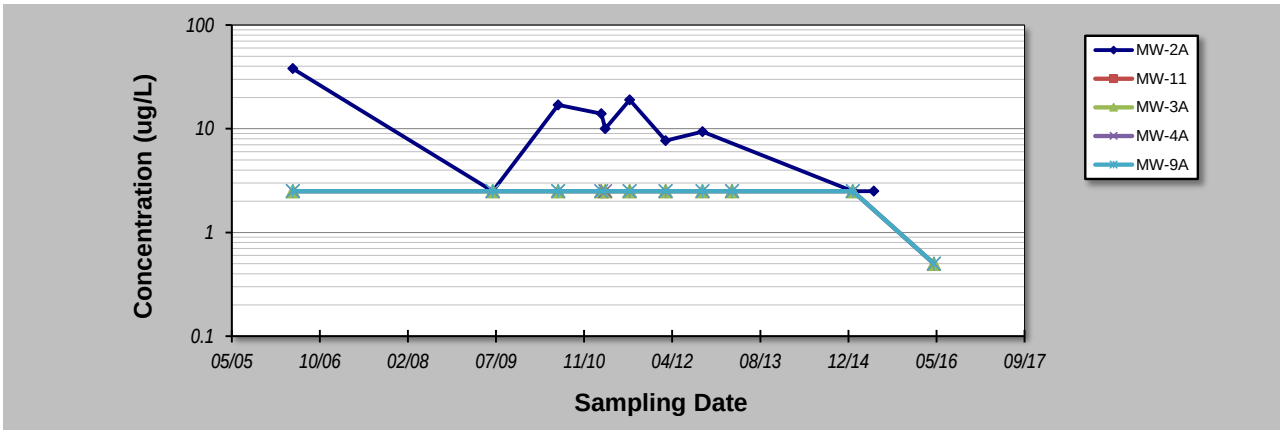
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Jun-16
Facility Name: OmniSource (Former Loef)-Athens, GA
Conducted By: Apex Companies

Job ID: 510393-002
Constituent: 1,1-DCE
Concentration Units: ug/L

Sampling Point ID:	MW-2A	MW-11	MW-3A	MW-4A	MW-9A		
Sampling Event	Sampling Date	1,1-DCE CONCENTRATION (ug/L)						
1	5/9/2006	38		2.5	2.5	2.5		
2	6/17/2009	2.5		2.5	2.5	2.5		
3	6/24/2010	17		2.5	2.5	2.5		
4	2/24/2011	14		2.5	2.5	2.5		
5	3/18/2011	10		2.5	2.5			
6	8/4/2011	19		2.5	2.5	2.5		
7	2/24/2012	7.7		2.5	2.5	2.5		
8	9/20/2012	9.4		2.5	2.5	2.5		
9	3/7/2013			2.5	2.5	2.5		
10	1/22/2015	2.5		2.5	2.5	2.5		
11	5/20/2015	2.5						
12	4/26/2016			0.5	0.5	0.5		
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.88		0.26	0.26	0.27		
Mann-Kendall Statistic (S):		-22		-10	-10	-9		
Confidence Factor:		97.1%		75.3%	75.3%	75.8%		
Concentration Trend:		Decreasing		Stable	Stable	Stable		



Notes:

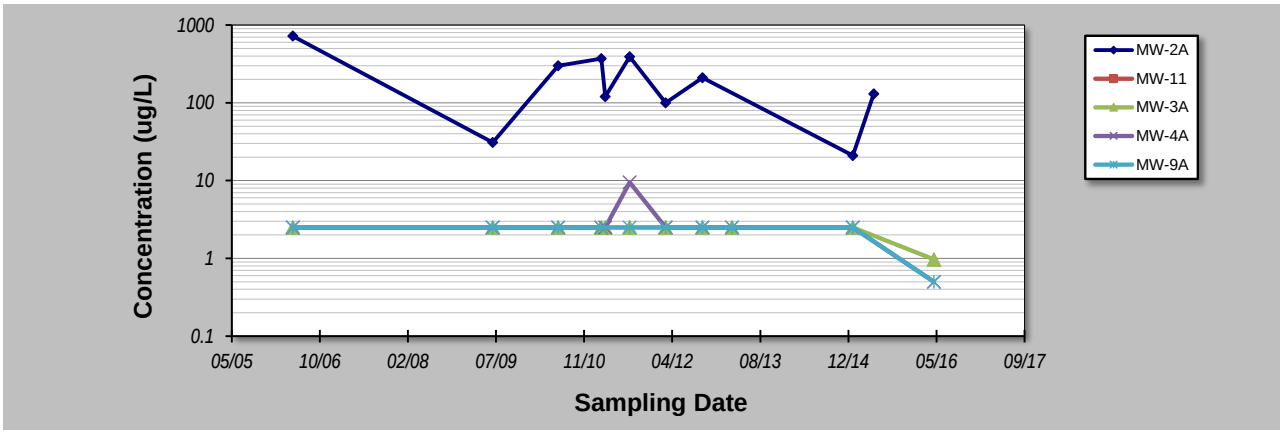
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Jun-16
Facility Name: OmniSource (Former Loef)-Athens, GA
Conducted By: Apex Companies

Job ID: 510393-002
Constituent: Cis 1,2-DCE
Concentration Units: ug/L

Sampling Point ID:	MW-2A	MW-11	MW-3A	MW-4A	MW-9A		
Sampling Event	Sampling Date	CIS 1,2-DCE CONCENTRATION (ug/L)						
1	5/9/2006	720		2.5	2.5	2.5		
2	6/17/2009	31		2.5	2.5	2.5		
3	6/24/2010	300		2.5	2.5	2.5		
4	2/24/2011	370		2.5	2.5	2.5		
5	3/18/2011	120		2.5	2.5			
6	8/4/2011	390		2.5	9.5	2.5		
7	2/24/2012	100		2.5	2.5	2.5		
8	9/20/2012	210		2.5	2.5	2.5		
9	3/7/2013			2.5	2.5	2.5		
10	1/22/2015	21		2.5	2.5	2.5		
11	5/20/2015	130						
12	4/26/2016			0.97	0.5	0.5		
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.89		0.20	0.76	0.27		
Mann-Kendall Statistic (S):		-13		-10	-9	-9		
Confidence Factor:		85.4%		75.3%	72.9%	75.8%		
Concentration Trend:		Stable		Stable	Stable	Stable		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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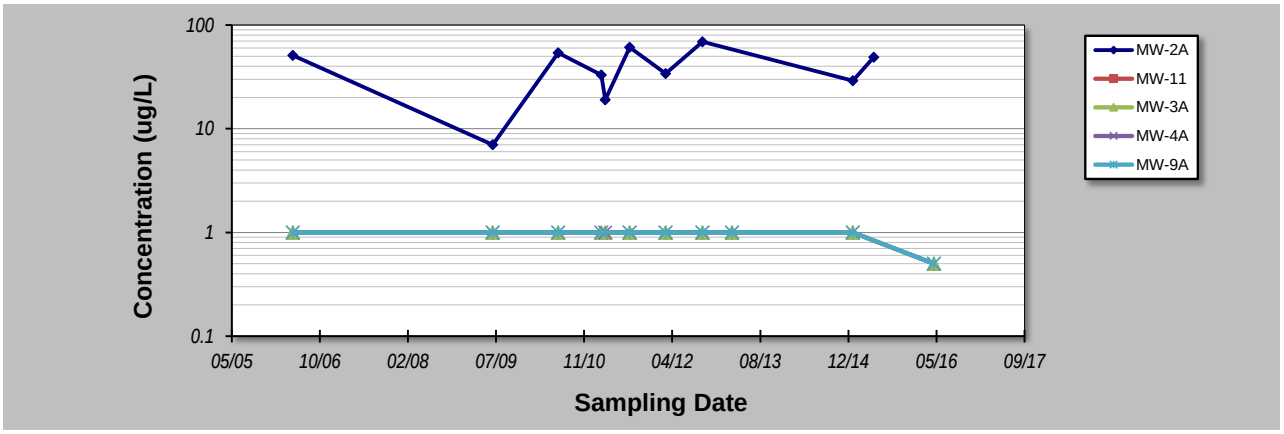
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Jun-16
Facility Name: OmniSource (Former Loef)-Athens, GA
Conducted By: Apex Companies

Job ID: 510393-002
Constituent: Vinyl Chloride
Concentration Units: ug/L

Sampling Point ID:	MW-2A	MW-11	MW-3A	MW-4A	MW-9A		
Sampling Event	Sampling Date	VINYL CHLORIDE CONCENTRATION (ug/L)						
1	5/9/2006	51		1	1	1		
2	6/17/2009	7		1	1	1		
3	6/24/2010	54		1	1	1		
4	2/24/2011	33		1	1	1		
5	3/18/2011	19		1	1			
6	8/4/2011	61		1	1	1		
7	2/24/2012	34		1	1	1		
8	9/20/2012	69		1	1	1		
9	3/7/2013			1	1	1		
10	1/22/2015	29		1	1	1		
11	5/20/2015	49						
12	4/26/2016			0.5	0.5	0.5		
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.48		0.16	0.16	0.17		
Mann-Kendall Statistic (S):		7		-10	-10	-9		
Confidence Factor:		70.0%		75.3%	75.3%	75.8%		
Concentration Trend:		No Trend		Stable	Stable	Stable		



Notes:

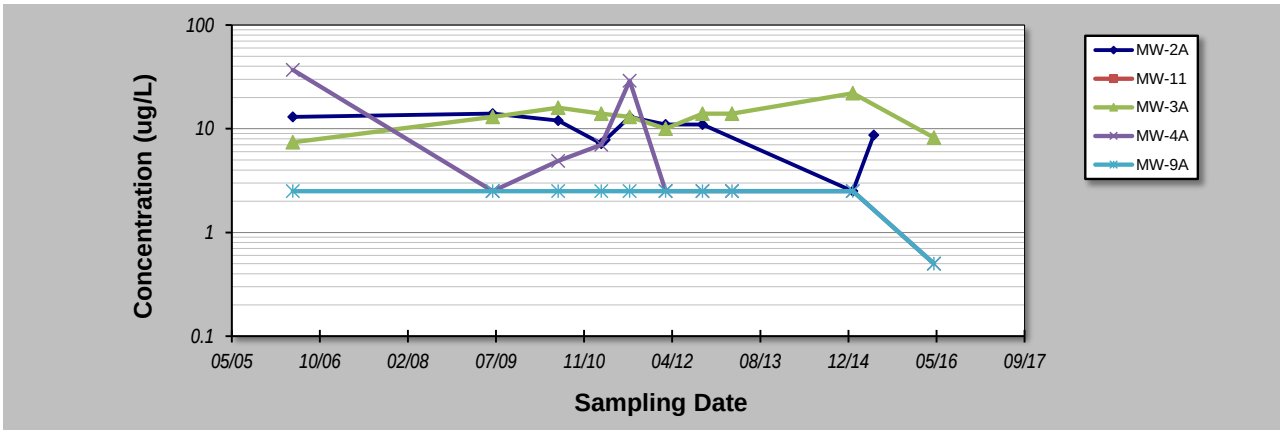
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 9-Jun-16
Facility Name: OmniSource (Former Loef)-Athens, GA
Conducted By: Apex Companies

Job ID: 510393-002
Constituent: Benzene
Concentration Units: ug/L

Sampling Point ID:	MW-2A	MW-11	MW-3A	MW-4A	MW-9A		
Sampling Event	Sampling Date	BENZENE CONCENTRATION (ug/L)						
1	5/9/2006	13		7.4	37	2.5		
2	6/17/2009	14		13	2.5	2.5		
3	6/24/2010	12		16	4.9	2.5		
4	2/24/2011	7.2		14	7	2.5		
5	3/18/2011	7.8						
6	8/4/2011	13		13	29	2.5		
7	2/24/2012	11		10	2.5	2.5		
8	9/20/2012	11		14	2.5	2.5		
9	3/7/2013			14	2.5	2.5		
10	1/22/2015	2.5		22	2.5	2.5		
11	5/20/2015	8.7						
12	4/26/2016			8.2	0.5	0.5		
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.35		0.32	1.41	0.27		
Mann-Kendall Statistic (S):		-19		7	-23	-9		
Confidence Factor:		94.6%		70.0%	97.7%	75.8%		
Concentration Trend:		Prob. Decreasing		No Trend	Decreasing	Stable		



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

APPENDIX E

BIOCHLOR OUTPUT SHEETS

SECTION 1

MODEL CALIBRATION

BIOCHLOR Natural Attenuation Decision Support System

Version 2.2
Excel 2000

OmniSource
Former Loef Site
Run Name

Data Input Instructions:
115 → 1. Enter value directly....or
or
0.02 2. Calculate by filling in gray cells. Press Enter, then C
(To restore formulas, hit "Restore Formulas" button)
Variable* → Data used directly in model.

Test if Biotransformation is Occurring → Natural Attenuation Screening Protocol

TYPE OF CHLORINATED SOLVENT: Ethenes ◉ Ethanes ○

1. ADVECTION

Seepage Velocity*	Vs	30.4	(ft/yr)
or			
Hydraulic Conductivity	K	2.3E-04	(cm/sec)
Hydraulic Gradient	i	0.023	(ft/ft)
Effective Porosity	n	0.18	(-)

2. DISPERSION

Calc. Alpha x

Alpha x*	29	(ft)
(Alpha y) / (Alpha x)*	2.9	(-)
(Alpha z) / (Alpha x)*	3.E-01	(-)

3. ADSORPTION

Retardation Factor* → R

or

	Koc		R	
Soil Bulk Density, rho	1.7	(kg/L)		
FractionOrganicCarbon, foc	2.0E-3	(-)		
Partition Coefficient				
PCE	95	(L/kg)	2.79	(-)
TCE	61	(L/kg)	2.15	(-)
DCE	40	(L/kg)	1.76	(-)
VC	22	(L/kg)	1.42	(-)
ETH	302	(L/kg)	6.70	(-)

Common R (used in model)* = 2.15

4. BIOTRANSFORMATION

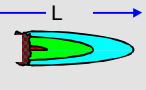
-1st Order Decay Coefficient*

	λ (1/yr)	half-life (yrs)	Yield
Zone 1			
PCE → TCE	0.433	1.60	0.79
TCE → DCE	0.347	2.00	0.74
DCE → VC	0.533	1.30	0.64
VC → ETH	0.693	1.00	0.45
Zone 2	λ (1/yr)	half-life (yrs)	
PCE → TCE	0.000		
TCE → DCE	0.000		
DCE → VC	0.000		
VC → ETH	0.000		

λ HELP

5. GENERAL

Simulation Time*	50	(yr)
Modeled Area Width*	300	(ft)
Modeled Area Length*	1000	(ft)
Zone 1 Length*	1000	(ft)
Zone 2 Length*	0	(ft)



Zone 2=

6. SOURCE DATA

TYPE: Continuous Single Planar

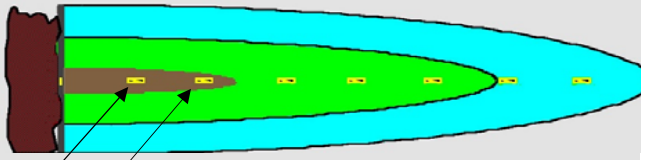
Source Options

Source Thickness in Sat. Zone* 20 (ft)

Width* (ft) Y1: 40

Conc. (mg/L)*	C1	k_s* (1/yr)
PCE	.15	0
TCE	13.0	0
DCE		0
VC		0
ETH		0

Vertical Plane Source: Determine Source Well Location and Input Solvent Concentrations



View of Plume Looking Down

Observed Centerline Conc. at Monitoring Wells

7. FIELD DATA FOR COMPARISON

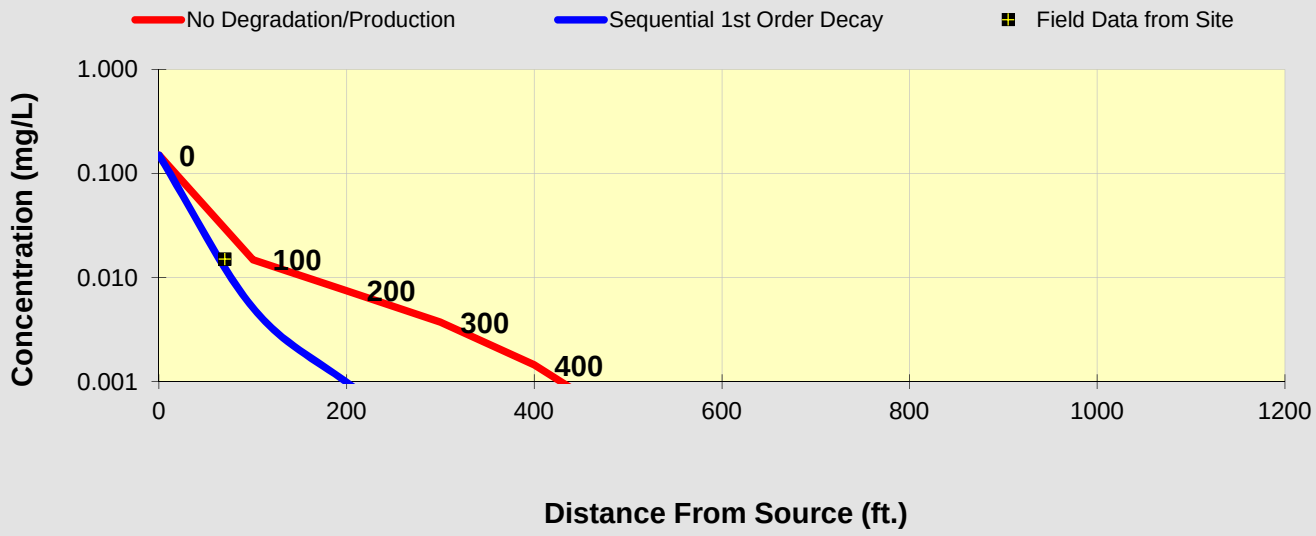
PCE Conc. (mg/L)	.015	.0									
TCE Conc. (mg/L)	1.5	.002									
DCE Conc. (mg/L)	.015	.005									
VC Conc. (mg/L)											
ETH Conc. (mg/L)	0.3										
Distance from Source (ft)	70	290									
Date Data Collected	2015										

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE | RUN ARRAY | Help | Restore | RESET | SEE OUTPUT | Paste

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.150	0.015	0.008	0.004	0.001	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.1500	0.005	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Monitoring Well Locations (ft)										
	70	290									
Field Data from Site	0.015										



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

22.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → PCE / TCE / DCE / VC / ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

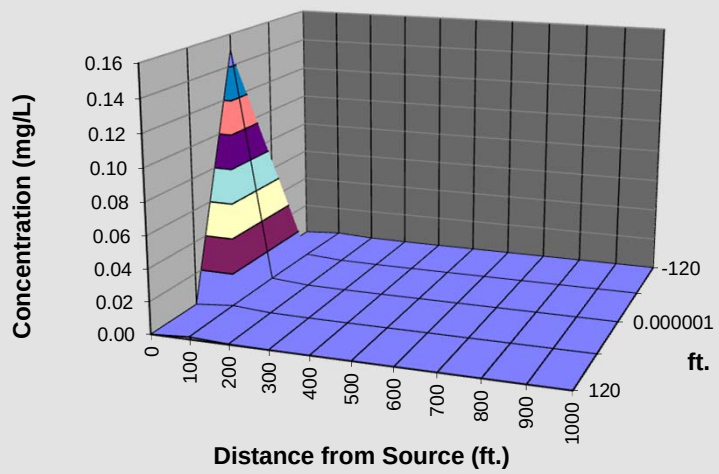
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.150	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound

Time: 22 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation PCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.2 (Kg)

- Plume Mass If Biotransformation/Production 0.1 (Kg)

Mass Removed 0.1 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed = +31.4%

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 0.16 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

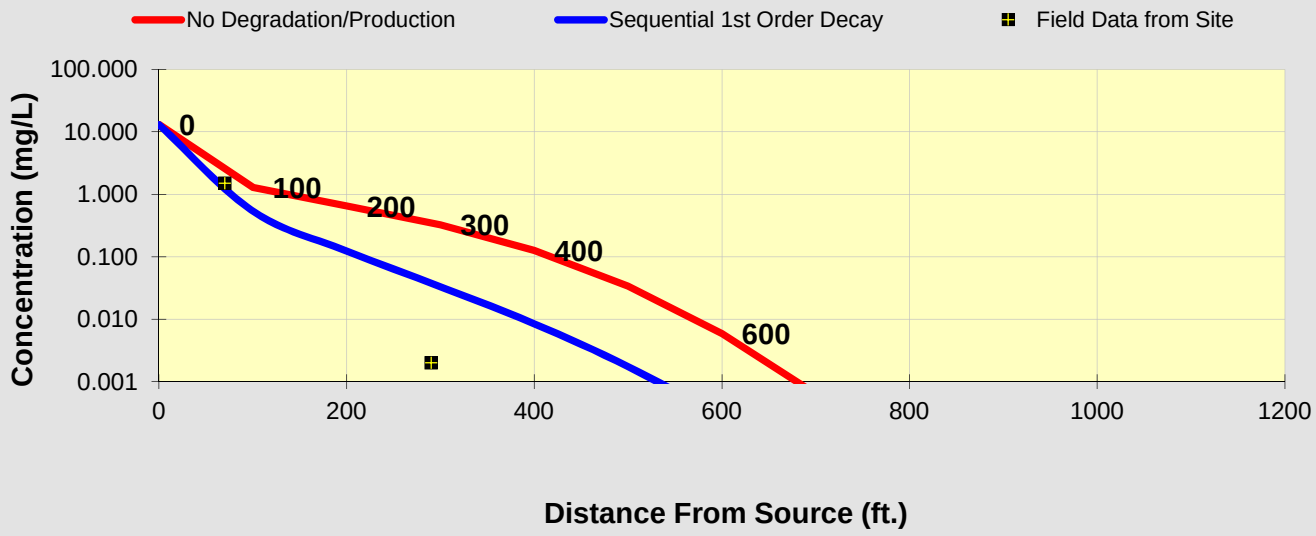
Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

TCE	Distance from Source (ft)										
	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	13.000	1.288	0.651	0.323	0.126	0.034	0.006	0.001	0.000	0.000	0.000
Biotransformation	13.0000	0.538	0.124	0.033	0.008	0.002	0.000	0.000	0.000	0.000	0.000
	Monitoring Well Locations (ft)										
	70	290									
Field Data from Site	1.500	0.002									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

22.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ◉ TCE ○ DCE ○ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

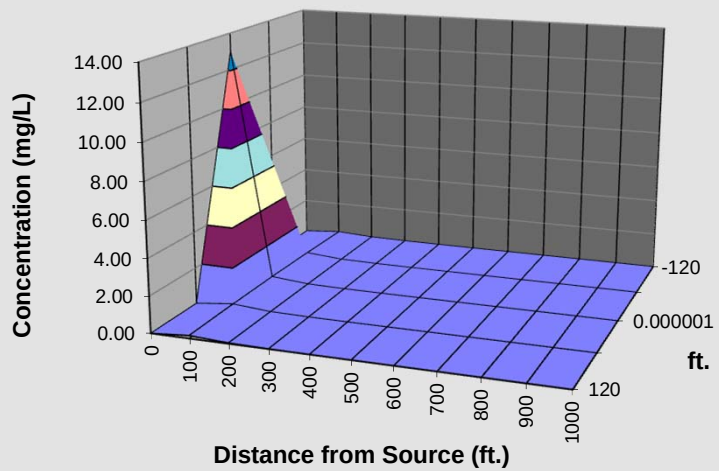
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.159	0.041	0.011	0.003	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.219	0.048	0.012	0.003	0.001	0.000	0.000	0.000	0.000	0.000
0	13.000	0.243	0.050	0.013	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.219	0.048	0.012	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.159	0.041	0.011	0.003	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound

Time: 22 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation TCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 14.4 (Kg)

- Plume Mass If Biotransformation/Production 10.3 (Kg)

Mass Removed 4.2 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed = +28.8%

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 2.59 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

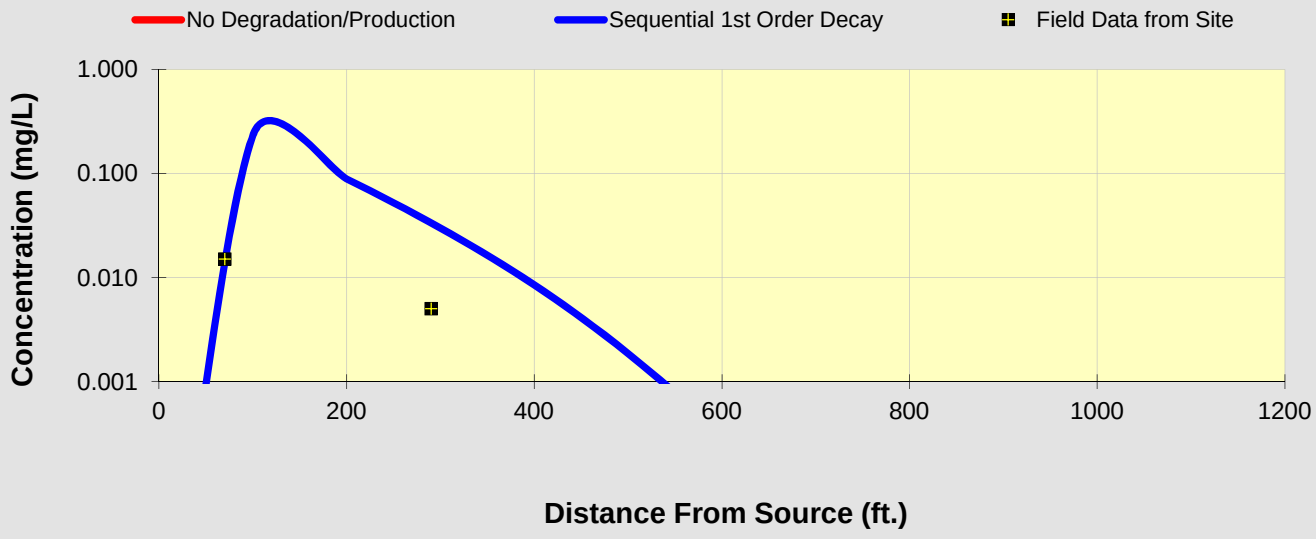
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

DCE	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.230	0.088	0.030	0.009	0.002	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.015	0.005									



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

22.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ◉ DCE ○ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

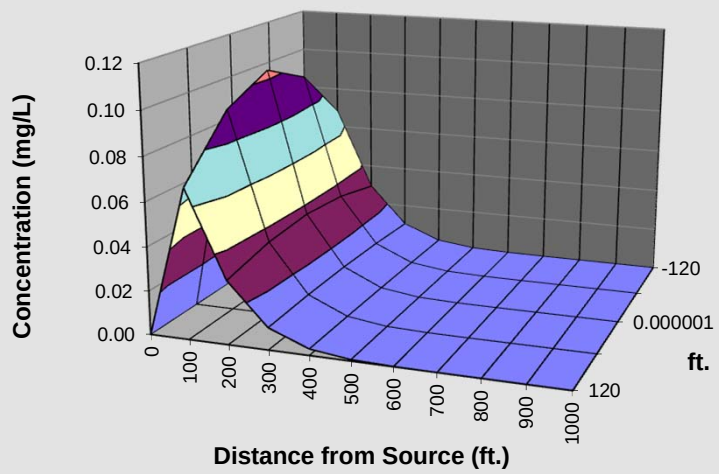
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.068	0.029	0.010	0.003	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.094	0.034	0.011	0.003	0.001	0.000	0.000	0.000	0.000	0.000
0	0.000	0.104	0.036	0.012	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.094	0.034	0.011	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.068	0.029	0.010	0.003	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound

Time: 22 yr Target Level: 0.070 mg/L Displayed Model: Biotransformation DCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.0 (Kg)

- Plume Mass If Biotransformation/Production 0.9 (Kg)

Mass Removed -0.9 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 2.42 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

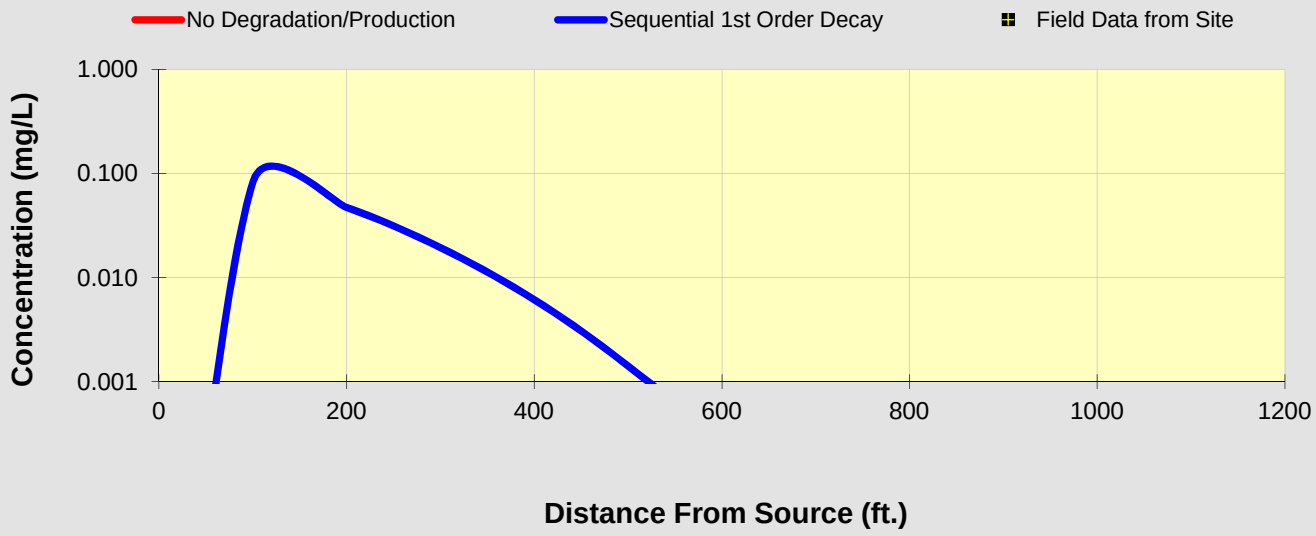
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.082	0.047	0.019	0.006	0.001	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site											



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

22.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ◉ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

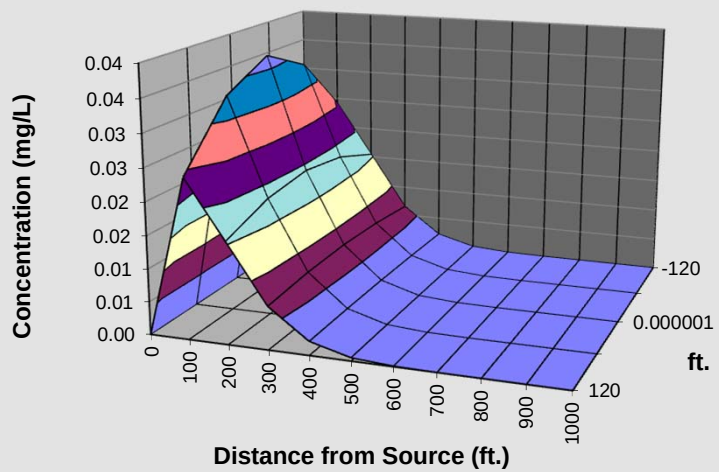
Transverse Distance (ft) ↓ / *Distance from Source (ft)* →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.024	0.015	0.007	0.002	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.033	0.018	0.007	0.002	0.001	0.000	0.000	0.000	0.000	0.000
0	0.000	0.037	0.019	0.008	0.002	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.033	0.018	0.007	0.002	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.024	0.015	0.007	0.002	0.000	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound

Time: 22 yr Target Level: **0.002** mg/L Displayed Model: **Biotransformation** **VC**



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.0 *(Kg)*

- Plume Mass If Biotransformation/Production 0.4 *(Kg)*

Mass Removed -0.4 *(Kg)*

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = **#VALUE!** (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 2.42 *MGal*

Flow Rate of Water Through Source Area 0.000 *MGD*

Compare to Pump and Treat

Pumping Rate *(gpm)*

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time *(yr)*

Plot All Data | Plot Data > Target

Mass HELP | To Centerline | Return to Input

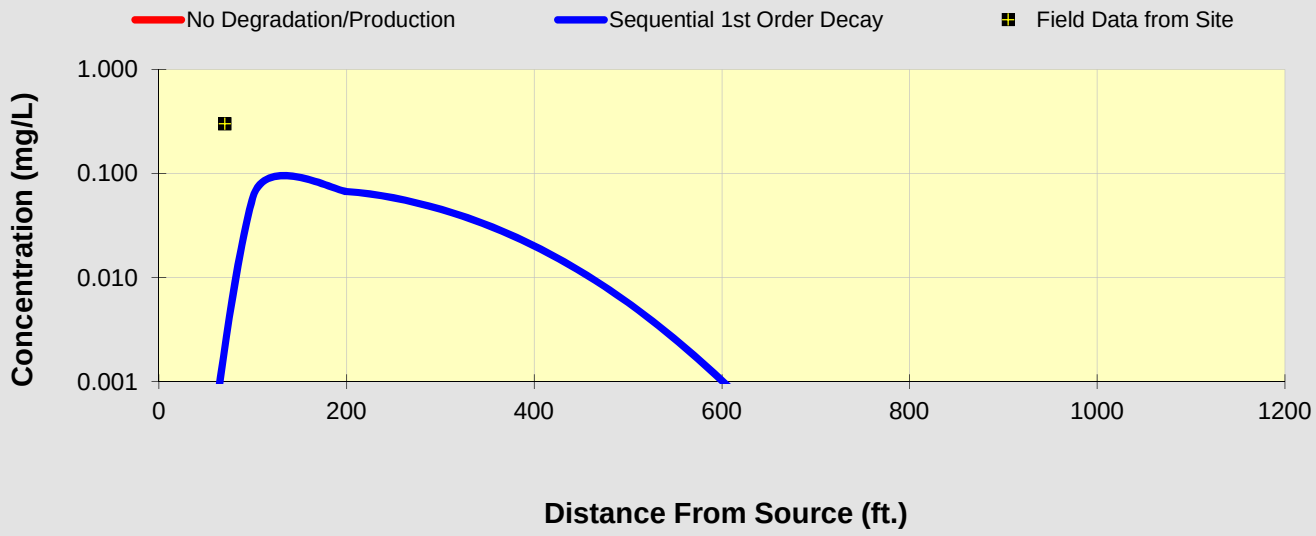
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

ETH	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.059	0.067	0.045	0.020	0.006	0.001	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.300										



See PCE

See TCE

See DCE

See VC

See ETH

Prepare Animation

Time:

22.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ○ VC ◉ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

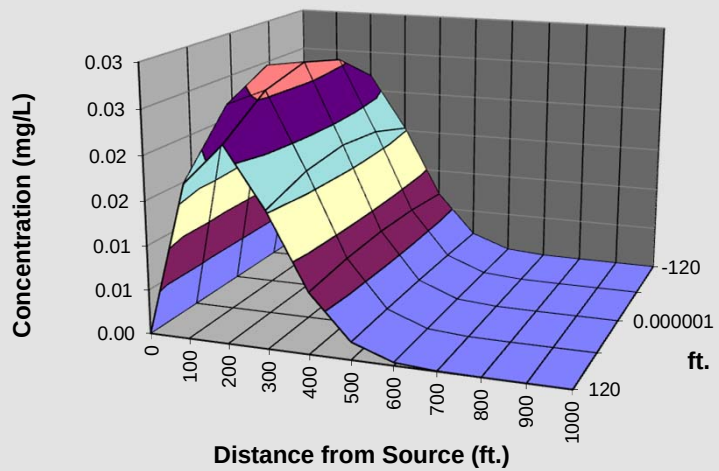
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.017	0.022	0.015	0.007	0.002	0.000	0.000	0.000	0.000	0.000
60	0.000	0.024	0.026	0.017	0.007	0.002	0.000	0.000	0.000	0.000	0.000
0	0.000	0.026	0.027	0.018	0.008	0.002	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.024	0.026	0.017	0.007	0.002	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.017	0.022	0.015	0.007	0.002	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound: ETH

Time: 22 yr Target Level: mg/L Displayed Model: Biotransformation



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation: 0.0 (Kg)

- Plume Mass If Biotransformation/Production: 0.5 (Kg)

Mass Removed: -0.5 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume: 3.23 MGal

Flow Rate of Water Through Source Area: 0.000 MGD

Compare to Pump and Treat

Pumping Rate: (gpm)

Pore Volumes Removed Per Yr.: 0.00

Pore Volumes to Clean-Up:

Clean-Up Time: (yr)

Plot All Data | Plot Data > Target

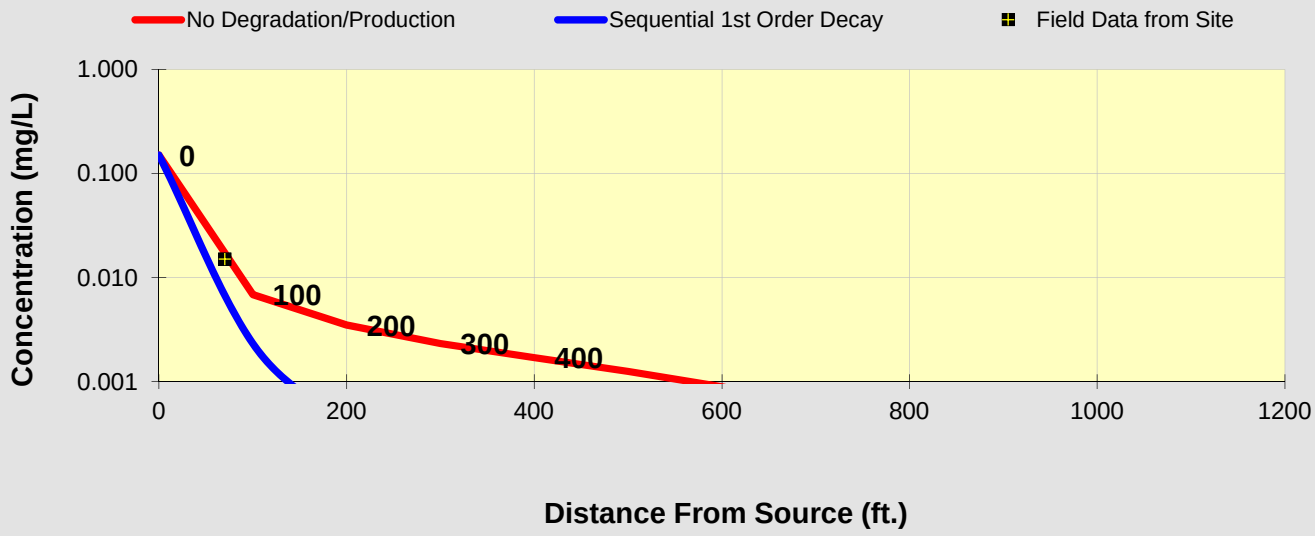
Mass HELP | To Centerline | Return to Input

SECTION 2

30 yrs - 2022

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.150	0.007	0.004	0.002	0.002	0.001	0.001	0.001	0.000	0.000	0.000
Biotransformation	0.1500	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Monitoring Well Locations (ft)										
	70	290									
Field Data from Site	0.015	0.000									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ◉ PCE ○ TCE ○ DCE ○ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

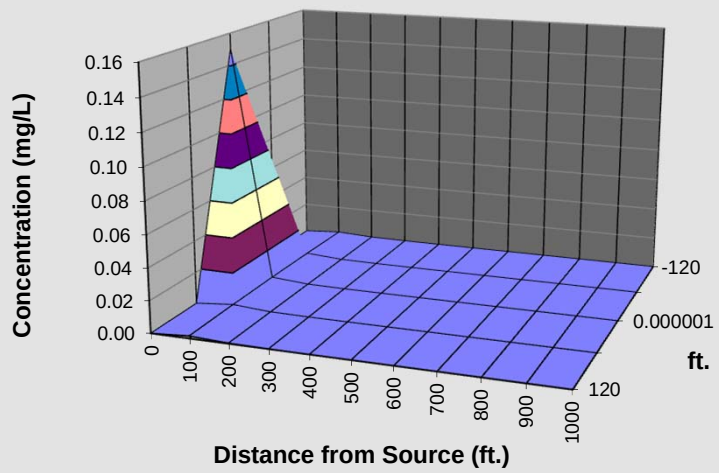
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.150	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Displayed Compound

Time: 30 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation PCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.2 (Kg)

- Plume Mass If Biotransformation/Production 0.1 (Kg)

Mass Removed 0.1 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed = +36.4%

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 0.16 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

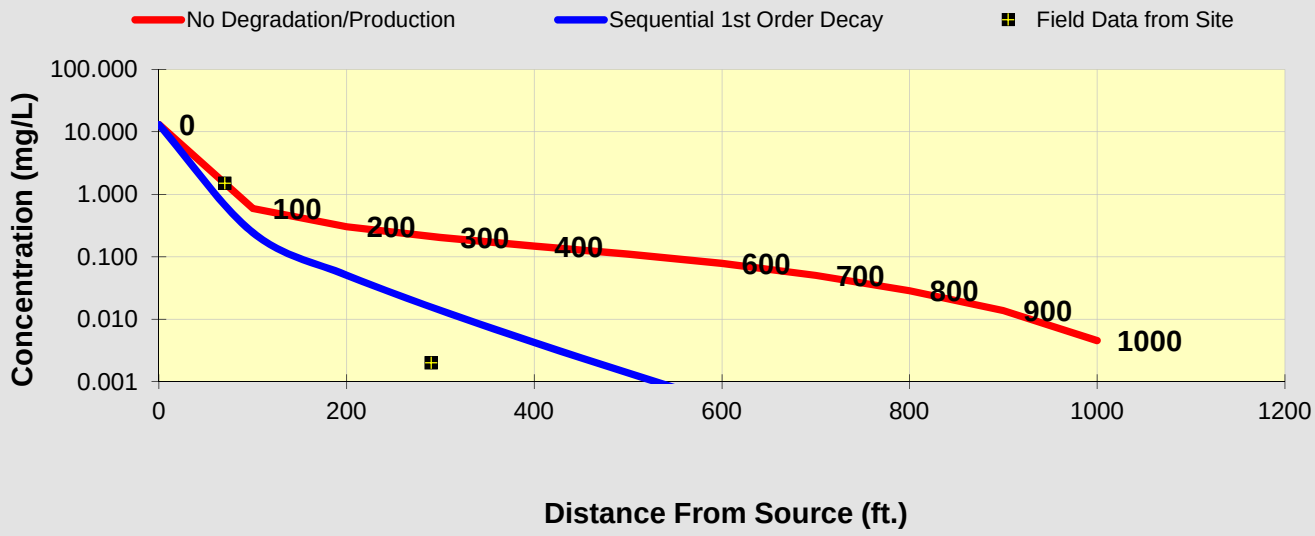
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

TCE	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	13.000	0.596	0.304	0.202	0.147	0.109	0.078	0.050	0.029	0.014	0.005
Biotransformation	13.0000	0.243	0.051	0.014	0.004	0.001	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	1.500	0.002									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ◉ TCE ○ DCE ○ VC ○ ETH

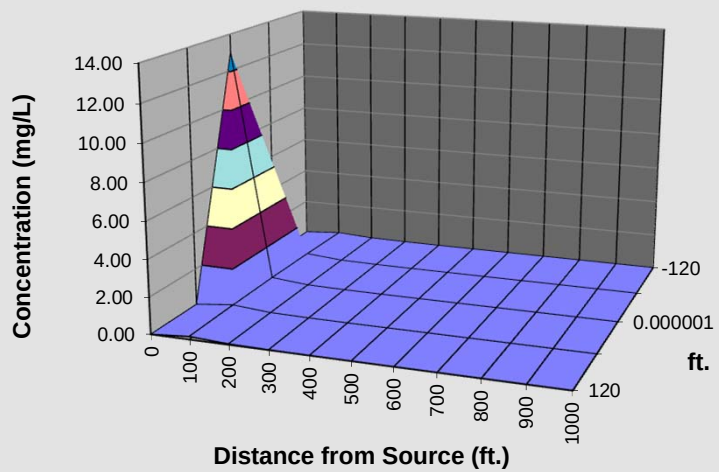
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.159	0.041	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.219	0.048	0.013	0.004	0.001	0.000	0.000	0.000	0.000	0.000
0	13.000	0.243	0.051	0.014	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.219	0.048	0.013	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.159	0.041	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Time: 30 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation Displayed Compound: TCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	15.6	(Kg)
- Plume Mass If Biotransformation/Production	10.3	(Kg)
Mass Removed	5.3	(Kg)

If "Can't Calc.", make model area longer

% Biotransformed = +34.0%

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume	2.59	MGal
Flow Rate of Water Through Source Area	0.000	MGD

Compare to Pump and Treat

Pumping Rate		(gpm)
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		(yr)

Plot All Data | Plot Data > Target

Mass HELP | To Centerline | Return to Input

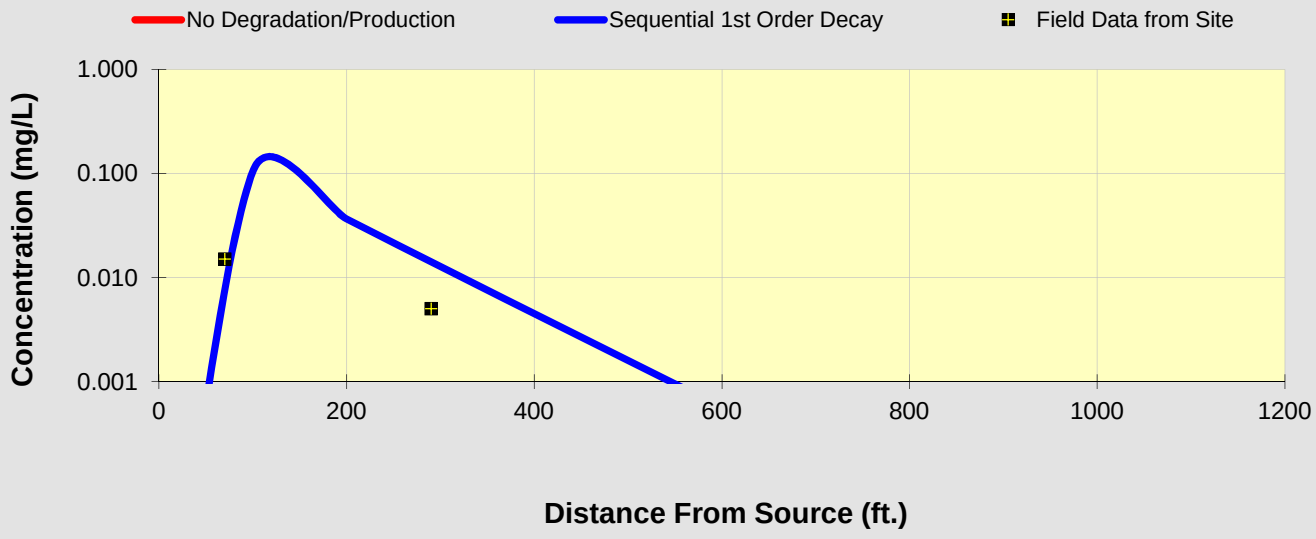
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

DCE	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.104	0.037	0.013	0.004	0.002	0.001	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.015	0.005									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ◉ DCE ○ VC ○ ETH

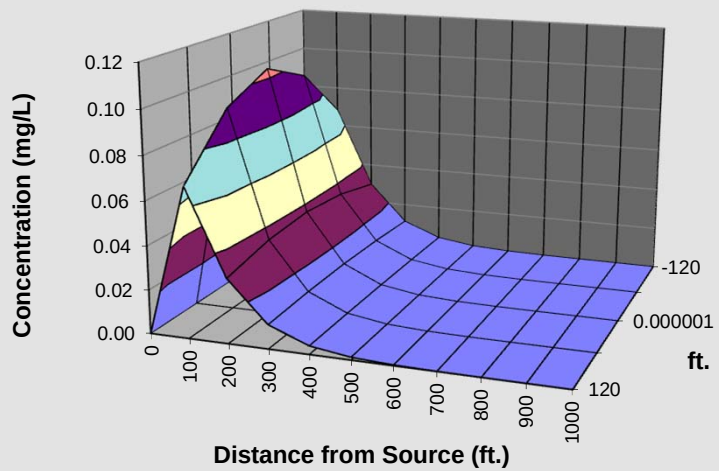
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.068	0.029	0.011	0.004	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.094	0.035	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
0	0.000	0.104	0.036	0.013	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.094	0.035	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.068	0.029	0.011	0.004	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Time: 30 yr Target Level: 0.070 mg/L Displayed Model: Biotransformation Displayed Compound: DCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation: 0.0 (Kg)

- Plume Mass If Biotransformation/Production: 0.9 (Kg)

Mass Removed: -0.9 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume: 2.42 MGal

Flow Rate of Water Through Source Area: 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr.: 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

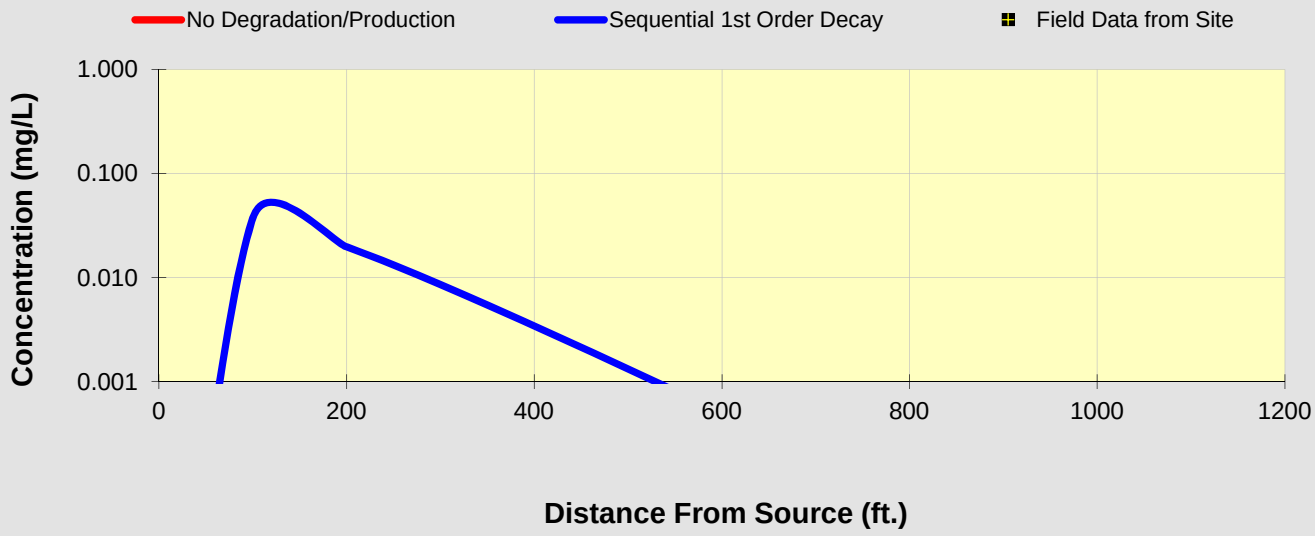
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.037	0.020	0.009	0.003	0.001	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site											



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ◉ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

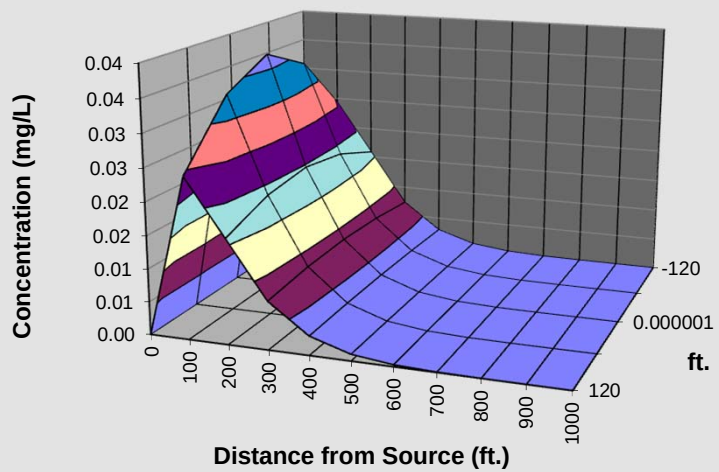
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.024	0.016	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.033	0.019	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.000
0	0.000	0.037	0.020	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.033	0.019	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.024	0.016	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Displayed Compound

Time: 30 yr Target Level: 0.002 mg/L Displayed Model: Biotransformation VC



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.0 (Kg)

- Plume Mass If Biotransformation/Production 0.4 (Kg)

Mass Removed -0.4 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 2.42 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

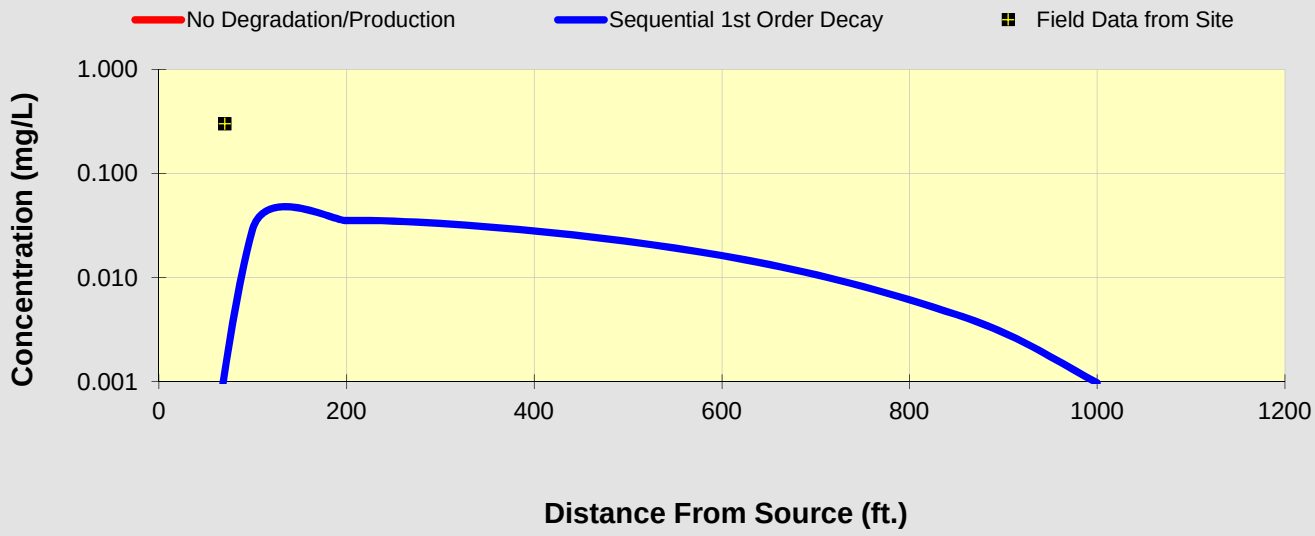
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

ETH	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.029	0.035	0.033	0.028	0.022	0.016	0.011	0.006	0.003	0.001

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.300										



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

30.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ○ VC ◉ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

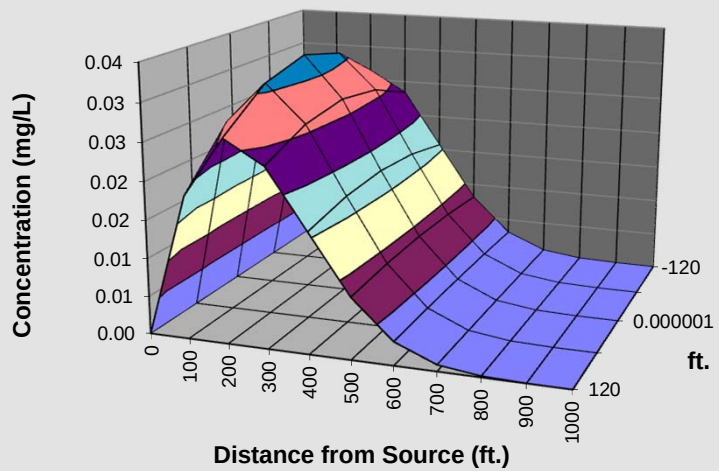
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.019	0.026	0.023	0.016	0.008	0.003	0.001	0.000	0.000	0.000
60	0.000	0.026	0.031	0.026	0.017	0.009	0.003	0.001	0.000	0.000	0.000
0	0.000	0.028	0.033	0.027	0.017	0.009	0.003	0.001	0.000	0.000	0.000
-60	0.000	0.026	0.031	0.026	0.017	0.009	0.003	0.001	0.000	0.000	0.000
-120	0.000	0.019	0.026	0.023	0.016	0.008	0.003	0.001	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Displayed Compound: ETH

Time: 30 yr Target Level: mg/L Displayed Model: Biotransformation



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation: 0.0 (Kg)

- Plume Mass If Biotransformation/Production: 0.7 (Kg)

Mass Removed: -0.7 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume: 4.04 MGal

Flow Rate of Water Through Source Area: 0.000 MGD

Compare to Pump and Treat

Pumping Rate: (gpm)

Pore Volumes Removed Per Yr.: 0.00

Pore Volumes to Clean-Up:

Clean-Up Time: (yr)

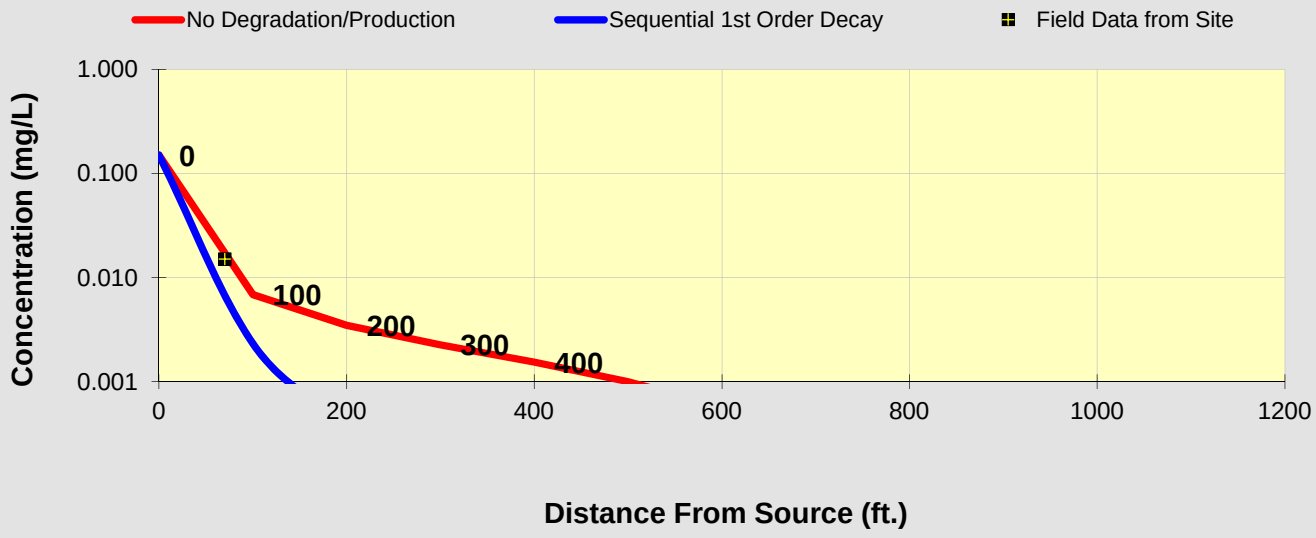
Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

SECTION 3

40 yrs - 2032

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.150	0.007	0.003	0.002	0.002	0.001	0.001	0.000	0.000	0.000	0.000
Biotransformation	0.1500	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Monitoring Well Locations (ft)										
	70	290									
Field Data from Site	0.015	0.000									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

40.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → PCE / TCE / DCE / VC / ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

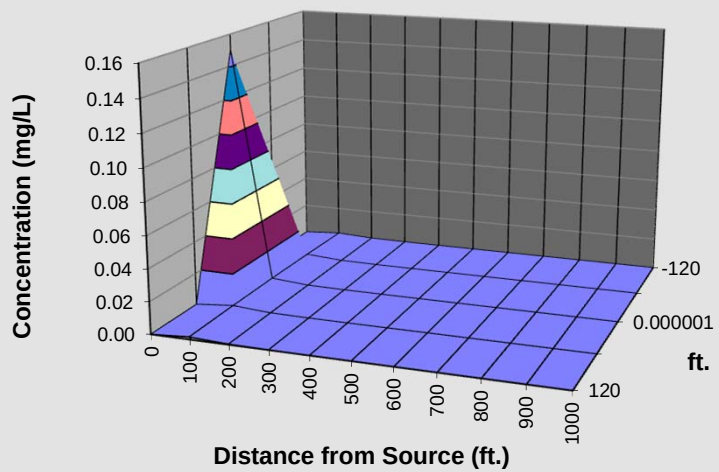
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.150	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Displayed Compound

Time: 40 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation PCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	0.2	(Kg)
- Plume Mass If Biotransformation/Production	0.1	(Kg)
Mass Removed	0.1	(Kg)
% Biotransformed =	+40.6%	
% Change in Mass Rate =	#VALUE!	(source to edge)

If "Can't Calc.", make model area longer

See acre-ft

Current Volume of Ground Water in Plume	0.16	MGal
Flow Rate of Water Through Source Area	0.000	MGD

Compare to Pump and Treat

Pumping Rate		(gpm)
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		(yr)

Plot All Data Plot Data > Target

Mass HELP To Centerline Return to Input

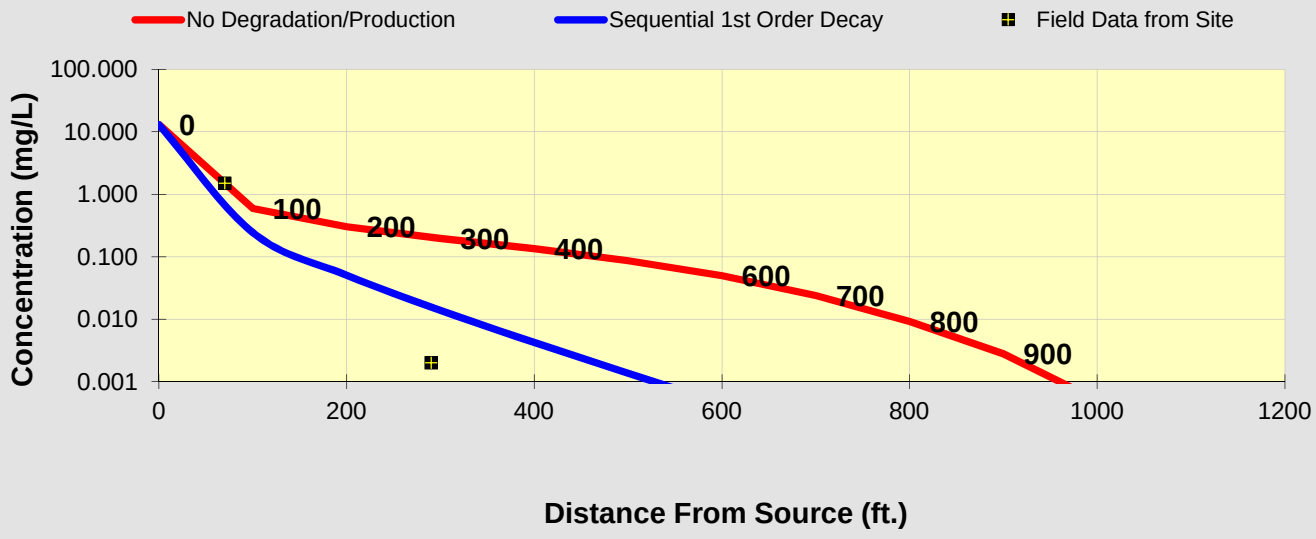
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

TCE	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	13.000	0.595	0.301	0.195	0.133	0.087	0.050	0.024	0.009	0.003	0.001
Biotransformation	13.0000	0.243	0.051	0.014	0.004	0.001	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	1.500	0.002									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

40.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ◉ TCE ○ DCE ○ VC ○ ETH

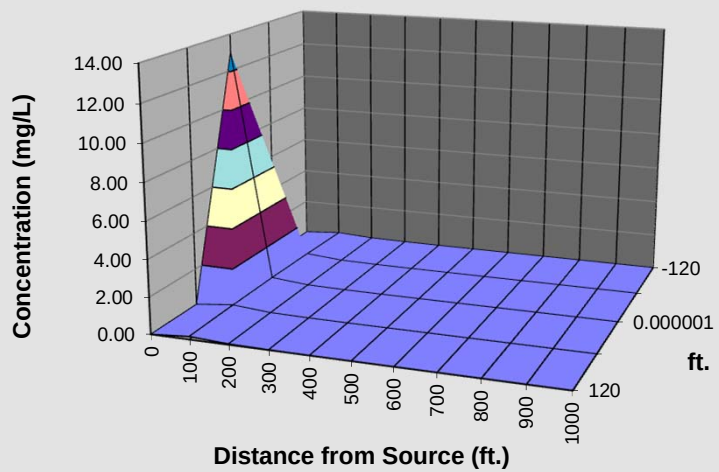
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.159	0.041	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.219	0.048	0.013	0.004	0.001	0.000	0.000	0.000	0.000	0.000
0	13.000	0.243	0.051	0.014	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.219	0.048	0.013	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.159	0.041	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Time: 40 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation Displayed Compound: TCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	16.7	(Kg)
- Plume Mass If Biotransformation/Production	10.3	(Kg)
Mass Removed	6.4	(Kg)

If "Can't Calc.", make model area longer

% Biotransformed = +38.3%

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume	2.59	MGal
Flow Rate of Water Through Source Area	0.000	MGD

Compare to Pump and Treat

Pumping Rate		(gpm)
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		(yr)

Plot All Data | Plot Data > Target

Mass HELP | To Centerline | Return to Input

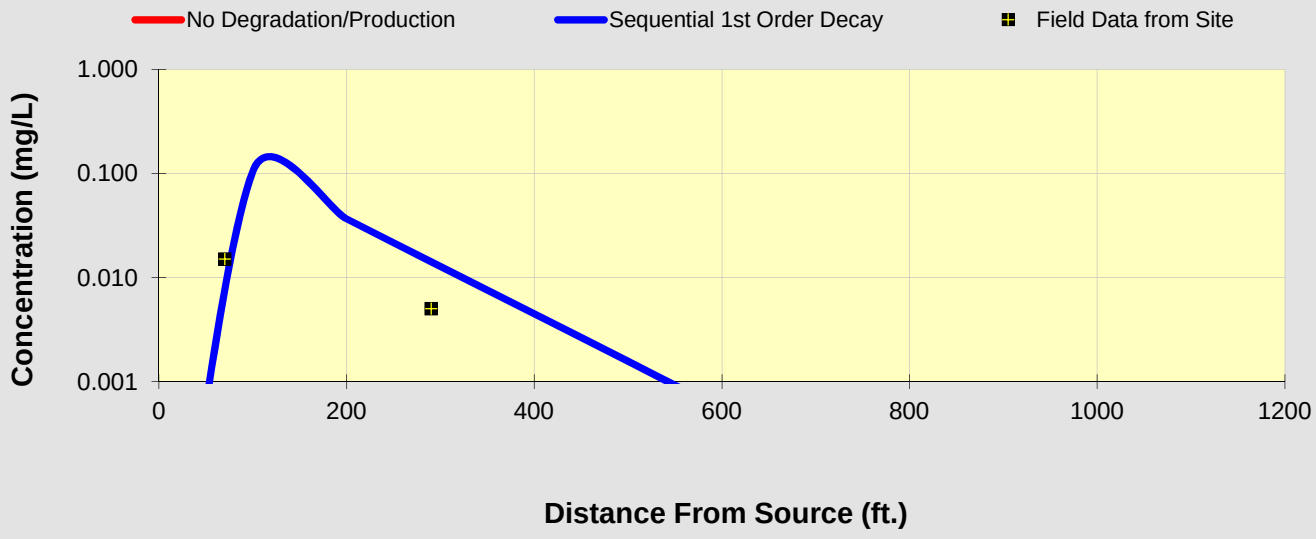
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

DCE	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.104	0.037	0.013	0.004	0.002	0.001	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.015	0.005									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

40.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ◉ DCE ○ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

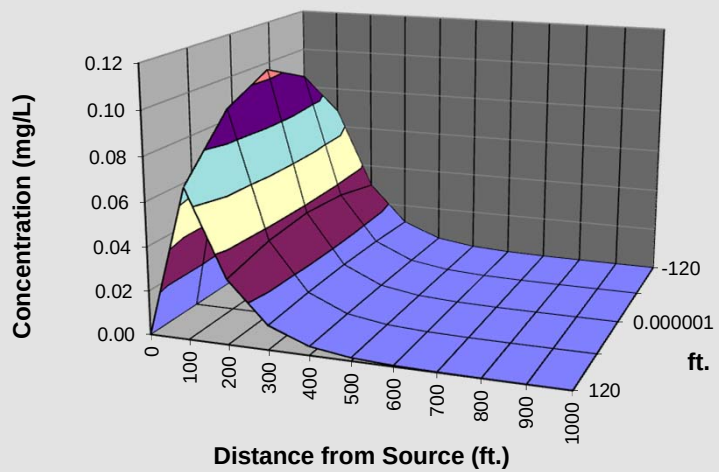
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.068	0.030	0.011	0.004	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.094	0.035	0.012	0.004	0.002	0.001	0.000	0.000	0.000	0.000
0	0.000	0.104	0.037	0.013	0.004	0.002	0.001	0.000	0.000	0.000	0.000
-60	0.000	0.094	0.035	0.012	0.004	0.002	0.001	0.000	0.000	0.000	0.000
-120	0.000	0.068	0.030	0.011	0.004	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Displayed Compound

Time: 40 yr Target Level: 0.070 mg/L Displayed Model: Biotransformation DCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	0.0	(Kg)
- Plume Mass If Biotransformation/Production	0.9	(Kg)
Mass Removed	-0.9	(Kg)
% Biotransformed =		
% Change in Mass Rate =	#VALUE!	(source to edge)

If "Can't Calc.", make model area longer

See acre-ft

Current Volume of Ground Water in Plume	2.42	MGal
Flow Rate of Water Through Source Area	0.000	MGD

Compare to Pump and Treat

Pumping Rate		(gpm)
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		(yr)

Plot All Data Plot Data > Target

Mass HELP To Centerline Return to Input

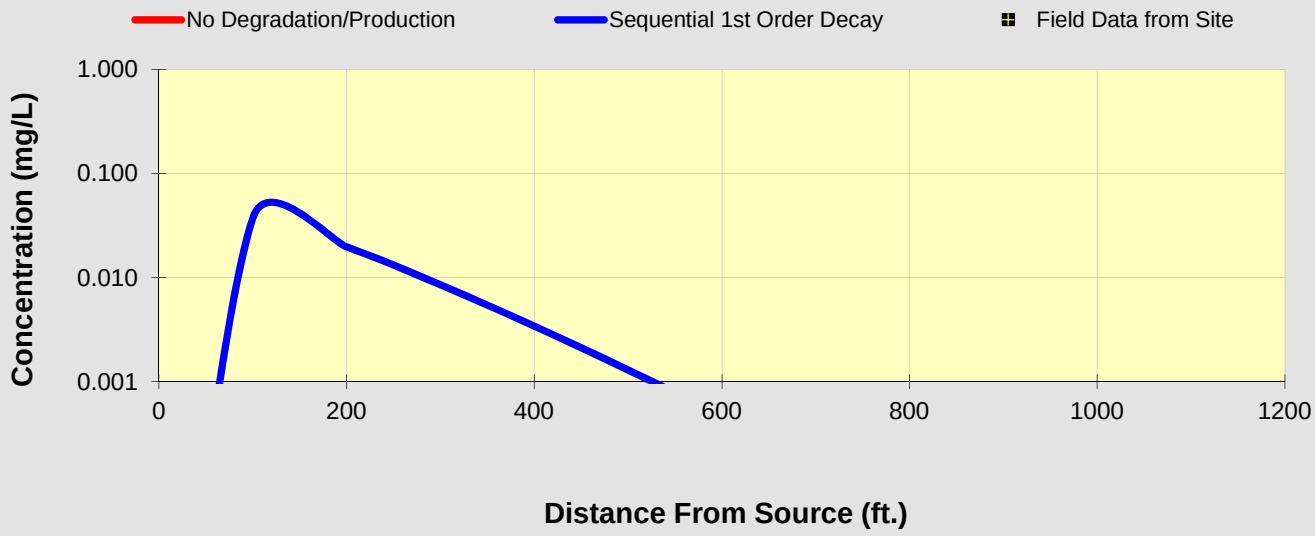
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.037	0.020	0.009	0.003	0.001	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site											



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

40.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ◉ VC ○ ETH

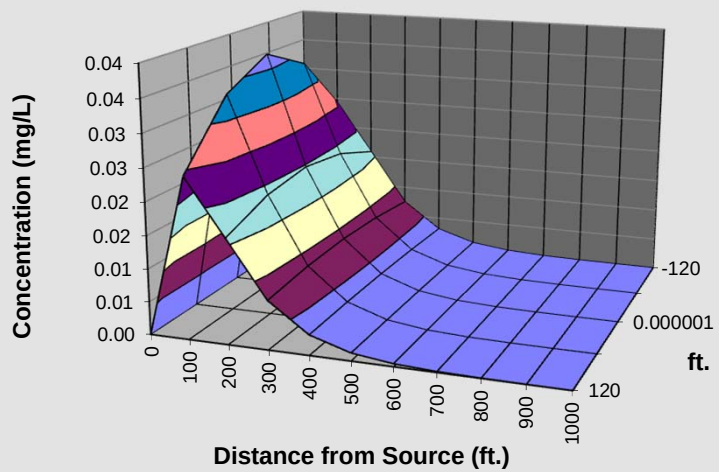
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓ / *Distance from Source (ft)* →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.024	0.016	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.033	0.019	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.000
0	0.000	0.037	0.020	0.009	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.033	0.019	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.024	0.016	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Time: 40 yr Target Level: **0.002** mg/L Displayed Model: **Biotransformation** Displayed Compound: **VC**



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	0.0	*(Kg)*
- Plume Mass If Biotransformation/Production	0.4	*(Kg)*
Mass Removed	-0.4	*(Kg)*

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = **#VALUE!** (source to edge)

See acre-ft

Current Volume of Ground Water in Plume	2.42	*MGal*
Flow Rate of Water Through Source Area	0.000	*MGD*

Compare to Pump and Treat

Pumping Rate		*(gpm)*
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		*(yr)*

Plot All Data Plot Data > Target

Mass HELP **To Centerline** **Return to Input**

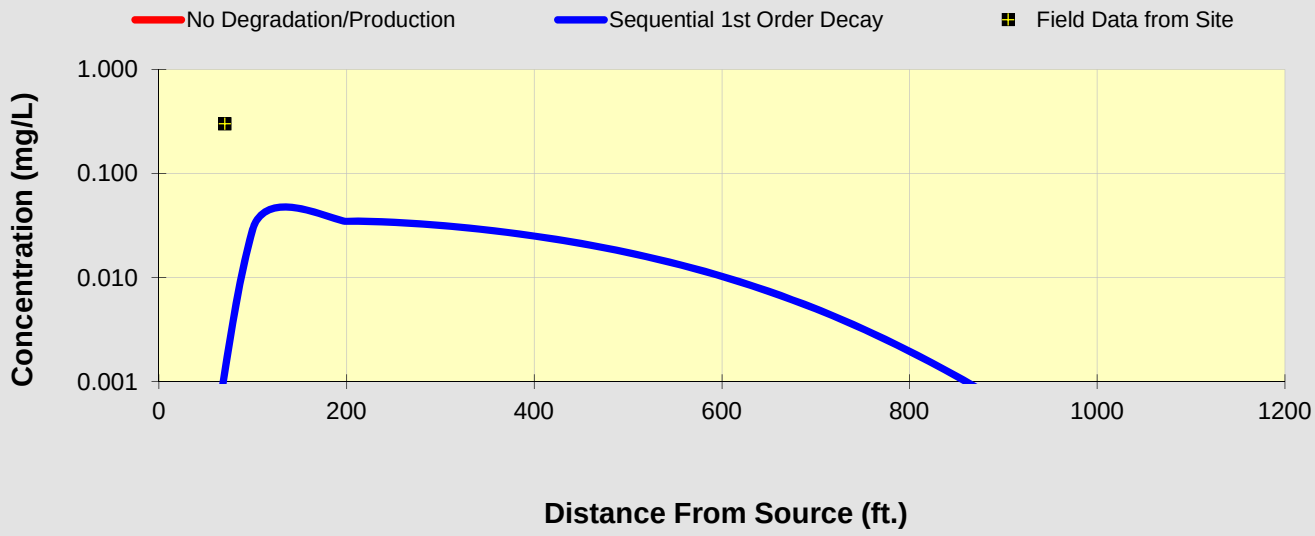
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

ETH	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.029	0.035	0.032	0.025	0.017	0.010	0.005	0.002	0.001	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.300										



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

40.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ○ VC ◉ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

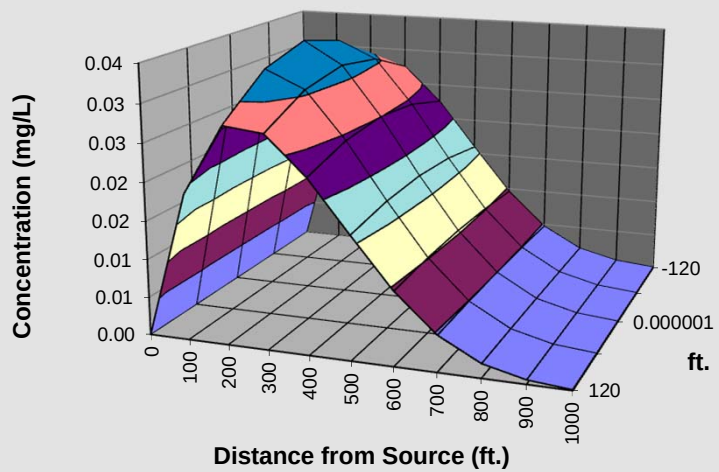
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.019	0.028	0.027	0.023	0.016	0.010	0.005	0.002	0.001	0.000
60	0.000	0.026	0.033	0.031	0.024	0.017	0.010	0.005	0.002	0.001	0.000
0	0.000	0.029	0.035	0.032	0.025	0.017	0.010	0.005	0.002	0.001	0.000
-60	0.000	0.026	0.033	0.031	0.024	0.017	0.010	0.005	0.002	0.001	0.000
-120	0.000	0.019	0.028	0.027	0.023	0.016	0.010	0.005	0.002	0.001	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No Degradation

Show Biotransformation

Displayed Compound

Time: 40 yr Target Level: mg/L Displayed Model: Biotransformation ETH



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.0 (Kg)

- Plume Mass If Biotransformation/Production 0.9 (Kg)

Mass Removed -0.9 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 5.01 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

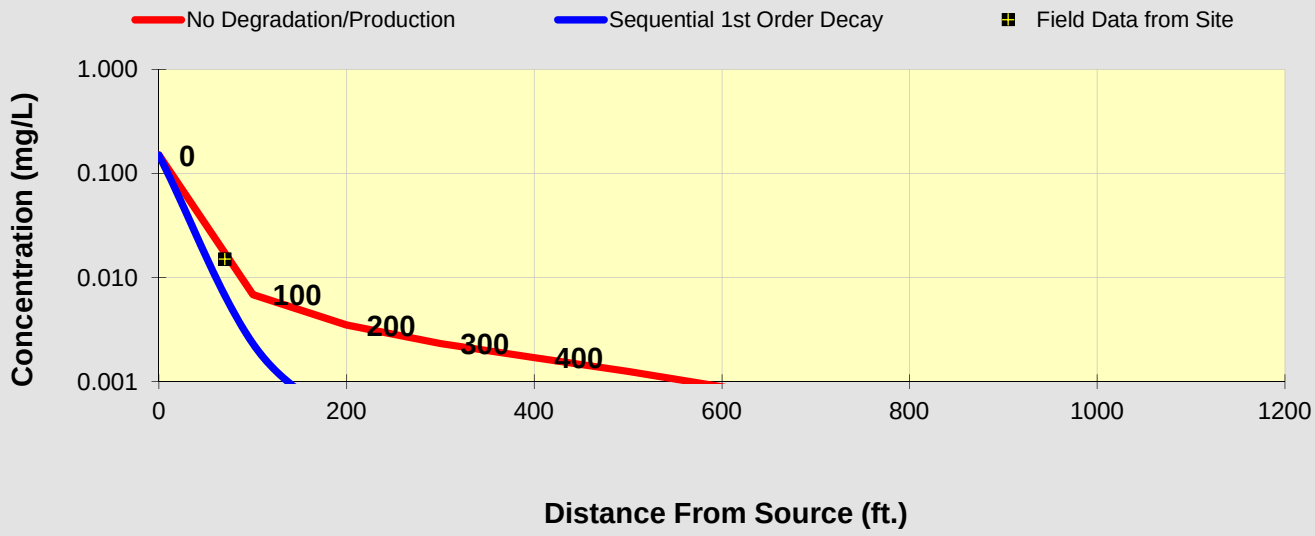
Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

SECTION 4

50 yrs - 2042

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

PCE	Distance from Source (ft)										
	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.150	0.007	0.004	0.002	0.002	0.001	0.001	0.001	0.000	0.000	0.000
Biotransformation	0.1500	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	Monitoring Well Locations (ft)										
	70	290									
Field Data from Site	0.015	0.000									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

50.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → PCE / TCE / DCE / VC / ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

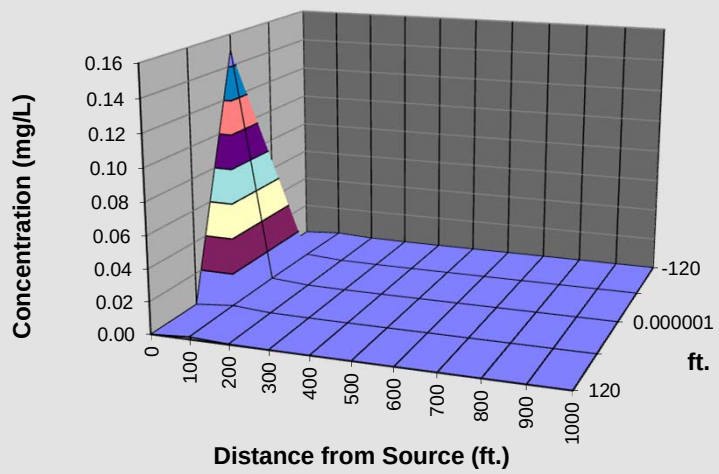
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
0	0.150	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound

Time: 50 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation PCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.2 (Kg)

- Plume Mass If Biotransformation/Production 0.1 (Kg)

Mass Removed 0.1 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed = +43.5%

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 0.16 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

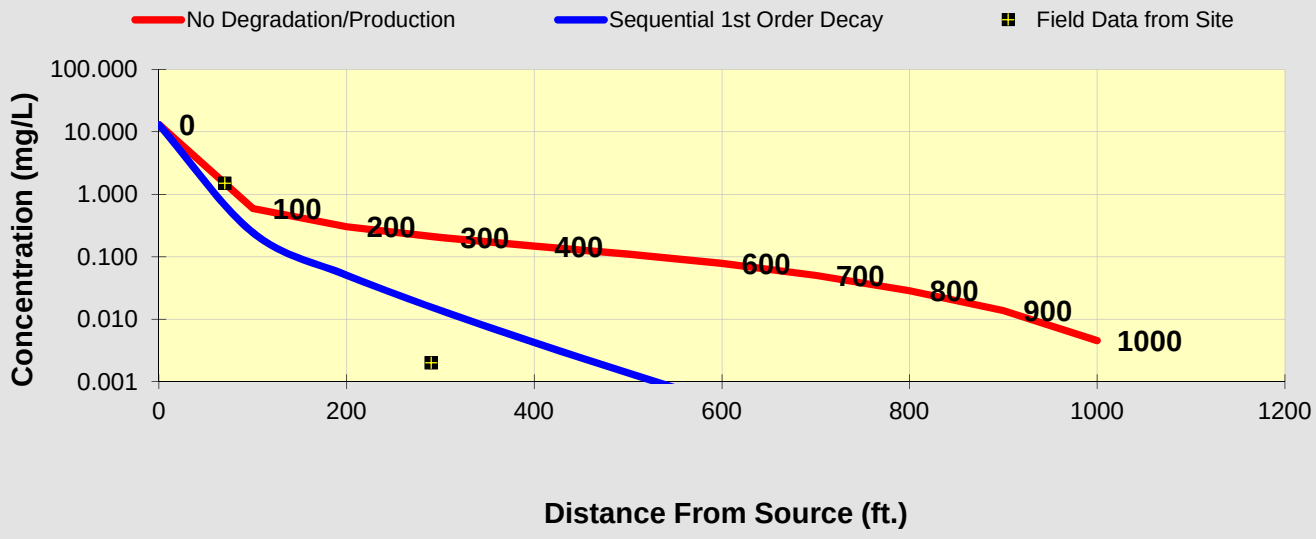
Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

TCE	Distance from Source (ft)										
	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	13.000	0.596	0.304	0.202	0.147	0.109	0.078	0.050	0.029	0.014	0.005
Biotransformation	13.0000	0.243	0.051	0.014	0.004	0.001	0.000	0.000	0.000	0.000	0.000
	Monitoring Well Locations (ft)										
	70	290									
Field Data from Site	1.500	0.002									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

50.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ◉ TCE ○ DCE ○ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

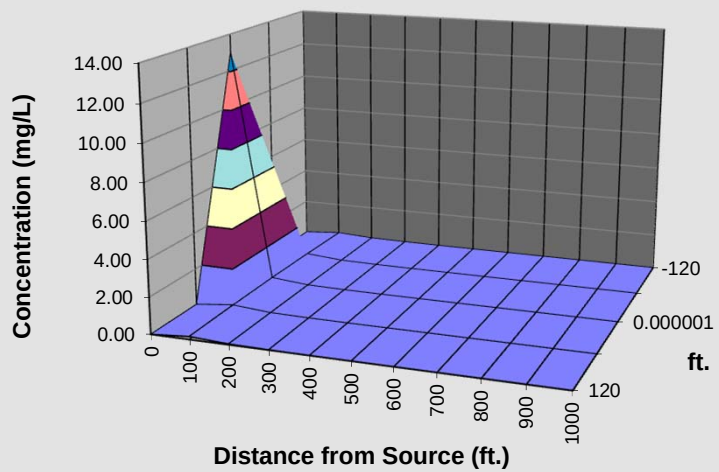
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.159	0.041	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.219	0.048	0.013	0.004	0.001	0.000	0.000	0.000	0.000	0.000
0	13.000	0.243	0.051	0.014	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.219	0.048	0.013	0.004	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.159	0.041	0.012	0.004	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound

Time: 50 yr Target Level: 0.005 mg/L Displayed Model: Biotransformation TCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 17.5 (Kg)

- Plume Mass If Biotransformation/Production 10.3 (Kg)

Mass Removed 7.2 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed = +41.3%

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 2.59 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

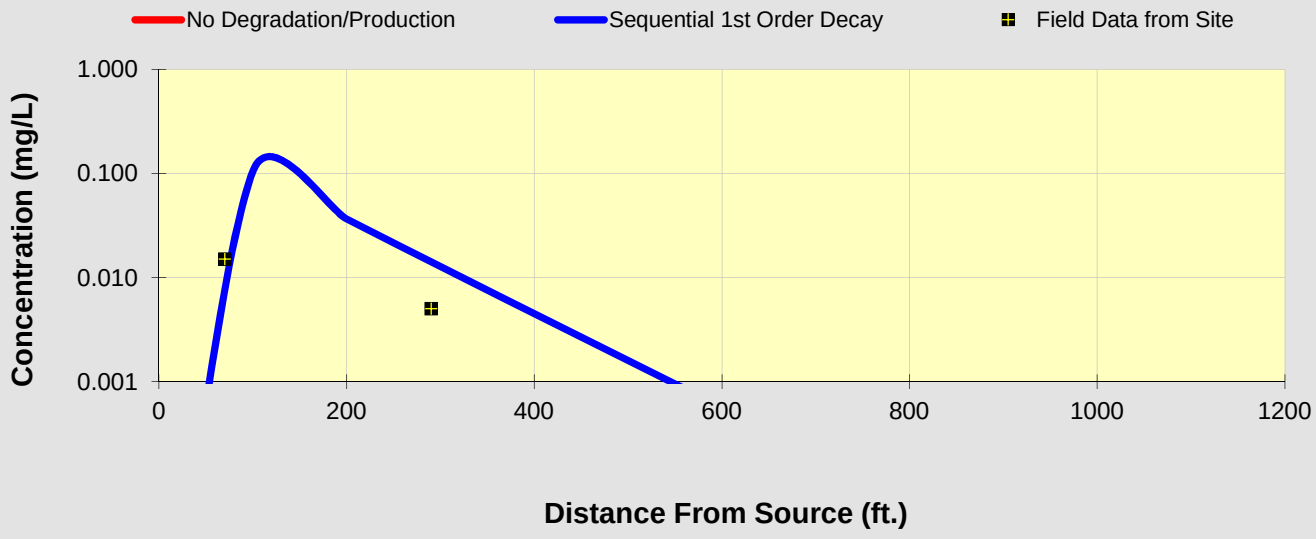
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

DCE	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.104	0.037	0.013	0.004	0.002	0.001	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.015	0.005									



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

50.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ◉ DCE ○ VC ○ ETH

DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

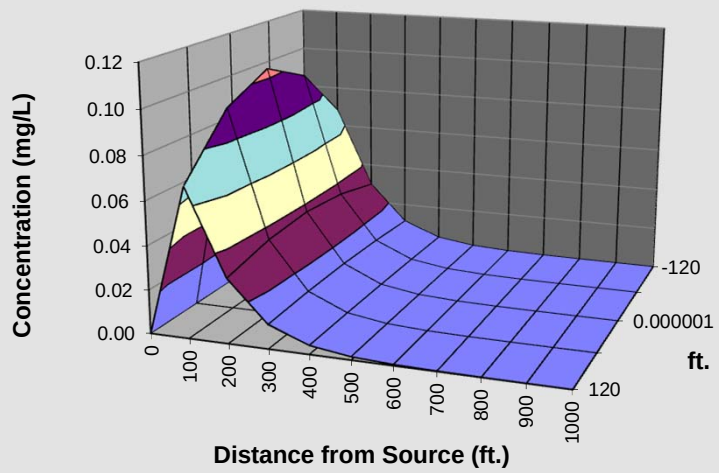
Transverse Distance (ft) ↓ / Distance from Source (ft) →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.068	0.030	0.011	0.004	0.001	0.001	0.000	0.000	0.000	0.000
60	0.000	0.094	0.035	0.012	0.004	0.002	0.001	0.000	0.000	0.000	0.000
0	0.000	0.104	0.037	0.013	0.004	0.002	0.001	0.000	0.000	0.000	0.000
-60	0.000	0.094	0.035	0.012	0.004	0.002	0.001	0.000	0.000	0.000	0.000
-120	0.000	0.068	0.030	0.011	0.004	0.001	0.001	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Displayed Compound

Time: 50 yr Target Level: 0.070 mg/L Displayed Model: Biotransformation DCE



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation 0.0 (Kg)

- Plume Mass If Biotransformation/Production 0.9 (Kg)

Mass Removed -0.9 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = #VALUE! (source to edge)

See acre-ft

Current Volume of Ground Water in Plume 2.42 MGal

Flow Rate of Water Through Source Area 0.000 MGD

Compare to Pump and Treat

Pumping Rate (gpm)

Pore Volumes Removed Per Yr. 0.00

Pore Volumes to Clean-Up

Clean-Up Time (yr)

Plot All Data | Plot Data > Target | Mass HELP | To Centerline | Return to Input

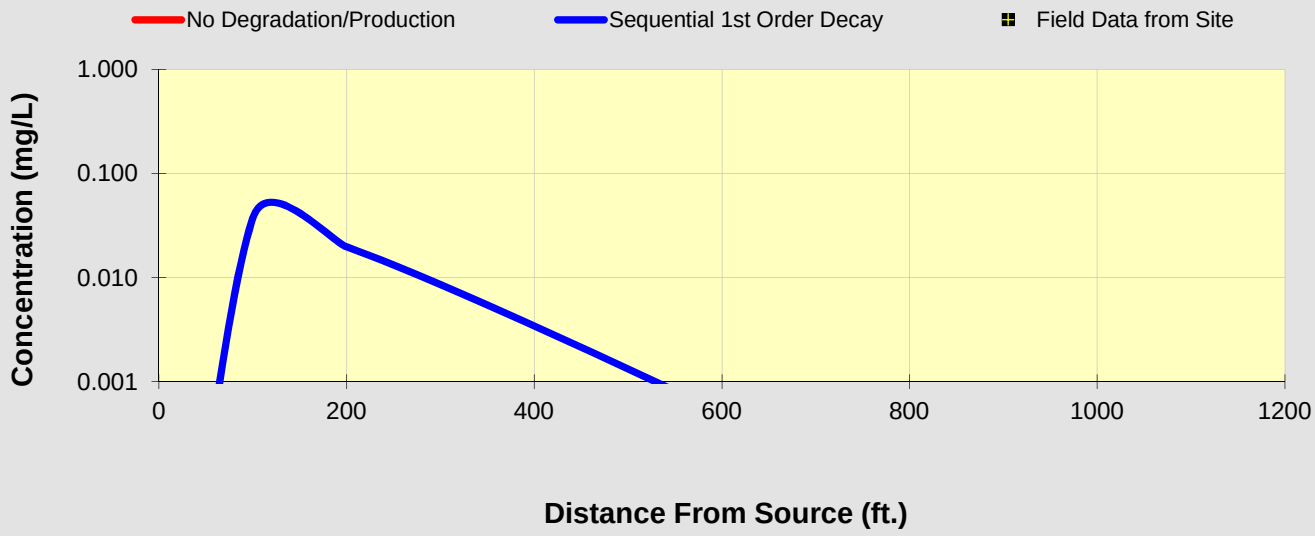
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

VC	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.037	0.020	0.009	0.003	0.001	0.000	0.000	0.000	0.000	0.000

Monitoring Well Locations (ft)

	70	290									
Field Data from Site											



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

50.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ◉ VC ○ ETH

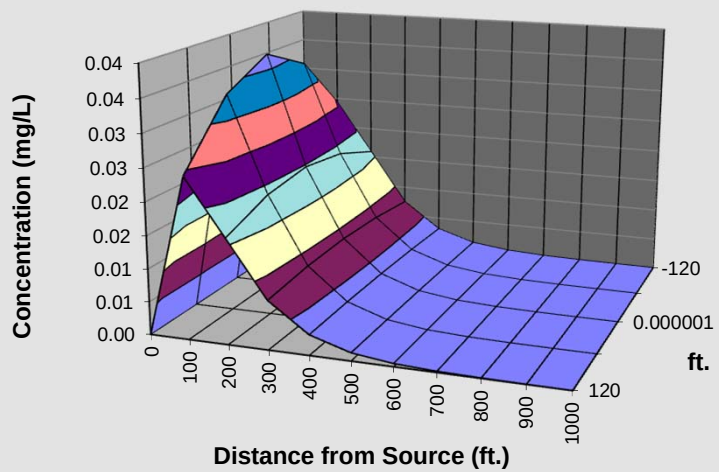
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓ / *Distance from Source (ft)* →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.024	0.016	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000
60	0.000	0.033	0.019	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.000
0	0.000	0.037	0.020	0.009	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-60	0.000	0.033	0.019	0.008	0.003	0.001	0.000	0.000	0.000	0.000	0.000
-120	0.000	0.024	0.016	0.007	0.003	0.001	0.000	0.000	0.000	0.000	0.000
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Time: 50 yr Target Level: **0.002** mg/L Displayed Model: **Biotransformation** Displayed Compound: **VC**



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation	0.0	*(Kg)*
- Plume Mass If Biotransformation/Production	0.4	*(Kg)*
Mass Removed	-0.4	*(Kg)*
% Biotransformed =		
% Change in Mass Rate =	**#VALUE!**	(source to edge)

If "Can't Calc.", make model area longer

See acre-ft

Current Volume of Ground Water in Plume	2.42	*MGal*
Flow Rate of Water Through Source Area	0.000	*MGD*

Compare to Pump and Treat

Pumping Rate		*(gpm)*
# Pore Volumes Removed Per Yr.	0.00	
# Pore Volumes to Clean-Up		
Clean-Up Time		*(yr)*

Plot All Data Plot Data > Target

Mass HELP **To Centerline** **Return to Input**

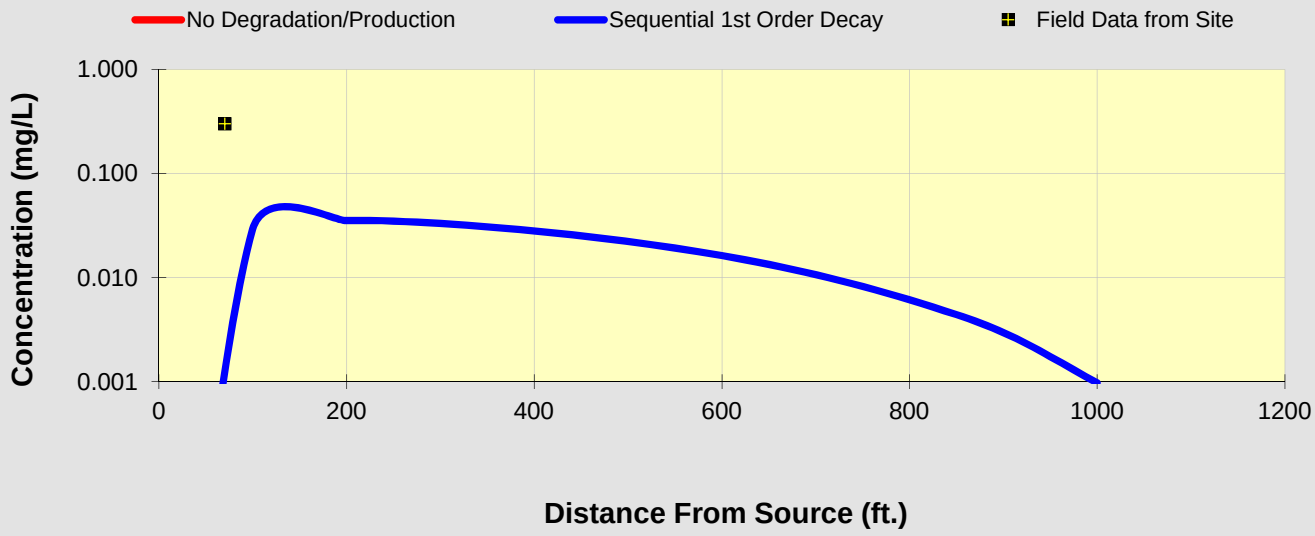
DISSOLVED CHLORINATED SOLVENT CONCENTRATIONS ALONG PLUME CENTERLINE (mg/L) at Z=0

Distance from Source (ft)

ETH	0	100	200	300	400	500	600	700	800	900	1000
No Degradation	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Biotransformation	0.0000	0.029	0.035	0.033	0.028	0.022	0.016	0.011	0.006	0.003	0.001

Monitoring Well Locations (ft)

	70	290									
Field Data from Site	0.300										



See PCE

See TCE

See DCE

See VC

See ETH

Replay

Time:

50.0 Years

Log ⟺ Linear

Return to Input

To All

To Array

Start Here → ○ PCE ○ TCE ○ DCE ○ VC ◉ ETH

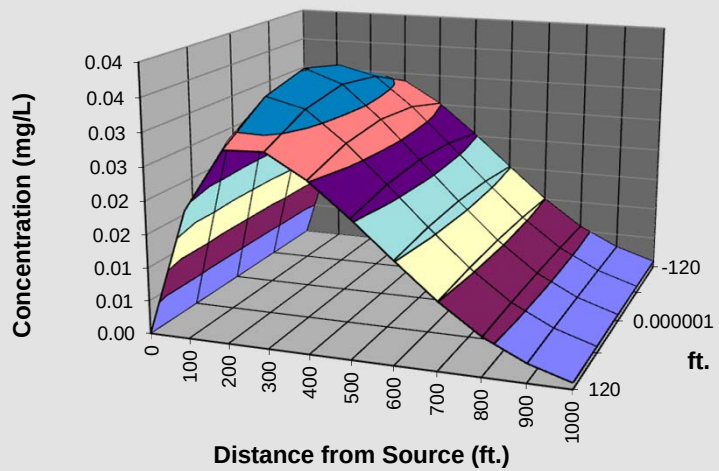
DISSOLVED SOLVENT CONCENTRATIONS IN PLUME

Transverse Distance (ft) ↓ / *Distance from Source (ft)* →	0	100	200	300	400	500	600	700	800	900	1000
120	0.000	0.019	0.028	0.029	0.025	0.020	0.015	0.010	0.006	0.003	0.001
60	0.000	0.026	0.033	0.032	0.027	0.022	0.016	0.011	0.006	0.003	0.001
0	0.000	0.029	0.035	0.033	0.028	0.022	0.016	0.011	0.006	0.003	0.001
-60	0.000	0.026	0.033	0.032	0.027	0.022	0.016	0.011	0.006	0.003	0.001
-120	0.000	0.019	0.028	0.029	0.025	0.020	0.015	0.010	0.006	0.003	0.001
MASS RATE (mg/day)	-	-	-	-	-	-	-	-	-	-	-

Show No

Show Biotransformation

Time: 50 yr Target Level: mg/L Displayed Model: **Biotransformation** Displayed Compound: **ETH**



Plume Mass (Order-of-Magnitude Accuracy)

See Gallons

Plume Mass If No Degradation: 0.0 (Kg)

- Plume Mass If Biotransformation/Production: 1.1 (Kg)

Mass Removed: -1.1 (Kg)

If "Can't Calc.", make model area longer

% Biotransformed =

% Change in Mass Rate = **#VALUE!** (source to edge)

See acre-ft

Current Volume of Ground Water in Plume: 6.46 MGal

Flow Rate of Water Through Source Area: 0.000 MGD

Compare to Pump and Treat

Pumping Rate: (gpm)

Pore Volumes Removed Per Yr.: 0.00

Pore Volumes to Clean-Up:

Clean-Up Time: (yr)

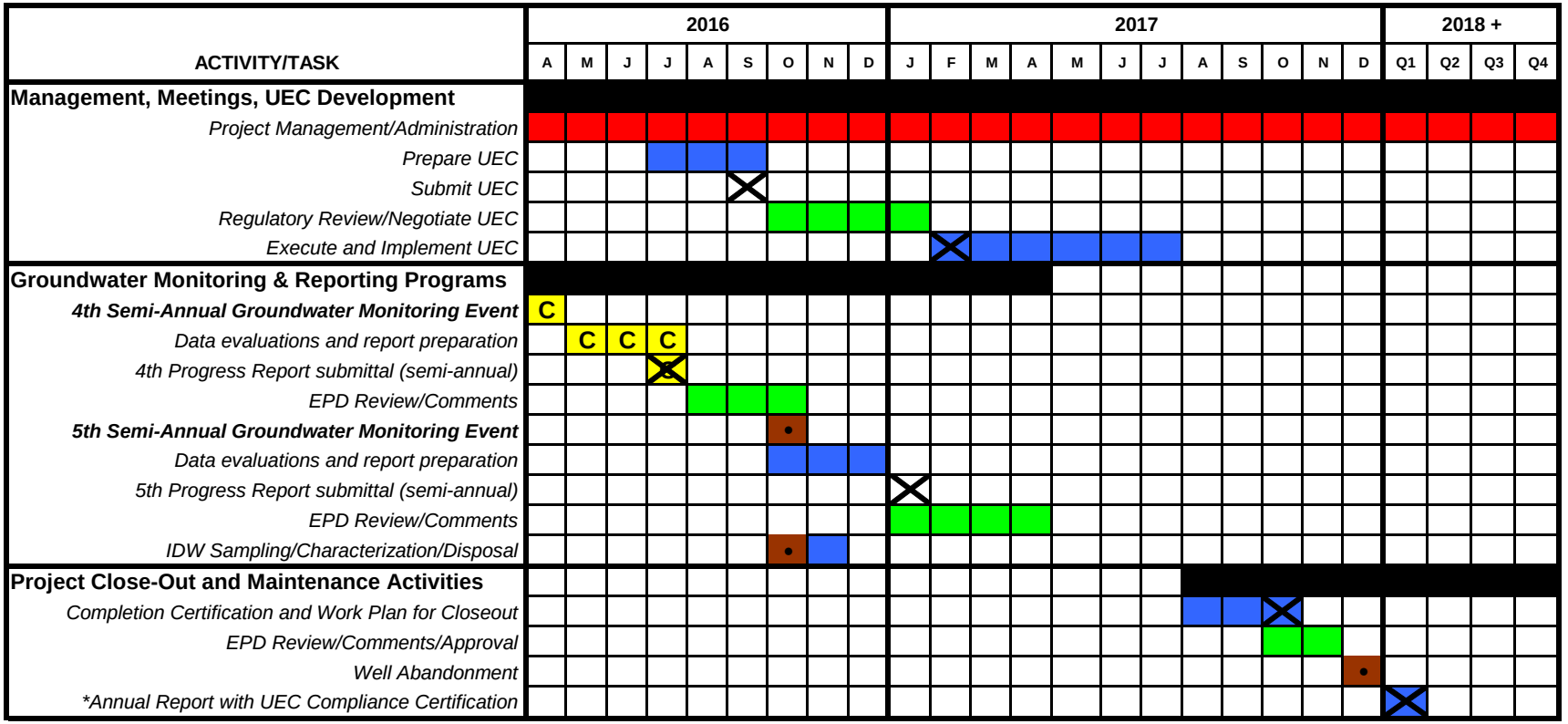
Plot All Data | Plot Data > Target

Mass HELP | To Centerline | Return to Input

APPENDIX F

UPDATED VRP PROJECT SCHEDULE

Project Schedule and Milestones (Updated July 29, 2016)
VRP Remediation Program
OmniSource (Former Loef) Facility, Athens, GA



Notes:

Overall schedule is based on assumption that no additional site investigation will be required, and only one additional semi-annual monitoring event will occur.

*Annual UEC Certification will be required indefinitely while use restriction is applied to the property. Annual submittal dates will be established in final UEC document.

Primary Tasks (Rollup)
Project Management/Administration
Desktop Tasks/Data Evaluation/Reports/Deliverables
Field Programs
Regulatory Reviews/Approvals
Report Submittal/Other Deliverable
Completed Task

APPENDIX G

SUMMARY OF HOURS INVOICED

APPENDIX G

Monthly Summary and Description of Georgia Professional Geologist Hours
January 2016 through July 2016
Former Loef Facility
Athens, Georgia

Kathleen Roush, P.G.		
Monthly Period	Total Hours	Description of Work
January 2016	0.5	Project Management; Follow-up with GAEPD on report review status
March 2016	1.5	Review GAEPD response letter; develop next steps; client communication
April 2016	2.5	Develop/review response letter to GAEPD; review BIOCHLOR inputs; Project Management
July 2016	10.5	4th Progress Report development and review; BIOCHLOR output reruns and review