



DSHW-2019-001602

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Division of Waste Management and Radiation Control
P.O. Box 144880
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February 5, 2019
Project No.: 2249-001D

Div of Waste Management
and Radiation Control

RE: Corrective Action Plan Implementation Report
Former Henries Dry Cleaner
1781 East Murray-Holladay Road
Millcreek, Utah

FEB - 8 2019

Mr. Maulding,

On behalf of our client, Chasebrook Company, Wasatch Environmental, Inc. (Wasatch), is submitting the attached Corrective Action Plan (CAP) Implementation Report which documents corrective action and mitigation measures implemented to address residual chlorinated solvent impacts to soil and groundwater that were identified at the above referenced facility.

At this time, Wasatch would like to proceed with preparation of a Site Management Plan and Environmental Covenant and request regulatory closure of the release.

Please feel free to contact us with any questions, comments, or concerns you may have regarding Cottonwood Square project.

Best regards,

A handwritten signature in black ink, appearing to read "Michael Cronin".

Michael Cronin, P.G.
Senior Geologist/Senior Project Manager

**CORRECTIVE ACTION PLAN IMPLEMENTATION REPORT
FORMER HENRIES DRY CLEANER
COTTONWOOD SQUARE
1781 EAST MURRAY-HOLLADAY ROAD
MILLCREEK, UTAH**

Project No. 2249-001D

Prepared for:

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A handwritten signature in black ink, appearing to read "Michael S. Cronin", written over a horizontal line.

**Michael S. Cronin, P.G.
Senior Project Manager and Senior Geologist**

February 5, 2019

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**CORRECTIVE ACTION PLAN IMPLEMENTATION REPORT
FORMER HENRIES DRY CLEANER
COTTONWOOD SQUARE
1781 EAST MURRAY-HOLLADAY ROAD
MILLCREEK, UTAH**

1. INTRODUCTION

On behalf of Chasebrook Company (Chasebrook), the owner of Cottonwood Square (Facility) and the former Henries Dry Cleaner (release site), Wasatch Environmental, Inc., (Wasatch) has prepared this Corrective Action Plan (CAP) Implementation Report describing the measures taken to address residual chlorinated solvent impacts originating from the release site to soil and groundwater that have been identified at the Facility.

1.1 Release Site Description

The Cottonwood Square Facility, which Chasebrook acquired in December of 2017, is a retail development located at the northwest corner of the intersection of Murray-Holladay Road and Highland Avenue, in Millcreek, Utah (see Figure 1). The Facility occupies a single 4.31-acre parcel (Parcel Number 22-09-202-006-0000). The former Henries Dry Cleaner release site occupies a small portion (approximately 2,800 square feet) of the Cottonwood Square Facility. The former Henries Dry Cleaner release site is located at 1781 East Murray-Holladay Road. Henries Dry Cleaner occupied the northernmost of four tenant spaces in the strip mall building (Southwest Building) located near the southwest corner of the Cottonwood Square Facility (as depicted on Figure 2). The Facility and release site are surrounded by mixed commercial and residential land use. Facility features and surrounding land use are shown on Figure 2.

1.2 Release Site Background

Henries Dry Cleaner occupied the release site from 1982 until 2007 and performed dry cleaning on-site. The results of subsurface investigations indicated the presence of chlorinated solvent impacts to soil, groundwater, soil gas, and indoor air at the release site. The results of these investigations also indicate the presence of two, relatively small, source areas; one under the western portion of the former Henries Dry Cleaner tenant space, and one just outside and northwest of the former Henries Dry Cleaner tenant space. The results of the subsurface investigations indicate that groundwater at the release site and nearby areas have been impacted with chlorinated solvents at concentrations above the United States Environmental Protection Agency (U.S. EPA) Maximum Contaminant Levels (MCLs).

Chasebrook requested regulatory oversight from the Utah Department of Environmental Quality (DEQ), Division of Waste Management and Radiation Control (DWMRC) in June 2018. A CAP was submitted to the DWMRC on July 17, 2018; followed by the submittal of a revised CAP on July 26, 2018. The DWMRC approved the revised CAP in a letter dated August 9, 2018. A copy of the CAP approval letter is presented in Appendix A.

1.3 Release Site Characteristics

Soils at and near the release site generally consist of silts (ML) with varying gravel and cobble content from 0 to 5 feet below ground surface (bgs); silts (ML) and clayey silts (CL-ML) from 5 to 10 feet bgs; and clayey sand (SC), sand with gravel (SP), silt with sand (SM), and sand with silt and gravel (SW) from 10 to 20 feet bgs. The most significant residual chlorinated solvent contamination in soil was evident at depths of 7 to 16 feet (boring location S-2), 8 to 16 feet bgs (boring location S-3), at 5 feet (boring location S-5), and 16 feet (boring location S-6). None of the chlorinated solvent concentrations detected in soil exceeded the U.S. EPA Regional Screening Levels (RSLs) for Industrial Soil or the U.S. EPA RSLs for Residential Soil; however, the residual contaminant mass in soil was high enough to drive vapor intrusion risk and dissolved phase contaminant concentrations in groundwater exceeding the U.S. EPA MCLs and

Vapor Intrusion Screening Level (VISL) Commercial Target Groundwater Concentrations. Historical soil analytical data are presented in Table 1. Sampling locations are shown on Figure 3.

Chlorinated solvents have been detected in groundwater in monitoring well MW-1, located hydraulically cross-gradient from the release site; and monitoring wells MW-3 and MW-9, located hydraulically upgradient of the release site. These detections included vinyl chloride (VC) at concentrations exceeding the U.S. EPA MCL in monitoring wells MW-1 and MW-3. These data indicate a source of chlorinated solvent contamination in groundwater upgradient of the Facility and unrelated to the chlorinated solvent contamination emanating from the release site.

Depth to groundwater in and around the release site varies from approximately 6 to 11 feet bgs with a hydraulic gradient of 0.007 feet per foot to the west. All of the groundwater sampling locations in the vicinity of and within the release site (S-1, S-2, S-3, S-4, S-5, S-6, MW-6, MW-10, and MW-11) have exhibited chlorinated solvent concentrations in excess of the U.S. EPA MCLs for one or more of the following compounds: tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (DCE), *cis*-1,2-dichloroethene (*cis*-1,2-DCE), *trans*-1,2-dichloroethene (*trans*-1,2-DCE), or VC. The highest concentrations of PCE and TCE were in source area sampling locations S-2 and S-3. Downgradient sampling locations B-3 and B-4 also exhibited chlorinated solvent concentrations in excess of the U.S. EPA MCLs. Sampling location B-3 exceeded the U.S. EPA MCLs for PCE, TCE, *cis*-1,2-DCE, and VC. Sampling location B-4 exceeded the U.S. EPA MCL for TCE. Historical groundwater analytical data are presented in Table 2. Sampling locations are shown on Figure 3.

PCE and TCE concentrations in sub-slab soil gas exceeded the U.S. EPA VISL Commercial Target Sub-slab and Exterior Concentration indicating a risk for vapor intrusion at the tenant space formerly occupied by Henries Dry Cleaner (sampling locations SSV-5, SSV-6, SS-1, and SS-2), as well as the tenant space two doors south of the former Henries Dry Cleaner (sample locations SSV-4 and SS-3). Although never sampled, a similar vapor intrusion risk is assumed for the nail salon tenant space located one door south of the former Henries Dry Cleaner. Historical sub-slab soil gas analytical data are presented in Table 3. Sampling locations are shown on Figure 3.

Concentrations of PCE in indoor air in the tenant space formerly occupied by Henries Dry Cleaner exceeded the U.S. EPA RSLs for Industrial Indoor Air at sample locations IA-4 (sample collected in 2012) and IA-1 (sample collected in 2017). Concentrations of TCE in indoor air in the tenant space formerly occupied by Henries Dry Cleaner has exceeded the U.S. EPA RSLs for Industrial Indoor Air at sample locations IA-4 and IA-5 (samples collected in 2012). No other instances of the U.S. EPA RSLs for Industrial Indoor Air having been exceeded have been documented for the other tenant spaces in the strip mall. Historical indoor air analytical data are presented in Table 4. Sampling locations are shown on Figure 3.

1.4 Objectives

Chasebrook intends to continue the current commercial land use at the Facility which includes the Southwest Building containing the release site for the foreseeable future; therefore, the objective of this corrective action is to remediate soil and groundwater and mitigate indoor air from impacts originating from the release site, to meet conditions acceptable for the continued commercial use of the property and to limit off-site migration of dissolved phase contamination. Wasatch anticipates a regulatory closure status of corrective action complete with controls (CACWC) due to the likelihood that the U.S. EPA MCLs and/or VISL Target Groundwater Concentrations may not be achieved in the short-term which will result in a requirement for groundwater monitoring, and that engineering controls (i.e., vapor barrier and sub-slab depressurization system, etc.) will be required to ensure that chlorinated solvent concentrations in indoor air are maintained at acceptable levels for the continued commercial use of the Southwest Building.

1.5 Cleanup Levels

The cleanup levels for this corrective action are the U.S. EPA RSLs for Industrial Soil for soil; U.S. EPA MCLs for groundwater to be protective relative to the groundwater ingestion exposure pathway and the U.S. EPA VISL Commercial Target Groundwater Concentrations for groundwater to be protective relative to the vapor intrusion exposure pathway; and the U.S. EPA RSLs for Industrial Indoor Air for indoor air. The referenced cleanup levels are presented on Tables 1, 2, 3, and 4.

1.6 Corrective Action Measures

Given the release site and general vicinity characteristics, nature and distribution of contaminants, and proposed future land use; Wasatch implemented *in situ* chemical reduction (ISCR) of the contaminants in the vadose zone and saturated zone by injection of a zero valent iron (ZVI) slurry into the two source areas. Details regarding these corrective action measures are provided in Sections 3 and 4 of this report.

1.7 Engineering Controls and Proposed Institutional Controls

Wasatch installed a vapor barrier and passive vapor mitigation system (VMS) in the tenant space formerly occupied by Henries Dry Cleaner. These engineering controls will reduce the potential for vapor intrusion into the strip mall structure. Details regarding these engineering controls are provided in Sections 3 and 4 of this report.

Wasatch anticipates that an environmental covenant (EC) and site management plan (SMP) will be required for regulatory closure of the release to reduce the probability of exposure to the contaminants by specifying how the area impacted by the release, to be specified within the SMP and EC as the Restricted Property, may and may not be used (e.g., forbidding the extraction and use of shallow groundwater and requiring vapor barriers for new structures). These controls would be protective of potential future occupants of the Restricted Property and would facilitate regulatory closure of the release with residual soil and/or groundwater contamination left in place. The EC and SMP would be subject to review and approval by the DWMRC and the SMP would also be subject to a 30-day public comment period.

2. PERMITTING AND NOTIFICATION REQUIREMENTS

2.1 Blue Stake Utility Clearance

Wasatch submitted a utility clearance request (Ticket Number A82470694-00A) to Blue Stake Utility Notification Center on September 4, 2018. The Blue Stake Ticket Number was communicated via email to the direct-push drilling contractor on the same date so that they could duplicate the request. A copy of the email confirmation from Blue Stake is presented in Appendix B.

2.2 Underground Injection Control Permit

Wasatch submitted an "Underground Injection Control (UIC) Inventory Form for Subsurface Environmental Remediation (SER) Injection Wells" to the Division of Water Quality (DWQ) on August 8, 2018. The DWQ approved the UIC permit by email on August 16, 2018. On October 3, 2018, following completion of the injections, Wasatch submitted a "Reporting Form for Change of Operating Status for Class V UIC Wells Authorized by Rule" to notify the DWQ that the injection wells were no longer in active use and had been abandoned. Documentation related to the UIC permit is presented in Appendix C.

2.3 Notification to Salt Lake County Health Department

Wasatch notified Mr. Gary Edwards, of the Salt Lake County Health Department, of the pending corrective action by email on August 23, 2018. The email was copied to Mr. Brad Maulding and Mr. Eric Baiden, both with the DWMRC. The notification stated that the corrective action would commence on September 10, 2018. A copy of the email notification is presented in Appendix D.

2.4 Division of Air Quality

Wasatch contacted Mr. Marty Gray, of the Division of Air Quality (DAQ), regarding the DAQ requirements for monitoring the emissions from the passive VMS. Mr. Gray stated that the DAQ currently requires monitoring of passive VMSs in accordance with R307-401-15. Wasatch is working with the DAQ to implement a rule change that would exempt passive VMSs from the monitoring and reporting requirements under R307-401-15; however, until an exemption is provided by rule, Wasatch will monitor and report emissions in accordance with R307-401-15 to the extent that the data support such reporting.

2.5 Public Notice

On August 16, 2018, Wasatch distributed written notices to the occupants of the neighboring tenant spaces notifying them of the pending corrective action and advising them of the schedule for the corrective action. A copy of the written notice is presented in Appendix E.

3. CORRECTIVE ACTION METHODS

3.1 ISCR - ZVI Injections

From September 10 through 15, 2018, Wasatch implemented ISCR of the contaminants in the vadose zone and saturated zone by injection of a ZVI slurry into the two source areas. See Appendix F for a photographic log of remediation activities. The ZVI product was provided by CERES Corporation (CERES), emplaced using specialized hydraulic fracturing and injection tooling by GeoTactical Remediation (GeoTactical), using direct-push drilling equipment operated by Direct Push Services (DPS), and with oversight by Wasatch. The ZVI product used for this project is Micro Blend (see Appendix G for additional information). The ZVI powder was mixed with water as specified by the manufacturer to form a slurry and then injected into the subsurface. The spacing of borehole locations and ZVI dosing was based on an assumed radius of influence of 4 feet in the vadose zone and an assumed radius of influence of 6.5 feet in the saturated zone. Actual boring locations were determined in the field based on the location of utilities and structures. The locations of the injection borings are shown on Figure 4.

Where injections were performed within the footprint of the strip mall structure, holes were cored through the concrete floor slab to facilitate drilling and injection. The holes were patched with cement following completion of the injections at each boring location.

Injections were first performed in the saturated zone (depths of 8 to 20 feet bgs). Saturated zone injections were performed in nine borehole locations. At three of the saturated zone injection boreholes minor surfacing occurred; therefore, Wasatch stepped out several feet and injected the remainder of the slurry at the appropriate depths. The ZVI slurry consisted of approximately 1.913 pounds of ZVI per gallon of water. At each borehole location, injections were performed top-down at seven injection intervals on approximately 2-foot vertical spacings between injection intervals. A total of approximately 530 gallons of ZVI slurry (containing 1013.9 pounds of ZVI) was planned for injection at each borehole location (or approximately 75.7 gallons of slurry containing 144.8 pounds of ZVI per injection interval). The total ZVI mass expected to be injected into the saturated zone at the release site was 9,125 pounds (4,770 gallons of ZVI slurry).

After injections into the saturated zone were completed, injections into the vadose zone (depths of 0 to 8 feet bgs) were performed. Saturated zone injections were performed in 22 borehole locations. At one of the vadose zone injection boreholes minor surfacing occurred; therefore, Wasatch stepped out several feet and injected the remainder of the slurry at the appropriate depths. The ZVI slurry consisted of approximately 1.440 pounds of ZVI per gallon of water. At each borehole location, injections were performed top-down at four injection intervals on approximately 2-foot vertical spacings between injection intervals. A total of approximately 80 gallons of ZVI slurry (containing 115.2 pounds of ZVI) was planned for injection at each borehole location (or approximately 3.64 gallons of slurry containing 5.24 pounds of

ZVI per injection interval). The total ZVI mass expected to be injected into the saturated zone at the release site was 10,140 pounds (7,040 gallons of ZVI slurry).

3.2 Installation of Passive VMS

On October 12 and 15, 2018, Wasatch installed a passive VMS, to be used in conjunction with a vapor barrier (as discussed below), to mitigate the accumulation of chlorinated solvent vapors beneath the floor slab of the strip mall structure following the ISCR injections. The passive VMS was constructed so as to be easily converted to an active VMS should the need arise. The VMS was installed near the southwest corner of the release site with the collection pipe penetrating the floor slab of the release site near the southwest corner of the release site. The approximate location of the VMS is shown on Figure 4. The passive VMS system consisted of 4-inch PVC piping that penetrated approximately 6 inches below the bottom of the concrete floor surface and extended to approximately four feet above the roof line of the building after being routed through the western exterior wall. The portion of the PVC pipe that extended below the concrete surface was perforated and coarse-grained sand was placed around the perforations. The concrete penetration was then sealed with silicone sealant and finally by the Retro-Coat® vapor barrier material. Additionally, a 4-inch ventilator turbine was attached to the top of the vent stack to promote advective air flow during windy conditions. The general construction of the passive VMS is presented in Appendix H.

3.3 Installation of Vapor Barrier

From November 12 through 27, 2018, Wasatch oversaw the installation of a vapor barrier covering the entire area of the floor slab in the former Henries Dry Cleaner tenant space. Prior to application of the primer coat, cracks and joints in the floor slab were filled and the surface of the floor slab was prepared in accordance with the manufacturer's recommendations. The vapor barrier consisted of a 20-mil layer of Retro-Coat® (two coats of 10-mil each) over a 6-mil primer coat. Retro-Coat® is a two-part epoxy-based coating that is highly durable. Sand was added to the Retro-Coat to provide a non-slip surface. The vapor barrier was installed by Russ Hall Floor Coverings, a contractor certified by the product manufacturer (Land Science Technologies). The vapor barrier was installed after confirmation soil sampling was been completed. The approximate location of the vapor barrier installation is shown on Figure 4. Specifications and installation instructions for the vapor barrier are provided in Appendix I.

3.4 Waste Characterization Sampling

A small quantity of soil and groundwater waste was generated during the soil confirmation sampling and groundwater monitoring activities.

Soil cuttings remaining after the soil confirmation sampling was completed were contained in a properly labeled 55-gallon drum. Due to the small volume of soil in the drum (approximately 1 cubic foot), and that fact that analyte concentrations in soil are known to be consistently below the RSLs for Residential Soil, the Utah DWMRC agreed that waste characterization sampling of the remaining soil was not required, and that the soil could be disposed in a nearby general waste dumpster located at the Facility.

Purge water generated during the groundwater monitoring activities was contained in a properly labeled 55-gallon drum. Approximately 3.5 gallons of purge water was generated during the groundwater monitoring activities. At the time of this report, water waste characterization sampling has not been completed. Wasatch plans to accumulate additional purge water before collecting the waste characterization samples, at which time, Wasatch will complete the appropriate waste profiles to be approved by the facility receiving the waste based on the waste characterization sample results.

Wasatch will arrange for proper transport and disposal of the waste groundwater.

3.5 Soil Confirmation Sampling

Although the proposed cleanup levels for the release site are the U.S. EPA RSLs for Industrial Soil, which are currently met, there is technical value in sampling soil at select locations at the release site to verify that contaminant mass reductions in soil are occurring, and that the ISCR approach has resulted in lower chlorinated solvent concentrations in soil, soil gas, and groundwater.

On October 15, 2018, Wasatch Project Hydrogeologist, Blake Downey, P.G., directed the completion of five soil borings (designated CS-1 through CS-5), using direct-push drilling techniques, to evaluate soil conditions at the release site post injection activities. For comparison purposes, Wasatch advanced our soil borings at the same location as the following historical boring locations, and Wasatch sampled at the same depth intervals:

- Historical sample location S-1 at a depth of 8 feet bgs (soil boring CS-4 completed at this location),
- Historical sample location S-2 at depths of 8 feet and 12 feet bgs (soil boring CS-3 completed at this location),
- Historical sample location S-3 at a depth of 8 feet bgs (soil boring CS-5 completed at this location),
- Historical sample location S-4 at depths of 3 feet and 12 feet bgs (soil boring CS-2 completed at this location), and
- Historical sample location S-5 at a depth of 5 feet bgs (soil boring CS-1 completed at this location).

DPS advanced the soil borings using a GeoProbe Model 7822 DT, track mounted, direct-push drill rig; and using a limited access attachment. The boring locations are shown on Figure 3.

Soil borings were advanced to a depth of 8 to 14 feet below ground surface (bgs). Soil samples from the borings were collected using 5-foot long, by 1.5-inch diameter, discrete interval push samplers equipped with disposable polybutyrate liners. Drill rods were decontaminated between each soil boring. The soil cores were field logged by an experienced geologist. The field logging included a description of color, consistency, odor, staining, and soil type based on the Unified Soil Classification System. The soil cores were screened in the field using a photoionization detector (PID) equipped with a 11.7 electron volt lamp. The PID was calibrated with a 100-parts per million isobutylene standard calibration gas. The PID is utilized to identify soils which may have been impacted by volatile VOCs such as those found in petroleum fuels and some solvents.

Soil samples were collected with gloved hands. Soil samples collected for VOC analysis were collected using U.S. EPA Method 5035A, using a disposable sampling device provided by the laboratory specifically for use with the closed-system purge and trap analytical method. VOC samples were collected from each sample interval for both low-range (0.5 to 250 micrograms per kilogram [$\mu\text{g}/\text{kg}$]) and high-range ($>250 \mu\text{g}/\text{kg}$) laboratory analysis of VOCs. Low-range samples were collected in 5-gram (g) aliquots and placed in laboratory-supplied, unpreserved, volatile organic analysis (VOA) bottles, and immediately placed in a cooler with dry ice. High-range samples were collected in 10g-aliquots, placed in laboratory-supplied VOA bottles preserved with methanol, and immediately placed in a cooler with ice. All soil VOC samples were delivered under chain-of-custody protocol to American West Analytical Laboratories (AWAL), a Utah-Certified analytical laboratory for analysis of VOCs by U.S. EPA Method 8260C.

All soil cuttings were containerized in a 55-gallon drum and labeled as "pending analysis."

The drill rods were decontaminated prior to the start of drilling activities and between boring locations. The equipment was decontaminated by pressure washing each piece of drill rod to remove gross contaminants. Next, the equipment was washed with an Alconox® and distilled water solution. Finally, the drill rod was double rinsed with distilled water.

Following the completion of sampling activities, the soil borings were backfilled with bentonite pellets, hydrated, and patched with concrete to match the existing surface at each boring location.

3.6 Emissions Sampling

Two monthly emissions samples (EM-1) have been collected from the vent stack of the passive sub-slab ventilation system. One sampling event was completed on November 29, 2018, and the second on January 2, 2019.

Prior to and following emissions sampling, the airflow, temperature, and PID readings of the vent stack were recorded. The air flow and temperature readings were collected using a Dwyer anemometer, and the PID reading was collected using the PID instrument described in Section 3.5. Additionally, a general observation of the outside wind speed and the vent stack ventilator turbine were completed for each sampling event.

A sample regulator equipped with a 30-minute flow restrictor and 6-liter Summa canister were provided by ALS Environmental (ALS) for each sample. A sample regulator was attached to the 6-liter Summa sample canister. The procedure for collecting each emissions sample began by checking the initial vacuum in each 6-liter Summa canister. Initial vacuums were recorded on the chain-of-custody forms provided by ALS. Tubing was connected directly to the vent stack using a barbed fitting that was screwed into the sample port on the vent stack. The opposite end of the tubing was connected to the sample regulator for the Summa canister. The valve for the Summa canister was then opened and a sample was collected for a period of approximately 30 minutes. The vacuum gauge on the sample regulator was monitored, with decreasing vacuum indicating that the sample was being collected into the Summa canisters. After 30 minutes the final vacuum on the Summa canister was recorded, the valve on the Summa canister was closed, the Summa canister was disconnected from the sample ports, and a brass dust cap was tightened to the inlet of the Summa canister. The canister was labeled with the appropriate sample location, as well as initial and final vacuum readings. Chain-of-custody documentation was completed, and the samples were delivered to ALS for VOC analysis using U.S. EPA Method TO-15.

3.7 Groundwater Sampling

From December 17 to 18, 2018, groundwater monitoring activities were completed at the release site and included collecting groundwater elevation data and the collection of groundwater samples from each of the following monitoring wells: MW-1, MW-2, MW-3, MW-6, MW-10, and MW-11. All monitoring well locations are presented on Figure 3.

Groundwater monitoring was conducted using low-flow sampling techniques following U.S. EPA guidelines, using a peristaltic pump and a multi-parameter, In-Situ® AquaTROLL® meter, to allow for the collection of additional geochemical data including temperature, specific conductivity, pH, oxidation-reduction potential (ORP), dissolved oxygen (DO), and turbidity.

The sampling procedure involved inserting ¼-inch outside diameter, low-density polyethylene (LDPE) tubing into each monitoring well. The tubing was run through a peristaltic pump, then to a flow cell to which a multi-parameter, AquaTroll meter was attached, and finally to a 5-gallon bucket to collect the purge water. Initial water levels were measured and recorded prior to the initiation of pumping. Once pumping was initiated, water levels, pumping rate, cumulative volume purged, water temperature, specific conductivity, pH, ORP, DO, and turbidity were recorded at five-minute intervals until stabilization was achieved. Pumping rates were maintained at a rate between 60 and 80 milliliters per minute to minimize drawdown. Stabilization was defined as three consecutive measurement intervals where temperature and specific conductivity were +/- 3%, pH was +/- 0.1, DO was +/-10% (or less than 0.5 milligrams per liter [mg/L]), and turbidity was +/- 10% (or less than 5 nephelometric turbidity units [NTUs]). After stabilization was achieved, the tubing was disconnected from the flow cell and the groundwater samples were dispensed into 40-milliliter capacity, glass vials with Teflon® septa caps. The vials, which were supplied by the analytical laboratory, contained several drops of hydrochloric acid as a preservative. The vials were filled slowly until a meniscus formed at the top of each vial, then each vial was sealed with a

septa cap. This procedure eliminates headspace within the vials and minimizes the loss of volatiles. The sample vials were each labeled with the analysis required, samplers name, sample identification, sample location, date, and time of sample collection. The samples were placed in a cooler with ice and transported under chain-of-custody protocol to AWAL for analysis. Groundwater samples were analyzed for VOCs using U.S. EPA Method 8260C. All groundwater sampling supplies were disposable; therefore, decontamination of sampling equipment was not required. Purge water was contained in a properly labeled 55-gallon drum for proper disposal.

3.8 Indoor Air Sampling

One indoor air sample (IA-8) was collected from the tenant space formerly occupied by Henries Dry Cleaner, one indoor air sample (IA-6) was collected from LA Nail Salon (adjoins the former Henries Dry Cleaner to the south), and one indoor air sample (IA-7) was collected from the vacant tenant space located immediately south of the LA Nail Salon. Each tenant space is located within the same strip mall structure. An outdoor air sample (OA-2) was also collected to allow for the evaluation of analyte concentrations present in ambient outdoor air.

Immediately prior to collecting indoor air samples, the tenant of the LA Nail salon was interviewed to ascertain whether or not dry cleaned clothing had been brought into the space, recent renovations have been completed, or carpets have been professionally cleaned, within the preceding two weeks. The manager of the LA Nails Salon stated that no dry-cleaned clothing had been brought in, no recent renovations had been completed, and there was no carpet in this tenant space. The other two tenant spaces sampled were vacant at the time of sampling.

Chemical inventories were also performed prior to sampling activities at each tenant space to identify and remove any consumer products containing chemicals of concern such as chlorinated solvents. These procedures were followed to reduce the potential for false positive results in the indoor air samples (i.e., the detection PCE in indoor air resulting from sources inside the tenant spaces rather than from beneath the floor slabs). No products containing chemicals of concern were observed within any of the sampled tenant spaces.

On December 17, 2018, Wasatch personnel collected the outdoor air and each of the indoor air samples from the described tenant spaces. The approximate sample locations are shown on Figure 3.

Techniques for collecting the indoor and outdoor air (ambient background sample) samples began by checking for a vacuum in each 6-liter Summa canister supplied by the laboratory. Initial vacuums were recorded on the chain-of-custody form. A 6-liter Summa canister was then be placed at an appropriate height (breathing zone) for sample collection at each indoor air sample location. A sample regulator with a flow restrictor was provided by the laboratory for each sample location. A sample regulator was attached to each 6-liter Summa canister. The vacuum gauge on the flow restrictor would be monitored, with decreasing vacuum indicating that ambient indoor air is being collected into the sample canister. The outdoor air sample was placed on the top of the roof of the strip mall structure near a main air intake unit. All samples were collected for approximately 8 hours. Final vacuums were recorded on the chain-of-custody form provided. The valves on the sample canisters were then closed, sample regulators were removed, and the brass dust caps tightened to the inlet of the sample canisters. Each canister was labeled with the appropriate sample location, as well as initial and final vacuum readings. Chain-of-custody documentation was completed, and the samples were delivered to ALS for the analysis of chlorinated solvents (VOX) by U.S. EPA Method TO-15.

4. CORRECTIVE ACTION RESULTS

The following sections of this report present the results of the corrective action conducted in connection with the documented release originating from the release site. All corrective action activities were performed by Wasatch and our subcontractors in accordance with Wasatch's general health and safety policy. A site-specific health and safety plan was prepared to address specific health and safety concerns

and establish protocols for conducting work related activities in a safe manner. The health and safety plan was on-site at all times during the corrective action. Daily health and safety tailgate meetings were conducted by Wasatch during the corrective action.

4.1 ISCR - ZVI Injections

The total volume of ZVI slurry injected at the release site was approximately 6,640 gallons containing a total of 19,200 pounds of ZVI. A total of 35 borehole locations (23 locations in the vadose zone and 12 locations within the saturated zone) were used to emplace the ZVI. Fluid surfacing was occasionally observed while injecting; however, Wasatch considers the volume of fluid that surfaced to be minor for the majority of the locations where surfacing occurred. See Table I of the GeoTactical report in Appendix G for the specific volume and ZVI mass emplaced at each injection interval.

4.2 Installation of Passive VMS

The passive VMS was successfully installed in the southwest portion of the former Henries Dry Cleaner tenant space (release site).

4.3 Installation of Vapor Barrier

The vapor barrier was successfully installed within the former Henries Dry Cleaner tenant space (release site) per manufacture specifications.

4.4 Waste Characterization Sampling

The Utah DWMRC agreed that waste characterization sampling of the remaining soil was not required, and that the soil could be disposed in a nearby general waste dumpster located at the Facility.

At the time of this report, no waste characterization sampling of the purge water has been completed.

4.5 Soil Sampling

Soils at the release site generally consist of sandy gravel fill (GW), silt/sandy silt (ML), and silty sand (SM). It appears the fill material is present within the top foot of soil beneath the strip mall building. Depth to groundwater was approximately 8 feet bgs. Black soil staining was observed in borings CS-1 and CS-2 at approximately 3.9 to 5 feet bgs. PID readings ranged from 0.0 to 193.1 ppm. Boring logs are presented in Appendix J.

For the purposes of data evaluation, soil analytical results were compared to the U.S. EPA RSLs for Industrial and Residential Soil (which are currently met). Historical soil analytical data are summarized in Table 1. Sampling locations are shown on Figure 3. The laboratory analytical report and chain of custody documentation are presented in Appendix K.

Soil samples CS-4-8' and CS-20-12' exhibited carbon disulfide concentrations of 2.53 µg/kg and 4.69 µg/kg, respectively. Both concentrations are well below the U.S. EPA RSL for Residential Soil of 770,000 µg/kg. Carbon disulfide was not detected in any other soil sample.

Acetone was detected in soil samples CS-2-12' (17.6 µg/kg), CS-3-12' (9.38 µg/kg), CS-4-8' (34.3 µg/kg), and CS-20-12' (11.1 µg/kg) at concentrations below the U.S. EPA RSL for Residential Soil for acetone of 61,000,000 µg/kg. Acetone was not detected in any other soil samples.

VC was detected in all soil samples, except CS-1-5' and CS-2-3', and ranged in concentration from 2.77 µg/kg to 34.4 µg/kg. All detected VC concentrations are well below the U.S. EPA RSL for Residential Soil for VC of 59 µg/kg.

Trans-1,2-DCE was detected in all soil samples, except CS-2-3', CS-3-8', and CS-3-12', and ranged in concentration from 3.67 µg/kg to 73.7 µg/kg. All detected *trans*-1,2-DCE concentrations are well below the U.S. EPA RSL for Residential Soil for *trans*-1,2-DCE of 1,600,00 µg/kg.

Cis-1,2-DCE was detected in all soil samples and ranged in concentration from 16.3 µg/kg to 8,170 µg/kg. All detected *cis*-1,2-DCE concentrations are below the U.S. EPA RSL for Residential Soil for *cis*-1,2-DCE of 160,000 µg/kg.

TCE was detected in all soil samples, except CS-2-12', CS-4-8', and CS-20-12', and ranged in concentration from 9.21 µg/kg to 644 µg/kg. All detected TCE concentrations are well below the U.S. EPA RSL for Residential Soil for TCE of 940 µg/kg.

PCE was detected in all soil samples, except CS-4-8', and ranged in concentration from 2.88 µg/kg to 1,690 µg/kg. All detected PCE concentrations are well below the U.S. EPA RSL for Residential Soil for PCE of 24,000 µg/kg.

Upon completion of the remediation and mitigation measures, analyte concentrations in soil remain below the U.S. EPA RSLs for Residential Soil. Soil sample CS-2-3' exhibited a decrease in all chlorinated solvent compounds compared to the pre-remediation soil sample S-4 collected at 3 feet bgs. Soil samples CS-3-8' and CS-3-12' exhibited a decrease in all chlorinated solvent compounds, except for VC, compared to the pre-remediation soil samples S-2 at 8 feet bgs and S-2 at 12 feet bgs, respectively. Soil sample CS-4-8' exhibited a decrease in all chlorinated solvent compounds, except for *cis*-1,2-DCE, compared to the pre-remediation soil sample S-1 at 8 feet bgs. Soil sample CS-2-12' exhibited a decrease in all chlorinated solvent compounds, except for PCE and VC, compared to the pre-remediation soil sample S-4 at 12 feet bgs. Soil sample CS-5-8' exhibited a decrease in all chlorinated solvent compounds, except for TCE and VC, compared to the pre-remediation soil sample S-3 at 8 feet bgs. Soil sample CS-1-5' exhibited a decrease in all chlorinated solvent compounds, except for PCE and TCE, compared to the pre-remediation soil sample S-5 at 5 feet bgs.

The short-term accumulation of PCE daughter products such as *cis*-1,2-DCE and VC is a common occurrence related to remediation approaches involving reductive dechlorination, as these compounds are created by the dechlorination of PCE and TCE. As the process of reductive dechlorination continues, the *cis*-1,2-DCE and VC concentrations in soil should continue to decrease.

It is Wasatch's opinion that the slight increases of PCE and TCE detected are likely the result of different collection methods used to sample the soil at and near the release site. Wasatch utilized the U.S. EPA 5035A soil sampling methods, whereas others utilized conventional soil sampling techniques for VOCs.

4.6 Emissions Sampling

Given that no airflow was detected during either of the emission sampling events, emission analytical results were not compared to the Threshold Limit Values (TLVs), Toxic Screening Levels (TSLs), or Emission Threshold Values (ETVs) as typically requested by the Utah DAQ. This is due to these screening levels being based on volume (which requires air flow to calculate) and not just concentrations. Several chlorinated solvent compounds were detected in the emissions samples. For convenience purposes, emissions analytical data are summarized in Table 5. Sampling locations are shown on Figure 3. The laboratory analytical report and chain of custody documentation are presented in Appendix L.

4.7 Groundwater Sampling

Analyte concentrations in groundwater were compared to the U.S. EPA Federal MCLs and VISL Commercial Target Groundwater Concentrations, where applicable. Historical analyte concentrations in groundwater are presented in Table 2. Sample locations and chlorinated solvent concentrations pre/post remediation are shown on Figure 5. The laboratory analytical report and chain of custody documentation are presented in Appendix M.

Groundwater sample MW-6 exhibited an acetone concentration of 13.6 micrograms per liter ($\mu\text{g/L}$). This concentration is well below the VISL Commercial Target Groundwater Concentration for acetone of 94,500,000 $\mu\text{g/L}$. Currently, no U.S. MCL has been established for acetone. Acetone was not detected in any other groundwater samples.

Groundwater samples MW-6 and MW-10 exhibited a 2-butanone concentration of 69.6 $\mu\text{g/L}$ and 16.9 $\mu\text{g/L}$, respectively. These concentrations are well below the VISL Commercial Target Groundwater Concentration for 2-butanone of 9,410,000 $\mu\text{g/L}$. Currently, no U.S. MCL has been established for 2-butanone. 2-butanone was not detected in any other groundwater samples.

Groundwater sample MW-10 exhibited a PCE concentration of 8.93 $\mu\text{g/L}$. This concentration exceeds the U.S. EPA MCL of 5 $\mu\text{g/L}$ for PCE, but is below the VISL Commercial Target Groundwater Concentration of 65.2 $\mu\text{g/L}$. PCE was not detected in any other groundwater samples.

Trans-1,2-DCE was detected in all groundwater samples, except MW-1 and MW-2, and ranged in concentration from 2.05 $\mu\text{g/L}$ to 44.6 $\mu\text{g/L}$. All detected *trans*-1,2-DCE concentrations are well below the U.S. EPA MCL for *trans*-1,2-DCE of 100 $\mu\text{g/L}$. Currently, no VISL Commercial Target Groundwater Concentration has been established for *trans*-1,2-DCE.

Cis-1,2-DCE was detected in groundwater samples MW-6 (486 $\mu\text{g/L}$), MW-10 (1,720 $\mu\text{g/L}$), and MW-11 (1,590 $\mu\text{g/L}$) at concentrations that exceed the U.S. EPA MCL for *cis*-1,2-DCE of 70 $\mu\text{g/L}$. *Cis*-1,2-DCE was detected in groundwater samples MW-1 (2.41 $\mu\text{g/L}$), MW-2 (4.50 $\mu\text{g/L}$), and MW-3 (3.06 $\mu\text{g/L}$) at concentrations below the U.S. EPA MCL for *cis*-1,2-DCE of 70 $\mu\text{g/L}$. Currently, no VISL Commercial Target Groundwater Concentration has been established for *cis*-1,2-DCE.

VC was detected in all groundwater samples, except MW-3, and ranged in concentration from 4.33 $\mu\text{g/L}$ to 30.7 $\mu\text{g/L}$. All detected VC concentrations exceed the U.S. EPA MCL and VISL Commercial Target Groundwater Concentration for VC of 2 $\mu\text{g/L}$ and 2.45 $\mu\text{g/L}$, respectively.

No other VOCs were detected in groundwater at the locations sampled.

Upon completion of the remediation and mitigation measures, PCE concentrations in groundwater have dropped to concentrations below the laboratory detection limits in all monitoring wells except MW-10 (which at a concentration of 8.93 $\mu\text{g/L}$ remains slightly above the MCL). TCE concentrations in groundwater have dropped to concentrations below the laboratory detection limits in all monitoring wells. *Cis*-1,2-DCE and VC concentrations remain above the MCLs in groundwater and have increased in most of the monitoring wells. VC also remains at concentrations above the U.S. EPA Commercial VISL Target Groundwater Concentrations in all monitoring wells except MW-3. Wasatch anticipates that these concentrations will steadily decrease over time. The short-term accumulation of PCE daughter products such as *cis*-1,2-DCE and VC is a common occurrence related to remediation approaches involving reductive dechlorination, as these compounds are created by the dechlorination of PCE and TCE. As the process of reductive dechlorination continues, the *cis*-1,2-DCE and VC concentrations in groundwater should decrease to concentrations below the U.S. EPA MCLs.

4.8 Indoor Air Sampling

Wasatch successfully collected three indoor air samples within the strip mall building and one outdoor (ambient) air sample from the roof of the building. Analyte concentrations in indoor air were compared to the U.S. EPA RSLs for Industrial Indoor Air. Historical indoor air/outdoor air analytical data are summarized in Table 4. The laboratory analytical report and chain of custody documentation are presented in Appendix N.

PCE was detected in indoor air samples IA-6 (9.0 micrograms per cubic meter [$\mu\text{g}/\text{m}^3$]), IA-7 (1.9 $\mu\text{g}/\text{m}^3$), and IA-8 (6.5 $\mu\text{g}/\text{m}^3$). These concentrations are below the U.S. EPA RSL for Industrial Air of 47 $\mu\text{g}/\text{m}^3$ for PCE. PCE was not detected in the outdoor air sample OA-2.

No other chlorinated solvents were detected in the indoor air or outdoor air samples.

Upon completion of the remediation and mitigation measures, analyte concentrations in indoor air are below the U.S. EPA RSLs for Industrial Air. Only two historical sampling locations coincided with our recent indoor air samples. Both the former Henries tenant space and the vacant tenant space south of the LA Nail Salon were sampled during Wasatch's sampling event and the indoor air sampling event conducted by Partner Engineering. The indoor air sample collected within the former Henries tenant space dropped from a PCE concentration of 55.9 $\mu\text{g}/\text{m}^3$ to 6.5 $\mu\text{g}/\text{m}^3$. The indoor air sample collected within the vacant tenant space dropped from a PCE concentration of 4.28 $\mu\text{g}/\text{m}^3$ to 1.9 $\mu\text{g}/\text{m}^3$.

5. CONCLUSIONS AND RECOMMENDATIONS

Remediation and mitigation of chlorinated solvent impacts originating from the release site were completed in accordance with the approved CAP between September and November 2018. Upon completion of the remediation and mitigation measures, analyte concentrations in soil remain below the U.S. EPA RSLs for Residential Soil, PCE concentrations in groundwater have dropped to concentrations below the laboratory detection limits in all monitoring wells except MW-10 (which at a concentration of 8.93 $\mu\text{g}/\text{L}$ remains slightly above the MCL), TCE concentrations in groundwater have dropped to concentrations below the laboratory detection limits in all monitoring wells, and indoor air concentrations are below the U.S. EPA RSLs for Industrial Indoor Air. Although *cis*-1,2-DCE and VC concentrations in groundwater remain above the MCLs, and VC remains at concentrations above the U.S. EPA Commercial VISL Target Groundwater Concentrations, Wasatch anticipates that these concentrations will steadily decrease over time. The short-term accumulation of PCE daughter products such as *cis*-1,2-DCE and VC is a common occurrence related to remediation approaches involving reductive dechlorination, as these compounds are created by the dechlorination of PCE and TCE. As the process of reductive dechlorination continues, the *cis*-1,2-DCE and VC concentrations in groundwater should decrease to concentrations below the U.S. EPA MCLs.

As of the issuance of the report, Wasatch has made two attempts to perform the emissions monitoring of the passive VMS in accordance with the requirements of R307-401-15 (as discussed in sections 3.6 and 4.6 of this report). Both attempts failed due to the lack of measurable air flow through the vent stack. Wasatch has communicated with the DAQ regarding this issue and will provide reports to the DAQ, to the extent that the data support such reporting. Wasatch will provide the DWMRC with copies of all reports issued to the DAQ. Wasatch will continue working with the DAQ to implement a rule change that would exempt passive VMSs from the monitoring and reporting requirements under R307-401-15.

The first groundwater monitoring event was performed in December 2018 (as discussed in sections 3.7 and 4.7 of this report). Wasatch proposes to continue sampling groundwater from monitoring wells MW-1, MW-2, MW-3, MW-6, MW-10, and MW-11 [or some subset of these wells] on a quarterly schedule for the remainder of 2019 with groundwater monitoring to be performed in March, June, and September of 2019. The groundwater monitoring requirements (i.e., schedule, monitoring wells sampled, and sampling methodologies, etc.) will be re-evaluated following the September 2019 groundwater monitoring event.

Wasatch anticipates that the next step toward regulatory closure of the release is authoring an EC and SMP limiting the Restricted Property to industrial and commercial uses, forbidding the extraction and use of shallow groundwater, and requiring vapor barriers for new structures. The EC and SMP would be subject to review and approval by the DWMRC, and the SMP would also be subject to a 30-day public comment period.

On behalf of the Facility owner Chasebrook, Wasatch is requesting regulatory closure of the release with a regulatory closure status of "corrective action complete with controls" pending completion and submittal of the EC and SMP, and pending recording of the EC.

Tables

Table 1
Historical Soil Analytical Data
Cottonwood Square
Former Henries Dry Cleaner
1781 East Murray-Holladay Road
Millicreek, Utah

All concentrations are expressed in micrograms per kilogram (µg/kg) except as noted otherwise

Sample I.D.	Depth (feet)	Sample Collection Date	Volatile Organic Compounds													
			Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans 1,2-Dichloroethene	Vinyl chloride	Methylene chloride	Toluene	Acetone	2-Butanone	Carbon Disulfide	Benzene	Ethylbenzene	Xylenes
Secor International October 2007																
S-1	8	8/17/2007	20	11	4.5	1,500	140	9.5	11	<4.1	89	<21	<4.1	---	---	---
	12		9.2	3.7	<2.1	180	27	3.3	6.8	<2.1	<11	<11	<2.1	---	---	---
S-2	7-8	8/17/2007	1,900	300	3.1	2,300	14	5.3	10	<2.2	92	16	<2.2	---	---	---
	12		410	71	<2.1	260	<2.1	2.1	6.2	<2.1	<11	<11	4.4	---	---	---
S-3	15-16	8/17/2007	86	180	<2.1	70	<2.1	<1.0	11	3.2	15	<10	<4.4	---	---	---
	8		1,000	110	2.5	2,900	110	<1.2	8.9	3.6	<12	<12	<2.4	---	---	---
	11		73	13	<2.3	570	14	<1.2	<5.8	<2.3	<12	<12	<2.3	---	---	---
S-4	15-16	8/24/2007	72	92	<2.2	14	<2.2	<1.1	<5.6	<2.2	13	<11	4.7	---	---	---
	3		360	29	<2.5	44	<2.5	<1.2	<6.2	<2.5	17	<12	<2.5	---	---	---
	12		<2.4	<2.4	2.7	7,000	470	29	<5.9	<2.4	<12	<12	<2.4	---	---	---
S-5	15	8/24/2007	<2.3	<2.3	<2.3	430	110	7.1	<5.7	<2.3	<11	<11	<2.3	---	---	---
	5		1,000	280	<2.4	370	130	3.9	<6.1	<2.4	<12	<12	<2.4	---	---	---
S-6	10	8/24/2007	5	<2.4	<2.4	180	52	<1.2	<5.9	<2.4	23	<12	<2.4	---	---	---
	20		5.5	<3.5	<3.5	190	18	<1.7	9	<3.5	<17	<17	<3.5	---	---	---
	3.5		290	<2.5	<2.5	4	<2.5	<1.2	<6.2	<2.5	<12	<12	<2.5	---	---	---
S-6	7	8/24/2007	32	<2.5	<25	4,100	490	<13	<63	<25	290	<130	<25	---	---	---
	16		<2.3	180	<2.3	850	230	10	<5.7	<2.3	<11	<11	4.8	---	---	---
Stantec July 2008																
B-1	20	4/22/2008	<2.8	<2.8	<2.8	<2.8	<2.8	<1.4	<6.9	<2.8	47	<14	<2.8	---	---	---
B-2	9.5	4/22/2008	<2.4	<2.4	<2.4	<2.4	<2.4	<1.2	<6.0	<2.4	<12	<12	<2.4	---	---	---
	20		<2.2	<2.2	<2.2	<2.2	<2.2	<1.1	<5.6	<2.2	<11	<11	4.0	---	---	---
B-3	6.0	4/22/2008	<2.4	<2.4	<2.4	<2.4	<2.4	<1.2	<5.9	<2.4	<12	20	<2.4	---	---	---
	20		<2.7	44	<2.7	36	3.9	<1.4	<6.8	<2.7	46	76	4.4	---	---	---
B-4	20	4/22/2008	10	4.2	<2.3	2.9	<2.3	<1.2	<5.9	<2.3	<12	57	<2.3	---	---	---
B-5	12.5	4/22/2008	<2.3	<2.3	<2.3	<2.3	<2.3	<1.1	<5.7	<2.3	15	40	11	---	---	---
	20		<2.4	<2.4	<2.4	<2.4	<2.4	<1.2	<6.0	<2.4	<12	<12	<2.4	---	---	---
MW-1	7.5	4/22/2008	<2.5	<2.5	<2.5	70	14	7.0	<6.3	<2.5	270	33	2.5	---	---	---
	10		<2.2	<2.2	<2.2	16	2.5	2.5	<5.6	<2.2	52	<11	<2.2	---	---	---
MW-2	7.5	4/22/2008	<2.6	<2.6	<2.6	4.9	<2.6	<1.3	<6.4	<2.6	490	50	5.3	---	---	---
MW-3	5.0	4/23/2008	<2.8	<2.8	<2.8	<2.8	<2.8	<1.4	<6.9	<2.8	200	22	3.6	---	---	---
MW-4	12.5	4/23/2008	<2.6	<2.6	<2.6	<2.6	<2.6	<1.3	<6.4	<2.6	<13	13	<2.6	---	---	---
Partner Engineering May 2017																
MW-5*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
B1 (MW-6)	9-10	3/28/2017	6.26	<1.17	---	---	---	<1.17	---	<5.86	---	---	---	<1.17	<1.17	<3.52
B2 (MW-7)	8-9	3/28/2017	<1.04	<1.04	---	---	---	<1.14	---	<5.21	---	---	---	<1.04	<1.04	<3.13
B3 (MW-8)	9-10	3/28/2017	<1.18	<1.18	---	---	---	<1.18	---	<5.91	---	---	---	<1.18	<1.18	<1.18
B4 (MW-9)	12-13	3/28/2017	<1.22	<1.22	---	---	---	<1.22	---	<6.09	---	---	---	<1.22	<1.22	<3.65
B5	15-16	3/28/2017	<1.19	<1.19	---	---	---	<1.19	---	<5.93	---	---	---	<1.19	<1.19	<3.56
	19-20		<1.30	<1.30	---	---	---	<1.30	---	<6.51	---	---	---	<1.30	<1.30	<3.91
Partner Engineering July 2017																
B6 (MW-10)	7-8	6/19/2017	<1.34	<1.34	---	1,280	18.5	---	---	---	72.1	20.8	---	---	---	---
	15-16		<1.18	<1.18	---	1,310	23.5	---	---	---	59.1	<1.18	---	---	---	---
B7 (MW-11)	7-8	6/19/2017	<75.2	<75.2	---	4,690	151	---	---	---	<3,760	<75.2	---	---	---	---
	13-14		113	11.8	---	623	7.76	---	---	---	<63	<12.6	---	---	---	---
Wasatch Environmental October 2018																
CS-1-5'	5	10-15-18	1,690	644	<1.99	63.5	3.67	<0.997	<4.98	<1.99	<9.97	<9.97	<1.99	<1.99	<1.99	<1.99
CS-2-3'	3	10-15-18	283	12.9	<2.04	16.3	<2.04	<1.02	<5.11	<2.04	<10.2	<10.2	<2.04	<2.04	<2.04	<2.04
CS-2-12'	12	10-15-18	3.11	<1.83	<1.83	5,570	63.3	31.5	<4.58	<1.83	17.6	<9.15	<1.83	<1.83	<1.83	<1.83
CS-3-8'	8	10-15-18	41.8	9.21	<2.32	242	<2.32	4.33	<5.80	<2.32	<11.6	<11.6	<2.32	<2.32	<2.32	<2.32
CS-3-12'	12	10-15-18	52.8	15.2	<1.80	149	<1.80	2.77	<4.51	<1.80	9.38	<9.02	<1.80	<1.80	<1.80	<1.80
CS-4-8'	8	10-15-18	<2.11	<2.11	<2.11	8,170	73.7	6.77	<5.28	<2.11	34.3	<10.6	2.53	<2.11	<2.11	<2.11
CS-5-8'	8	10-15-18	634	154	<2.31	1,280	17.5	2.78	<5.78	<2.31	<11.6	<11.6	<2.31	<2.31	<2.31	<2.31
CS-20-12'	12	10-15-18	2.88	<1.88	<1.88	4,340	53.7	34.4	<4.71	<1.88	11.1	<9.42	4.69	<1.88	<1.88	<1.88
U.S. EPA RSL for Residential Soil			24,000	940	230,000	160,000	1,600,000	59	57,000	4,900,000	61,000,000	27,000,000	770,000	1,200	5,800	580,000
U.S. EPA RSL for Industrial Soil			100,000	6,000	1,000,000	2,300,000	23,000,000	1,700	1,000,000	47,000,000	670,000,000	190,000,000	3,500,000	5,100	25,000	2,500,000

NOTES:

Only analytes detected above laboratory reporting limits in one or more sample are presented

< = Concentration was below the laboratory reporting limit

BOLD = Measured concentration is greater than the applicable U.S. EPA RSL for Residential Soil

= Measured concentration is greater than the applicable U.S. EPA RSL for Industrial Soil

U.S. EPA RSL = United States Environmental Protection Agency Regional Screening Level

--- = Not established

* MW-5 not listed in previous reports although listed in Partner 2017 as previously established Monitoring Well

Table 2
Historical Groundwater Analytical Data
Former Henries Dry Cleaner
Cottonwood Square
1781 East Murray-Holladay Road
Millicreek, Utah

All concentrations are expressed in micrograms per liter (µg/L) except as noted otherwise

Sample I.D.	Depth to Water (feet)	Sample Collection Date	Relative Ground Water Elevation (feet)	Volatile Organic Compounds															Geochemical Parameters						
				Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1-Dichloroethene (DCE)	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl chloride	Methylene Chloride	Toluene	Acetone	2-Butanone	Carbon Disulfide	Methyl t-butyl ether (MTBE)	Benzene	Naphthalene	Ethylbenzene	Xylenes	Temperature (degrees fahrenheit)	pH	Specific Conductivity (microSiemens per centimeter)	Dissolved Oxygen (milligrams per liter)	Oxidation Reduction Potential (millivolts)	Turbidity (nephelometric turbidity unit)
Secor International October 2007																									
S-1	12	8/17/07	---	32	11	<2.0	1,400	48	5.8	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
S-2	11.5	8/17/07	---	440	2,800	5.4	2,300	41	20	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
S-3	11.5	8/17/07	---	44	1,300	<2.0	300	13	1.3	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
S-4	11.2	8/24/07	---	80	4.0	4.5	4,400	310	94	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
S-5	11	8/24/07	---	2.4	4.0	<2.0	310	40	9.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
S-6	11.5	8/24/07	---	90	240	7.4	15,000	690	89	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
Stantec July 2008																									
B-1	6.00	4/22/2008	88.82	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
B-2	7.10	4/22/2008	87.53	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
B-3	5.91	4/22/2008	88.61	8.5	69	<2.0	150	5.7	7.1	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
B-4	5.61	4/22/2008	88.59	2.7	29	<2.0	54	<2.0	<1.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
B-5	5.91	4/22/2008	88.39	2.0	2.7	<2.0	3.6	<2.0	<1.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
MW-1	10.99	4/24/2008	89.04	<2.0	<2.0	<2.0	5.2	<2.0	27	<2.0	<2.0	21	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
MW-2	10.99	4/24/2008	89.01	<2.0	<2.0	<2.0	7.9	2.3	6.7	<2.0	<2.0	<10	<10	<2.0	3.4	---	<2.0	---	---	---	---	---	---	---	
MW-3	9.31	4/24/2008	89.72	<2.0	2.4	<2.0	6.2	3.9	2.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
MW-4	9.75	4/24/2008	89.24	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
Resident	---	4/22/2008	---	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0	<2.0	<10	<10	<2.0	<2.0	---	<2.0	---	---	---	---	---	---	---	
Partner Engineering May 2017																									
MW-1	12-17	3/29/2017	---	1.19	1.00	---	1.44	<1.0	<1.0	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
MW-2	12-17	3/29/2017	---	<1.0	<1.0	---	3.51	1.23	<1.0	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
MW-3	12-17	3/29/2017	---	<1.0	<1.0	---	2.75	1.84	<1.0	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
MW-4	12-17	3/29/2017	---	<1.0	<1.0	---	<1.0	<1.0	<1.0	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
MW-5*	12-17	3/29/2017	---	3.39	<1.0	---	<1.0	<1.0	<1.0	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
B1 (MW-6)	12-17	3/29/2017	---	27.5	49.4	---	755	26.6	4.80	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
B2 (MW-7)	12	3/29/2017	---	1.24	<1.0	---	<1.0	<1.0	<1.0	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
B3 (MW-8)	12-17	3/29/2017	---	<1.0	<1.0	---	<1.0	<1.0	<1.0	---	<1.0	---	---	---	<1.0	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
B4 (MW-9)	12-17	3/29/2017	---	2.80	1.50	---	1.36	<1.0	<1.0	---	<1.0	---	---	---	1.05	<1.0	<5.00	<1.0	<3.0	---	---	---	---	---	
Partner Engineering July 2017																									
B6 (MW-10)	12-17	6/20/2017	---	61.5	2.45	<1.0	143	38.8	9.56	---	---	<50	---	---	<1.0	---	<5.00	---	---	---	---	---	---	---	
B7 (MW-11)	12-17	6/20/2017	---	28.6	21.6	<1.0	1,200	86.8	23.5	---	---	<50	---	---	<1.0	---	<5.00	---	---	---	---	---	---	---	
Wasatch Environmental December 2018																									
MW-1	12.45	12/17/2018	---	<2.00	<2.00	<2.00	2.41	<2.00	18.0	<2.00	<2.00	<10.0	<10.0	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	55.95	7.41	1,804	4.28	140.0	1.34
MW-2	11.65		---	<2.00	<2.00	<2.00	4.50	<2.00	4.33	<2.00	<2.00	<10.0	<10.0	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	55.61	7.36	2,056	4.43	72.7	1.25
MW-3	10.93		---	<2.00	<2.00	<2.00	3.06	2.05	<1.00	<2.00	<2.00	<10.0	<10.0	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	53.44	8.00	1,914	4.89	157	1.39
MW-6	12.57		---	<2.00	<2.00	<2.00	486	8.77	5.34	<2.00	<2.00	13.6	69.6	<2.00	<2.00	2.16	<2.00	<2.00	<2.00	48.85	7.56	1,632	5.02	38.8	1.73
MW-10	13.40	12/18/2018	---	8.93	<2.00	<2.00	1,720	44.6	30.7	<2.00	<2.00	<10.0	16.9	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	59.78	8.00	841.1	4.45	-164.0	1.24
MW-11	12.78		---	<2.00	<2.00	<2.00	1,590	36.6	16.3	<2.00	<2.00	<10.0	<10.0	<2.00	<2.00	<2.00	<2.00	<2.00	<2.00	58.66	7.91	527.0	4.42	-12.5	1.93
U.S. EPA Commercial VISL Target Groundwater Concentrations				65.2	7.43	821	---	---	2.45	9,230	80,700	94,500,000	9,410,000	5,210	1,970	6.93	4.59	15.2	1,620						
U.S. EPA Maximum Contaminant Levels				5	5	7	70	100	2	5	1,000	---	---	---	---	5	---	700	10,000						

NOTES:
Only analytes detected above laboratory reporting limits in one or more sample are presented
< = Concentration was below the laboratory reporting limit
U.S. EPA = United States Environmental Protection Agency
VISL = Vapor Instrution Screening Level
BOLD = Measured concentration is greater than the applicable U.S. EPA Federal Maximum Contaminant Level
= Measured concentration is greater than the applicable U.S. EPA Commercial VISL Target Groundwater Concentration (THQ=1, TR= 1 x 10⁻⁶)
--- = Not Established
* MW-5 not listed in previous reports although listed in Partner 2017 as previously established Monitoring Well

Table 3
Historical Sub-Slab Soil Gas Analytical Data
Cottonwood Square
Former Henries Dry Cleaner
1781 East Murray-Holladay Road
Millcreek, Utah

All concentrations are expressed in micrograms per cubic meter (µg/m³) except as noted otherwise

Sample ID	Sample Collection Date	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene (PCE)	Trichloroethene (TCE)	Vinyl chloride	Ethanol	Acetone	Carbon disulfide	2-Butanone	4-Ethyltoluene	Dichlorodifluoromethane	Isopropylbenzene	n-Hexane	Benzene	Cyclohexane	Methylene Chloride	2-Propanol	Propene	Heptane	Toluene	Tetrahydrofuran	Ethylbenzene	m,p-Xylene	o-Xylene	Styrene	1,3,5-Trimethylbenzene	1,2,4-Trimethylbenzene
Arcadis September 2012																												
SSV-1	8/21/2012	<3.9	<3.9	161	<5.2	<2.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SSV-2	8/21/2012	<8.4	<8.4	157	<11.4	<5.4	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SSV-3	8/21/2012	<27.1	<27.1	591	<36.6*	<17.4*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SSV-4	8/21/2012	<124	<124	7,120	332	<79.9*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SSV-5	8/21/2012	<23,700	<23,700	5,000,000	<32,000**	<15,200**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
SSV-6	8/21/2012	<260	<260	3,170	<15,200**	<167**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Partner Engineering July 2017																												
SS-1	7/16/2017	<1.62	<1.59	2,280	74	---	146	1,260	3.93	<7.37	<1.96	1.98	<1.97	1.62	<1.28	<1.38	1.74	199	2.83	<81.8	3.36	<1.18	<1.73	<3.47	<1.73	<1.70	<1.96	<1.96
SS-2	7/16/2017	55.4	<1.59	253,000	196	---	565	1,390	15.6	<7.37	<1.96	1.98	<1.97	<17.6	<1.28	<1.38	<17.4	1,030	<17.2	<81.8	<18.8	<1.18	<1.73	<3.47	<1.73	<1.70	<1.96	<1.96
SS-3	7/16/2017	23.5	14	4,350	356	---	1,640	2,270	2.24	16.9	4.27	2.09	19.2	6.48	2.57	3.41	1.49	384	<1.38	1,030	60.7	2.43	54	204	105	4.35	3.76	6.31
U.S. EPA VISL Residential Target Sub-Slab and Exterior Soil Gas Concentraion		---	---	360	16	5.6	---	1,100,000	24,000	5,200	---	24,000	---	24,000	12	210,000	3,400	7,000	100,000	14,000	170,000	70,000	37	3,500	3,500	35,000	---	2,100
U.S. EPA VISL Commercial Target Sub-Slab and Exterior Soil Gas Concentraion		---	---	1,600	100	93	---	4,500,000	100,000	22,000	---	100,000	---	880,000	52	880,000	41,000	29,000	440,000	58,000	730,000	290,000	160	15,000	15,000	150,000	---	8,800

NOTES:

Only analytes that were detected at concentrations above the reporting limit in one or more samples are presented in the table.

< = Concentration was below the reporting limit

BOLD = Measured concentration is greater than the applicable United States (U.S.) Environmental Protection Agency (EPA) Vapor Intrusion Screening Level (VISL) calculator spreadsheet, version 3.5.2, Residential Target Sub-slab Soil Gas Concentration (TCR = 1x10⁻⁶, THQ = 1)

= Measured concentration is greater than the applicable U.S. EPA VISL calculator spreadsheet, version 3.5.2, Commercial Target Sub-slab Soil Gas Concentration (TCR = 1x10⁻⁶, THQ = 1)

*= Reporting limit is greater than the applicable U.S. EPA VISL calculator spreadsheet, version 3.5.2, Residential Target Sub-slab Soil Gas Concentration (TCR = 1x10-6, THQ = 1)

**= Reporting limit is greater than the applicable U.S. EPA VISL calculator spreadsheet, version 3.5.2, Commercial Target Sub-slab Soil Gas Concentration (TCR = 1x10-6, THQ = 1)

--- = No U.S. EPA VISL Target Subslab Soil Gas Concentration has been established

Table 4
Historical Indoor and Outdoor Air Analytical Data
Cottonwood Square
Former Henries Dry Cleaner
1781 East Murray-Holladay Road
Millcreek, Utah

All concentrations are expressed in micrograms per cubic meter (µg/m³)

Sampling Location	Date Sampled	Location	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Tetrachloroethene (PCE)	Trichloroethene (TCE)	1,1-Dichloroethene (DCE)	Vinyl chloride	Ethanol	Acetone	Chloromethane	2-Butanone	Methyl methacrylate	Dichlorodifluoromethane	n-Hexane	Benzene	Cyclohexane	2-Propanol	Heptane	Toluene	Tetrahydrofuran	Ethylbenzene	m,p-Xylene	o-Xylene	2,2,4-Trimethylpentane	1,2,4-Trimethylbenzene	
Arcadis September 2012																											
OA-1	8/20/2012	Outdoor	<0.081	<0.081	0.32	0.67	---	<0.052	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
IA-1	8/20/2012	Indoor	<0.077	<0.077	<0.13	<0.052	---	<0.050	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
IA-2	8/20/2012	Indoor	<0.081	<0.081	<0.14	<0.055	---	<0.052	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
IA-3	8/20/2012	Indoor	<0.081	<0.081	2	0.2	---	<0.052	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
IA-4	8/20/2012	Indoor	<4.1	<4.1	55.4	<5.5*	---	<2.6*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
IA-5	8/20/2012	Indoor	<0.085	<0.085	20.7	4.5	---	<0.055	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Partner Engineering July 2017																											
IA-1 (P)	6/17/2017	Indoor	---	---	55.9	---	<0.793	---	188	6,110	1.24	10.5	4.79	1.78	<0.705	<0.639*	<0.689	1,330	0.906	31.8	<0.590	<0.867	<1.73	<0.867	<4.66	<0.982	
IA-2 (P)	6/17/2017	Indoor	---	---	4.28	---	<0.793	---	760	7,440	1.39	20.5	52.6	1.64	1.29	0.747	3.64	1640	2.18	43.4	5.88	1.12	4.23	1.55	1.12	1.36	
OA-1 (P)	6/17/2017	Outdoor	---	---	<1.36	---	<0.793	---	10	41.5	1.13	<1.25	<0.819	1.77	<0.705	<0.639*	<0.689	9.11	<0.818	1.84	<0.590	<0.867	<1.73	<0.867	<0.934	<0.982	
Wasatch Environmental December 2018																											
IA-6	12/17/2018	Indoor (LA Nails Salon)	<0.59	<0.59	9.0	<0.81	<0.59	<0.38*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
IA-7	12/17/2018	Indoor (Vacant Space)	<0.59	<0.59	1.9	<0.81	<0.59	<0.38*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
IA-8	12/17/2018	Indoor (Former Henries Space)	<0.59	<0.59	6.5	<0.81	<0.59	<0.38*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
OA-2	12/17/2018	Outdoor (Roof)	<0.59	<0.59	<1.0	<0.81	<0.59	<0.38*	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
U.S. EPA Regional Screening Level for Residential Air			---	---	11	0.48	210	0.17	---	32,000	94	5,200	730	100	730	0.36	6,300	210	420	5,200	2,100	1.1	100	100	---	63	
U.S. EPA Regional Screening Level for Industrial Air			---	---	47	3	880	2.8	---	140,000	390	22,000	3,100	440	3,100	1.6	26,000	880	1,800	22,000	8,800	4.9	440	440	---	260	

NOTES:
< = concentration was below the laboratory reporting limit
--- = not established or not analyzed
BOLD = Measured concentration is greater than the applicable U.S. EPA Regional Screening Level for Residential Air
= Measured concentration is greater than the applicable U.S. EPA Regional Screening Level for Industrial Air
*= Reporting limit is greater than the applicable U.S. EPA Regional Screening Level for Residential Air

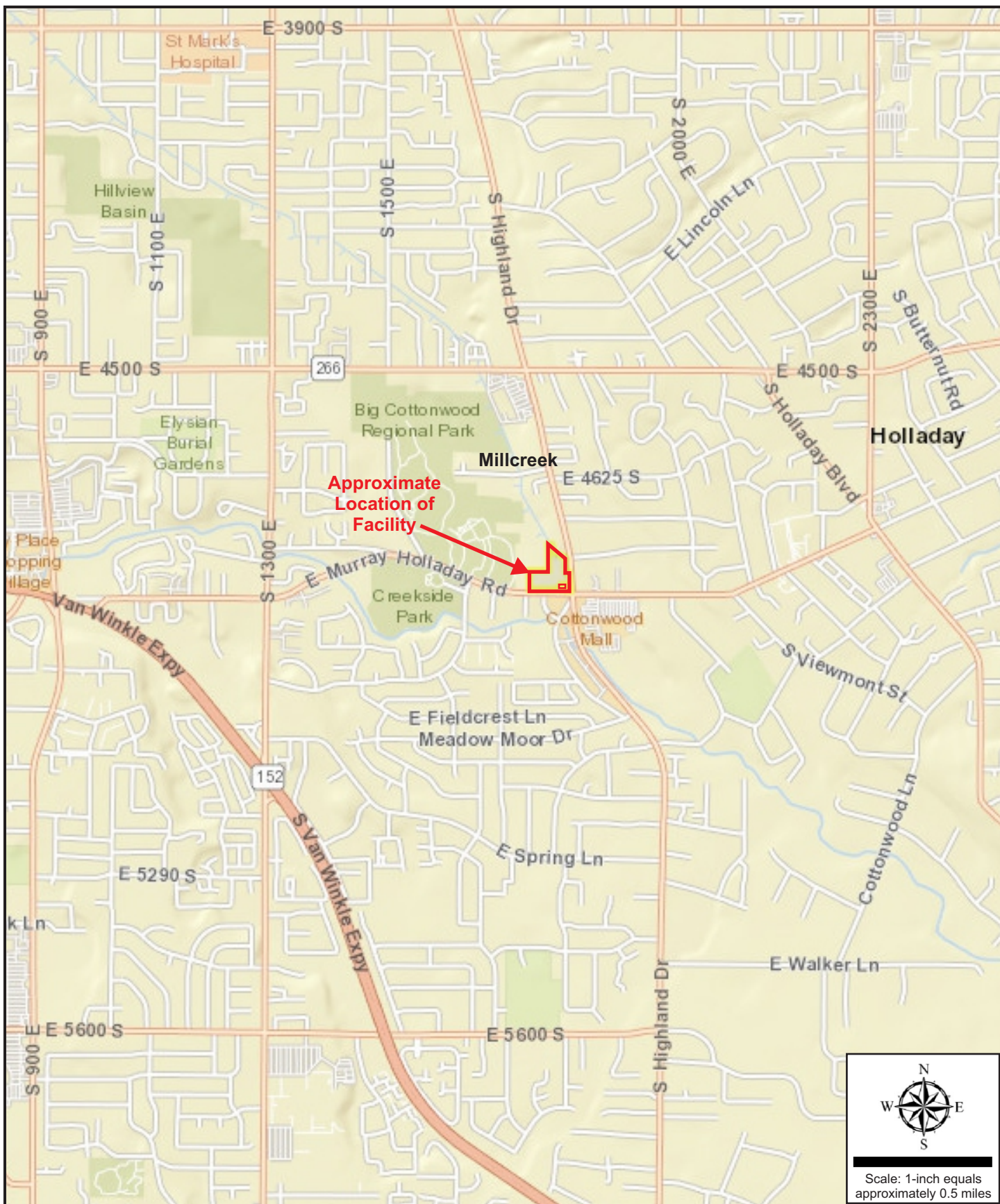
Table 5
Emissions Analytical Data
Cottonwood Square
Former Henries Dry Cleaner
1781 East Murray-Holladay Road
Millcreek, Utah

All concentrations are presented in micrograms per cubic meter (µg/m³)

Sample ID	Sample Collection Date	Acetone	Carbon disulfide	Methylene Chloride	2-Butanone	cis-1,2-Dichloroethene	Tetrahydrofuran	Trichloroethene (TCE)	Tetrachloroethene (PCE)	4-Methyl-2-pentanone	Ethylbenzene	m,p-Xylene	o-Xylene
EM-1	11/29/18	340	140	260	230	60	2,200	140	5,600	170	12,000	30,000	18,000
EM-1	1/2/19	150	<9.3	<10	30	38	530	150	21,000	17	3,000	4,700	11,000

NOTES:
Only analytes that were detected at concentrations above the reporting limit in one or more samples are presented in the table.
< = Concentration was below the reporting limit

Figures



Environmental Science and Engineering

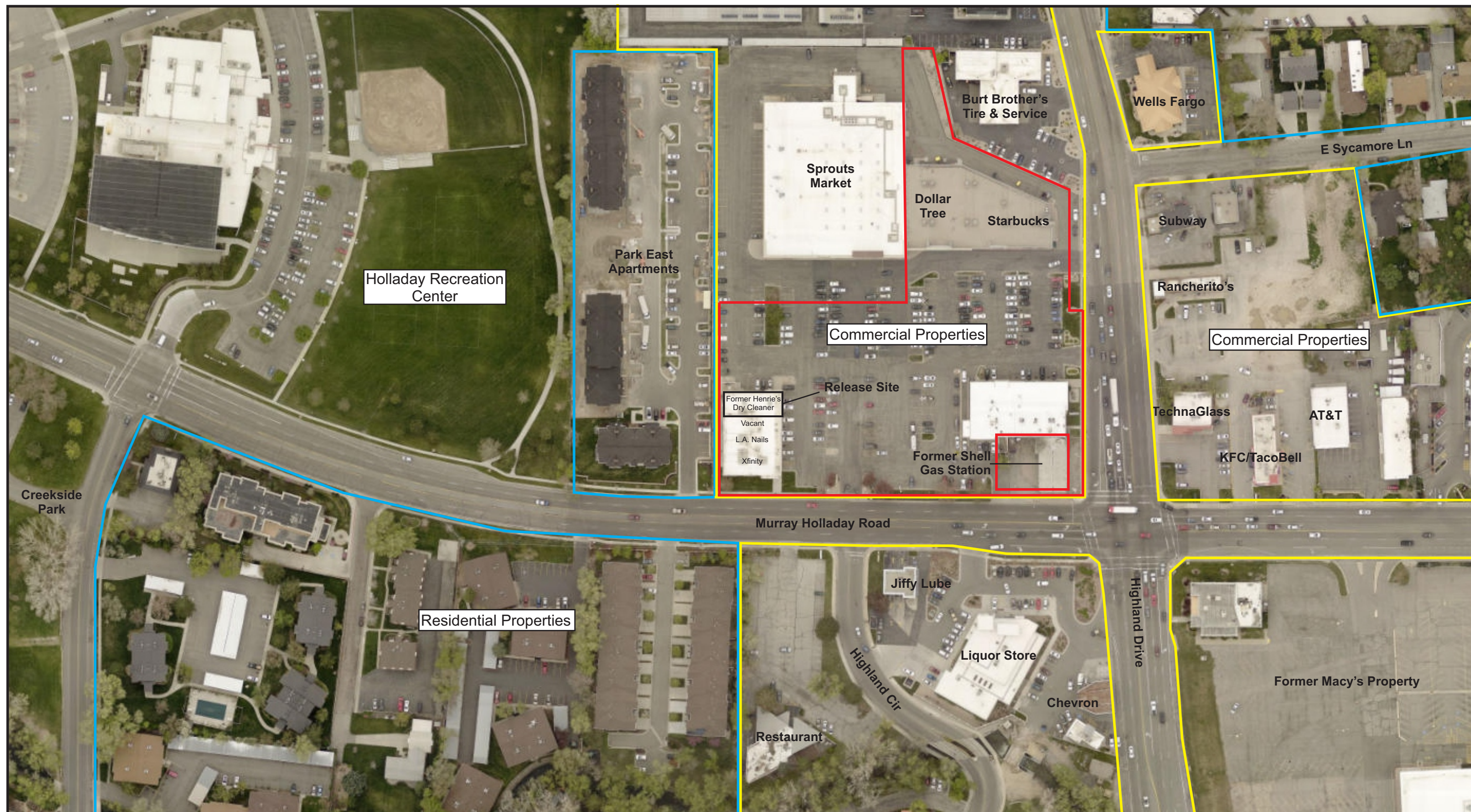
Facility Location Map

Former Henries Dry Cleaner, Cottonwood Square
1781 East Murray-Holladay Road
Millcreek, Utah

PROJECT NO.: 2249-001D

DATE: June 20, 2018

Figure 1



Scale: 1-inch equals
approximately 125'

- Commercial Properties
- Residential Properties
- Release Site Boundary

— Cottonwood Square
(Facility Boundary)


Environmental Science and Engineering

Facility Feature Map

Former Henries Dry Cleaner
Cottonwood Square
1781 East Murray-Holladay Road
Millcreek, Utah

PROJECT NO.	DRAWING DATE	FIGURE
2249-001D	June 20, 2018	2



Monitoring Well Location

Secor (2007) Boring Location

Stantec (2008) Boring Location

Partner (2017) Boring Location

Wasatch (2018/2019) Emission Sample Location

Arcadis (2012) Sub-Slab Soil Gas Location

Arcadis (2012) Ambient Air Monitoring Location

Partner (2017) Sub-Slab Soil Gas Location

Partner (2017) Ambient Air Monitoring Location

Cottonwood Square
(Facility Boundary)

Former Henriess Dry Cleaner
(Release Site Boundary)

Wasatch (2018) Ambient Air Monitoring Location

Wasatch (2018) Confirmation Soil Sample
Location

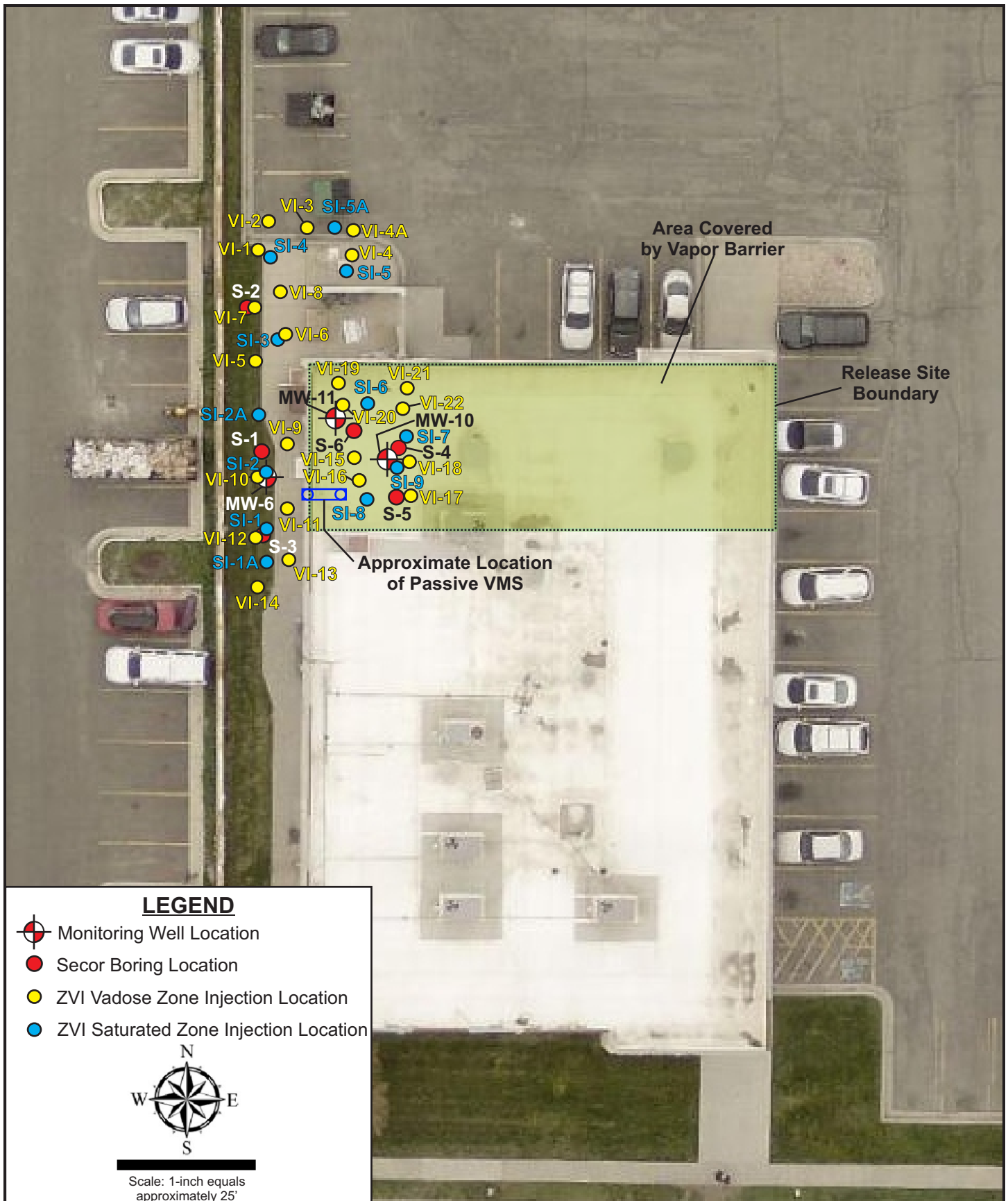
Environmental Science and Engineering

Historical Sample Location Map
Former Henriess Dry Cleaner
Cottonwood Square
1781 East Murray-Holladay Road
Millcreek, Utah

PROJECT NO.
2249-001D

DRAWING DATE
January 8, 2019

FIGURE
3



Remediation Map

Former Henries Dry Cleaner, Cottonwood Square
1781 East Murray Holladay Road
Millcreek, Utah



Environmental Science and Engineering

PROJECT NO.: 2249-001D

DATE: January 8, 2019

Figure 4

MW-2

Analyte	Pre-Remediation Concentration	Post-Remediation Concentration
PCE	<1.0	<2.00
TCE	<1.0	<2.00
DCE	—	<2.00
cis-1,2-DCE	3.51	4.50
trans-1,2-DCE	1.23	<2.00
VC	<1.0	4.33

MW-1

Analyte	Pre-Remediation Concentration	Post-Remediation Concentration
PCE	1.19	<2.00
TCE	1.00	<2.00
DCE	—	<2.00
cis-1,2-DCE	1.44	2.41
trans-1,2-DCE	<1.0	<2.00
VC	<1.0	18.0

MW-11

Analyte	Pre-Remediation Concentration	Post-Remediation Concentration
PCE	28.6	<2.00
TCE	21.6	<2.00
DCE	<1.0	<2.00
cis-1,2-DCE	1,200	1,590
trans-1,2-DCE	86.8	36.6
VC	23.5	16.3

Release Site Boundary

MW-10

Analyte	Pre-Remediation Concentration	Post-Remediation Concentration
PCE	61.5	8.93
TCE	2.45	<2.00
DCE	<1.0	<2.00
cis-1,2-DCE	143	1,720
trans-1,2-DCE	38.8	44.6
VC	9.56	30.7

MW-6

Analyte	Pre-Remediation Concentration	Post-Remediation Concentration
PCE	27.5	<2.00
TCE	49.4	<2.00
DCE	—	<2.00
cis-1,2-DCE	755	486
trans-1,2-DCE	26.6	8.7
VC	4.80	5.34

MW-3

Analyte	Pre-Remediation Concentration	Post-Remediation Concentration
PCE	<1.0	<2.00
TCE	<1.0	<2.00
DCE	—	<2.00
cis-1,2-DCE	2.75	3.06
trans-1,2-DCE	1.84	2.05
VC	<1.0	<1.00

LEGEND

Monitoring Well Location

*All concentrations are in micrograms per liter

***Bolded** concentration exceed the applicable U.S. EPA Maximum Contaminant Level



Scale: 1-inch equals approximately 27'



Environmental Science and Engineering

Pre/Post Remediation VOCs in Groundwater Map

Former Henries Dry Cleaner, Cottonwood Square
1781 East Murray Holladay Road
Millcreek, Utah

PROJECT NO.: 2249-001D

DATE: January 8, 2019

Figure 5

Appendix A
CAP Approval Letter



State of Utah

GARY R. HERBERT
Governor

SPENCER J. COX
Lieutenant Governor

Department of
Environmental Quality

Alan Matheson
Executive Director

DIVISION OF WASTE MANAGEMENT
AND RADIATION CONTROL
Scott T. Anderson
Director

August 9, 2018

Michael Cronin, P.G.
Senior Geologist/Senior Project Manager
Wasatch Environmental
2410 West California Avenue
Salt Lake City, Utah 84104

RE: Corrective Action Plan
Former Henries Dry Cleaners
Cottonwood Square 1781 East Murray - Holladay Road
Millcreek, Utah

Dear Mr. Cronin:

The Division of Waste Management and Radiation Control has completed its review of the revised Corrective Action Plan (CAP) submitted in behalf of the Chasebrook Company. The CAP has been prepared to address residual chlorinated solvent impacts to soil and groundwater at the former Henries Dry Cleaner facility.

The Division concurs with the proposal of an in-situ chemical reduction (ISCR) of the contaminants in the vadose zone and the saturated zone by injection of a zero valent iron (ZVI) slurry into the two source zones. The goal of the effort is to effectively reduce the mass of chlorinated compounds in contaminated zones by chemical redox reactions.

The proposed CAP is hereby approved for implementation. Please provide the Division a seven-day notice before conducting field activities to enable Division personnel to coordinate oversight of the effort. If you have any questions, or to provide notification of field activities, please call Eric Baiden at (801) 536-0216.

Sincerely,

Scott T. Anderson, Director
Division of Waste Management and Radiation Control

(Over)

DSHW-2018-007081

195 North 1950 West • Salt Lake City, UT
Mailing Address: P.O. Box 144880 • Salt Lake City, UT 84114-4880
Telephone (801) 536-0200 • Fax (801) 536-0222 • T.D.D. (801) 536-4284
www.deq.utah.gov
Printed on 100% recycled paper

STA/EB/km

c: Gary Edwards, MS, Health Officer, Salt Lake County Health Dept.
Royal DeLegge, MPA, EHS, Environmental Health Director, Salt Lake County Health Dept.

Appendix B

Blue Stake Utility Clearance Request

Michael Cronin

From: Blake Downey
Sent: Tuesday, September 04, 2018 10:45 AM
To: 'sean@directpushservices.com'
Cc: Michael Cronin
Subject: FW: UTAH EMLCFM 2018/09/04 #00693 A82470694-00A NORM NEW LREQ

Sean,

See the bluestakes ticket below for the upcoming injection work in Millcreek next week. Don't forget we need the fencing dropped off this Friday.

Thank you!

Blake Downey, P.G.
Project Hydrogeologist
Wasatch Environmental
Cell: 435-760-8269
Office: 801-972-8400
Email: BD@wasatch-environmental.com

-----Original Message-----

From: noreply@bluestakes.org <noreply@bluestakes.org>
Sent: Tuesday, September 04, 2018 10:43 AM
To: Blake Downey <bd@wasatch-environmental.com>
Subject: UTAH EMLCFM 2018/09/04 #00693 A82470694-00A NORM NEW LREQ

EMLCFM 00693 UTAHa 09/04/18 10:43:15 A82470694-00A NORM NEW POLY

VISIT <http://www.bluestakes.org/locate-requests-new> BEFORE YOUR NEXT PROJECT!
DO IT YOURSELF ONLINE! – EXISTING TICKETS CAN BE UPDATED AND NEW TICKETS CAN BE CREATED ONLINE QUICKLY AND EASILY, 24 HOURS PER DAY. NO NEED TO WAIT ON HOLD!

Thank you for contacting Blue Stakes of Utah Utility Notification Center, Inc.
regarding your upcoming digging project. Please review your locate request ticket (below) and save it for your records.

If any of the information is incorrect, please contact Blue Stakes ASAP by dialing 811 or 800-662-4111 and reference your ticket number. Agents are available Monday - Friday, 7 AM - 5 PM, except on Holidays.

For information about the next steps in the process or other pertinent details, please visit the Frequently Asked Questions section of our website:
<http://www.bluestakes.org/faqs>. Dig Safely!

Ticket : A82470694 Rev:00A Taken: 09/04/18 10:37 Old Tkt: A82470694 Taken: 09/04/18 10:37 Oper: _RANDI

Submitted: 09/04/18 10:43 Oper: _RANDI Chan:ITE Legal date: 09/06/18 10:37 Good Thru : 09/18/18 10:37 Update By: 09/14/18 10:37

State: UT Cnty: SALT LAKE Place: MILLCREEK
Subdivision:

Address :

Street : Murray Holladay Rd

Cross 1 : Highland Dr

Side of St: Side of Lot: Digging in Rd: N

Svc Side of St: Depth:

Location: FROM THE NORTHWEST CORNER OF THE MURRAY HOLLADAY ROAD AND HIGHLAND DRIVE INTERSECTION TRAVEL WEST 400 FT ALONG THE NORTHERN EDGE OF MURRAY HOLLADAY ROAD TO THE BEGINNING POINT. FROM THE BEGINNING POINT STK 215 FT TO THE NORTH AND 140 FEET TO THE WEST (TO THE RETAINING WALL BETWEEN A STRIP MALL AND RESIDENTIAL APARTMENTS) STKG EVERYTHING WITHIN.
CALL BLAKE WITH ANY QUESTIONS.

:

Grids : 4039A11150B 4039A11150C 4040D11150B 4040D11150C

P&D: N Work type: SOIL REMEDIATION

Ug/Oh/Both: U Expl/Blast: N Boring: N Railroad: Emergency: N Meet: N

Company : WASATCH ENVIRONMENTAL Phone: 435-760-8269 Co addr : 2410 WEST CALIFORNIA AVENUE

City : SALT LAKE CITY State: UT Zip: 84104

Caller : BLAKE DOWNEY Phone: 435-760-8269 Type: E Contact : BLAKE DOWNEY Phone: 435-760-8269

BestTime:

Email : BD@WASATCH-ENVIRONMENTAL.COM

Members:

Code	Company	Description	Phone
CTLUT01	CENTURYLINK	FBR & PHN MRKD BY STAKE CENTER STA-KE	-CENTx8013641063
CCUT3	COMCAST - SALT LAKE, TOOELE & UTAH CO	CATV & FIBER MRKD BY STK CNTR STA-KE	-CENTx8013641063
QGCOCL	DOMINION ENERGY UTAH	GAS MARKED BY ELM LOCATING ELM- LO-CAT	Ix8887289343
FDIGIT	FIRSTDIGITAL TELECOM	PHONE NAT-HAN- MAR	x8016647362
HLDYWT	HOLLIDAY WATER COMPANY	CULINARY WATER MAR-LIN- SUN	x8012772893
JVWTR	JORDAN VALLEY WATER C.D.	CULINARY WATER GOR-DON- BAT	x8015654300
MTOLY	MOUNT OLYMPUS I.D.	SEWER ZAC-K S-TEVE	x8012622904
RMPJOR	ROCKY MOUNTAIN POWER - JORDAN VALLEY	ELECTRIC MRKD BY STAKE CENTER STA-KE	-CENTx8013641063
SLWTR	SALT LAKE CITY PUBLIC UTILITIES	STRM DRN, SWR & CULINARY WTR SLC- PU-BLIC	x8014836700
SYRINGAH	SYRINGA NETWORKS	FIBER & PHONE MRKD BY SYRINGA SYR-ING-A	Glx8004547214

View map at:

<http://map.bluestakes.org/?TRG=EBFnMcNeFnCi5nD-a>

Appendix C

Underground Injection Control Permit and Related Documentation



State of Utah
Department of Environmental Quality
Division of Water Quality
Underground Injection Control (UIC) Program
195 North 1950 West
Salt Lake City, Utah 84116

Reporting Form for Change of Operating Status for
Class V UIC Wells Authorized by Rule

Owner / operators of Class V injection wells regulated by the Utah 1422 UIC Program are required to submit information on the operating status of Class V wells. Use this form to report a change in the operating status of an existing injection well relative to the operating status that was indicated on the originally submitted UIC Inventory Information Form. **Do not** use this form to submit original UIC Inventory Information.

FACILITY LOCATION

Facility Name:	Former Henries Dry Cleaner, Cottonwood Square	UIC Facility ID: (if known)	UTU-35F-2A170E29
Physical Address:	1781 East Murray-Holladay Road	Millcreek (City)	
Geographic Location:	Select a method described in the Instructions at the end of this form to acquire a map showing the location of your UIC facility. Submit the map along with this form.		
County:	Salt Lake County		

INJECTION WELL(S) FOR WHICH CHANGE IN OPERATING STATUS IS BEING REPORTED

Well Designation (# or Name)	Operating Status Before Change	Operating Status After Change	Operating Status Change Date
All temporary subsurface environmental remediation wells (EPA Well Code 5B6) at the site	<input type="checkbox"/> Proposed <input type="checkbox"/> Under Construction <input checked="" type="checkbox"/> Active <input type="checkbox"/> Temporarily Abandoned <input type="checkbox"/> Other _____	<input type="checkbox"/> Under Construction <input type="checkbox"/> Active <input checked="" type="checkbox"/> Abandoned <input type="checkbox"/> Temporarily Abandoned <input type="checkbox"/> Other _____	9/14/2018
	<input type="checkbox"/> Proposed <input type="checkbox"/> Under Construction <input type="checkbox"/> Active <input type="checkbox"/> Temporarily Abandoned <input type="checkbox"/> Other _____	<input type="checkbox"/> Under Construction <input type="checkbox"/> Active <input type="checkbox"/> Abandoned <input type="checkbox"/> Temporarily Abandoned <input type="checkbox"/> Other _____	
	<input type="checkbox"/> Proposed <input type="checkbox"/> Under Construction <input type="checkbox"/> Active <input type="checkbox"/> Temporarily Abandoned <input type="checkbox"/> Other _____	<input type="checkbox"/> Under Construction <input type="checkbox"/> Active <input type="checkbox"/> Abandoned <input type="checkbox"/> Temporarily Abandoned <input type="checkbox"/> Other _____	

* Check Other if Active well is Modified but remains Active, or if Composition and/or Volume of injectate changes significantly from that which was originally reported.

SIGNATURE OF OWNER / OPERATOR

Jay Larsen, Construction Manager Name & Title (print or type)	(801) 364-2602 Phone Number
 Signature	October 3, 2018 Date Signed

Instructions

Facility Location:

Physical Address: Enter street address of facility or other description of physical location of facility that would enable someone to drive to the location of the facility. You may also choose to provide a photocopy of a road map (no greater than 11" x 17", preferably 8 ½" x 11") with the facility location indicated if a street address is not available.

Geographic Location: Submit a map from Atlas Utah (<https://atlas.utah.gov>) or another online map service ([Bing Maps](#), [Google Maps](#), [MapQuest](#))

To use the Atlas Utah to locate your facility, go to this web site <https://atlas.utah.gov/> Use the stacked layer symbol in the upper right hand corner of the map to select the base map (Hybrid, Lite, Terrain, Topo, or Color IR) you would like to use in locating your facility. Then locate your facility by using the Find Address, Find Point of Interest or Find City in the search fields at the left of the map. Use the + and – signs in the upper left hand corner of the map to zoom to your facility boundary. Using the pull down menu for the blue Print button in the upper left hand corner of the screen, select either Portrait or Landscape orientation for the map of your facility. While the service is preparing the printout the Print button will be gray and read 'Printing'. Once the Printout is finished the button will read 'Printout'. Click on Printout to open the map.

Electronic Submittal of Change of Operating Status Form

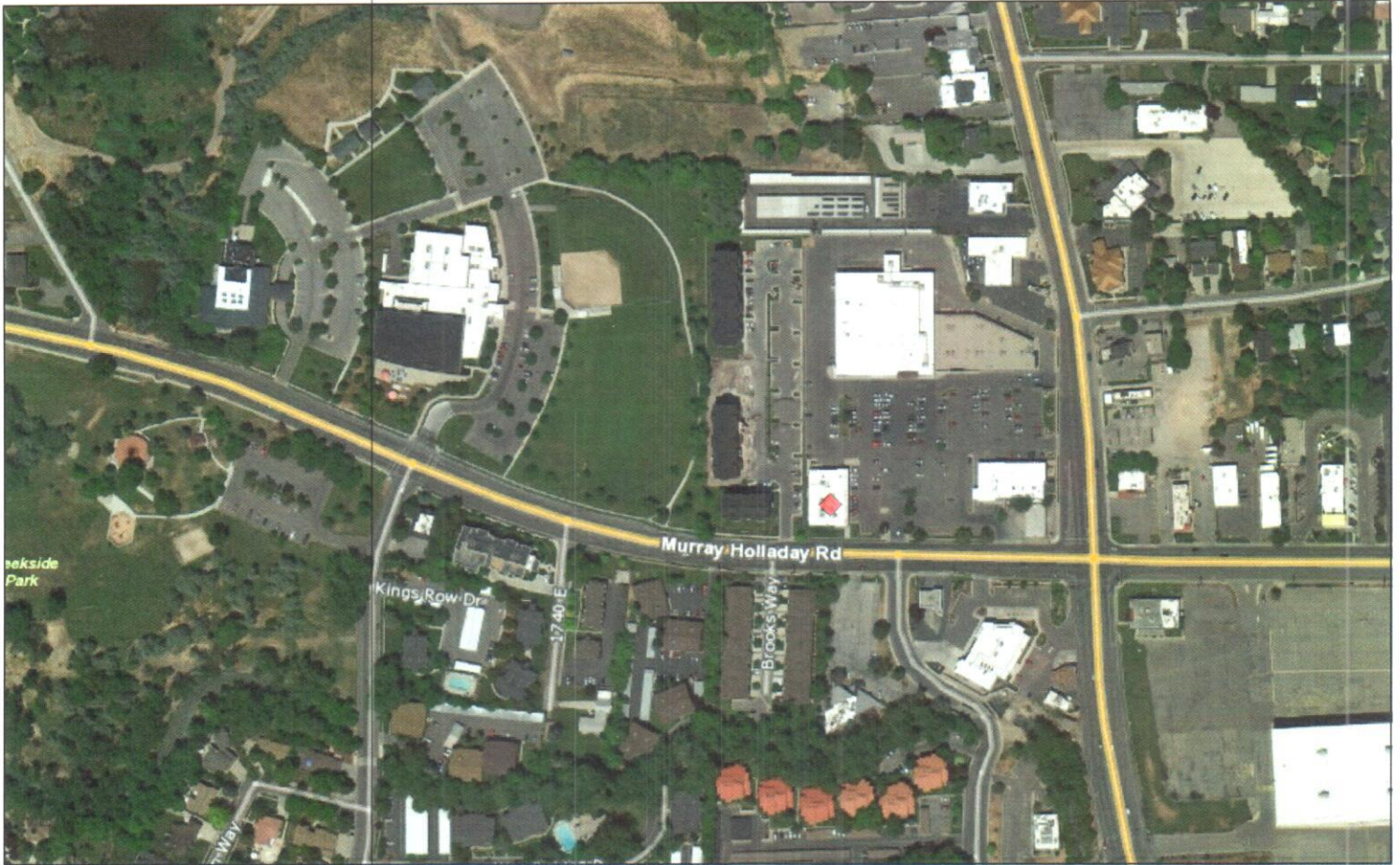
To submit the UIC Inventory Information Form using DWQ's Electronic Submissions web service:

1. Scan your completed, signed, and dated Change of Operating Status Form and save as a .pdf document on your computer.
2. Go to this website: <https://deq.utah.gov/ProgramsServices/services/submissions/index.htm>
3. Enter 'UIC Inventory Information Form' in the 'Purpose of Submission' box.
4. Complete the 'Submitted By' section.
5. Select the file you created in Step 1, and hit the 'Click here to submit' button.

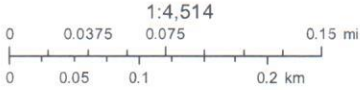
Submit Change of Operating Status by Mail

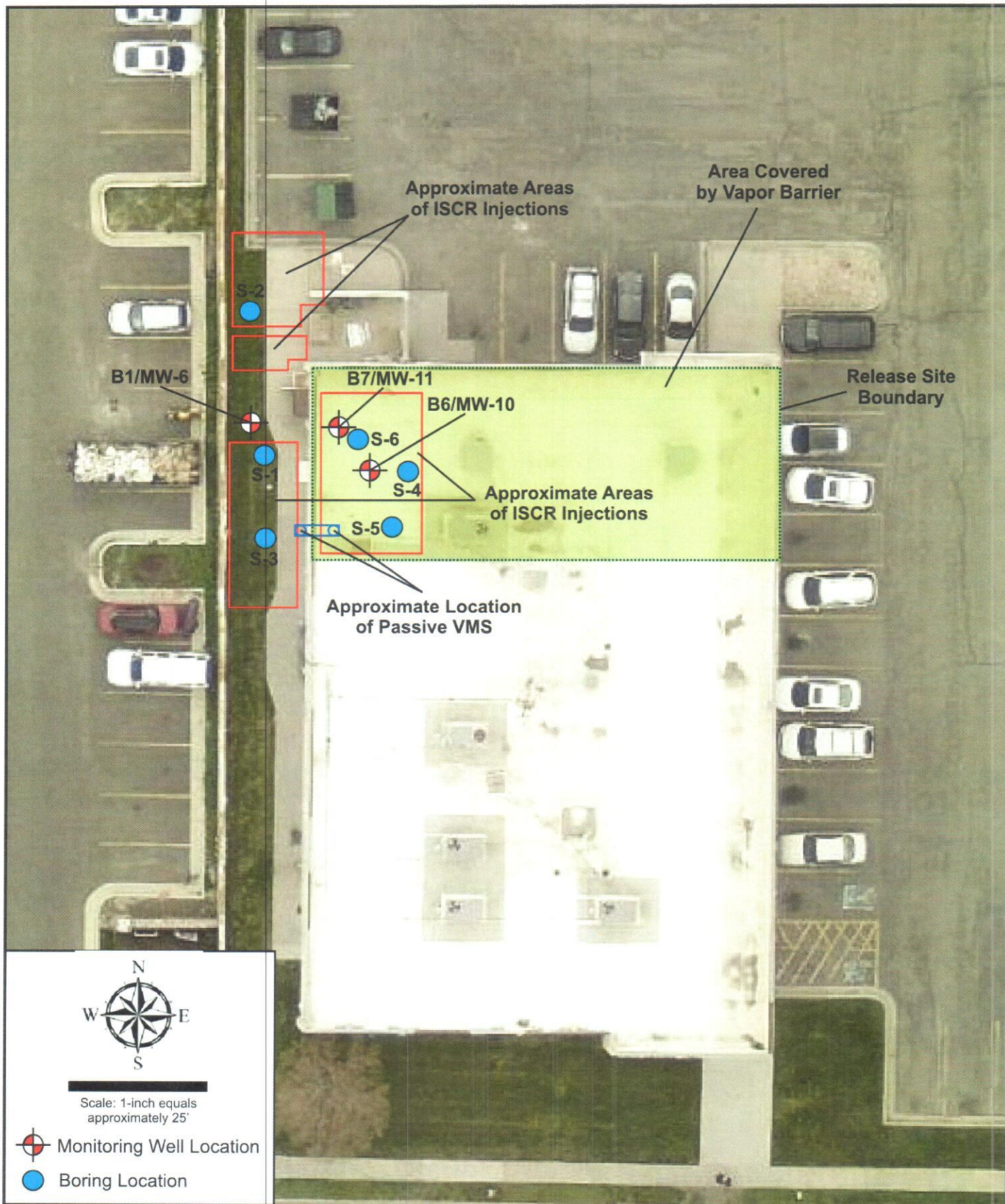
To submit the change of operating status form by mail, send your completed, signed and dated form to:

Utah Department of Environmental Quality
Division of Water Quality, ATTN: UIC
P.O. Box 144870
Salt Lake City, Utah 84114-4870



August 7, 2018





Environmental Science and Engineering

Proposed Remediation Plan Map

Former Henriess Dry Cleaner, Cottonwood Square
1781 East Murray Holladay Road
Millcreek, Utah

PROJECT NO.: 2249-001C

DATE: June 20, 2018

Figure 4

Michael Cronin

From: Brianna Ariotti <bariotti@utah.gov>
Sent: Thursday, August 16, 2018 3:28 PM
To: jay@chasebrookco.com; Eric Baiden; Michael Cronin
Subject: Class V Injection Well Authorization by Rule - former Henries Dry Cleaner
Attachments: UPDATED change of operating status.docx

Mr. Jay Larsen
Construction Manager
Holladay Corner LLC
154 East Myrtle Avenue
Suite 303
Murray, UT 84107

Dear Mr. Larsen:

Subject: Approval of Class V Injection Well Authorization by Rule
Subsurface Environmental Remediation– EPA Well Code – 5B6
Former Henries Dry Cleaner, Cottonwood Square
1781 West Murray- Holladay Road; Millcreek, UT 84117
Utah UIC Facility Identification Number: **UTU-35F-2A170E29**

APPROVAL AND AUTHORIZATION

The Division of Water Quality (DWQ) has reviewed the information submitted on the Utah Underground Injection Control (UIC) Inventory Information form along with any additional details that may have been provided pertaining to the Class V wells at the **former Henries Dry Cleaner** located at **1781 East Murray-Holladay Road in Millcreek, Utah**. Approval is hereby granted to construct and operate the thirty-one (31) Class V wells under Authorization by Rule according to the Administrative Rules for the Utah UIC Program (Utah UIC Program Rules) [R317-7](#).

The Class V wells are authorized as Subsurface Environmental Remediation Wells to inject Zero Valent Iron (ZVI) for the in-situ chemical reduction of chlorinated solvents on the property.

The construction and operation of any injection wells at this site for subsurface environmental remediation may be subject to additional requirements established by the Utah Division of Waste Management and Radiation Control (WMRC).

****NOTICE - You are required to report any change in the operating status of these wells (e.g. date constructed, date active, date closed, etc.) on the attached 'Reporting Form for Change of Operating Status for Class V Injection Wells Authorized by Rule.' These wells are currently entered as proposed, you must complete and submit the form for each injection event and when they are closed/abandoned****

This facility has been assigned a Utah UIC Facility Identification Number: **UTU-35F-2A170E29**. Please use this identification number when submitting any further information and correspondence regarding injection wells at this facility.

PROHIBITION OF UNAUTHORIZED INJECTION

Responsibility of the Utah Division of Water Quality According to the Utah UIC Program Rules, Class V injection wells are Authorized by Rule provided inventory information is submitted before injection commences. The Utah UIC Program Rules prohibit authorization of underground injections "which would allow movement of fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water regulation ([40 CFR Part 141](#) and Utah Public Drinking Water Rules [R309-200](#)), or which may adversely affect the health of persons" or which "may cause a violation of any ground water quality rules that

may be promulgated by the Utah Water Quality Board [R317-6](#).”

If at any time the Director of the Utah Division of Water Quality determines that a Class V well may cause a violation of primary drinking water rules, the Utah UIC Program Rules require the Director to take appropriate action to address such determination. The Director may require the injector to obtain an individual permit, require the injector to close the injection well, or take appropriate enforcement action including site remediation.

Responsibility of the Operator Once approval has been given to operate a Class V injection well under Authorization by Rule, it is the responsibility of the operator of the Class V injection well to implement appropriate Best Management Practices (BMPs) to ensure that the authorized injectate does not contain any contaminant that would cause a violation of any primary drinking water regulation or ground water quality rule or would otherwise adversely affect the health of persons. Additionally, no injectate other than that for which the well is authorized should be allowed to enter the well.

If you have any questions or comments, please feel free to contact me by phone at [\(801\) 536-4351](tel:8015364351) or by email at bariotti@utah.gov.

Sincerely,

Brianna Ariotti

Environmental Scientist
Underground Injection Control (UIC) Program

Attachments: Reporting Form for Change of Operating Status Class V ABR

Courtesy Copy Recipients: Eric Baiden, WMRC
Michael Cronin, Wasatch Environmental, Inc.

File: Groundwater\UIC Program\ Salt Lake County \former Henries Dry Cleaner

Inventory Review Fee Payment Method:	
<input type="checkbox"/> Online	Order # _____
<input type="checkbox"/> Check	Check # _____
(For DWQ use only)	

Utah
Underground
Injection
Control
(UIC)
Inventory Information

Well Subclass: _____
Facility ID: UTU- _____
Date Entered: _____ By: _____
(For DWQ use only)

Subsurface Environmental Remediation (SER) Injection Wells

Owners / operators of existing and new Class V injection wells authorized-by-rule shall submit inventory information (UAC R317-7-6). This form is designed to assist the regulated community in complying with this requirement. Please complete all fields.

FACILITY LOCATION

Facility Name:	Former Henries Dry Cleaner, Cottonwood Square		Date:	August 8, 2018	
Physical Address:	1781 East Murray-Holladay		Millcreek	(City)	
Mailing Address:	Holladay Corner LLC 154 East Myrtle Avenue, Suite #303	Murray	(City)	84107	(Zip Code)
Geographic Location:	Select a method described in the Instructions at the end of this form to acquire a map showing the location of your UIC facility. Submit the map along with this form.				
County:	Salt Lake County				

FACILITY CONTACT

Contact Name:	Jay Larsen		Phone:	(801) 364-2602		Email:	jay@chasebrookco.com	
Contact Type:	<input type="checkbox"/> Owner/Operator	<input checked="" type="checkbox"/> Owner	<input type="checkbox"/> Operator	<input type="checkbox"/> Facility Manager	<input type="checkbox"/> Developer			
(check all that apply)	<input type="checkbox"/> Legal Representative	<input type="checkbox"/> Official Representative	<input type="checkbox"/> Contractor	<input type="checkbox"/> DEQ District Engineer / Project Manager				
	<input type="checkbox"/> Other _____							
Title:	Construction Manager		Organization:	Holladay Corner LLC				
Mailing Address:	154 East Myrtle Avenue, Suite #303		Murray	(City)	84107	(Zip Code)		
Contact Name:	Michael Cronin		Phone:	(801) 972-8400		Email:	mc@wasatch-environmental.com	
Contact Type:	<input type="checkbox"/> Owner/Operator	<input type="checkbox"/> Owner	<input type="checkbox"/> Operator	<input type="checkbox"/> Facility Manager	<input type="checkbox"/> Developer			
(check all that apply)	<input type="checkbox"/> Legal Representative	<input type="checkbox"/> Official Representative	<input type="checkbox"/> Contractor	<input type="checkbox"/> DEQ District Engineer / Project Manager				
	<input checked="" type="checkbox"/> Other Environmental Consultant							
Title:	Senior Geologist/Senior Project Manager		Organization:	Wasatch Environmental, Inc.				
Mailing Address:	2410 West California Avenue		Salt Lake City	(City)	84104	(Zip Code)		

DWQ Use Only for Date Received Stamp and eDocs Number:

SWPZ? ☐ Yes ☐ No

System Name:

Contact Information:

LAND OWNERSHIP AT FACILITY			
<input checked="" type="checkbox"/> Private – For Profit	<input type="checkbox"/> Private – Not for Profit	<input type="checkbox"/> Private - Farm	<input type="checkbox"/> Private - Other
<input type="checkbox"/> Govt – Federal	<input type="checkbox"/> Govt – State	<input type="checkbox"/> Govt – Local	<input type="checkbox"/> Other
FACILITY DESCRIPTION (see Instructions)			
6-Digit NAICS Code:	812320	Corresponding NAICS Title:	Drycleaning and laundry services (except coin operated)
Describe the primary business activity conducted at the facility: The Facility is a retail shopping center which includes a strip mall. The northern-most tenant space in the strip mall was a Henries Dry Cleaner which has been vacated.			
REMEDIATION TYPE AND OVERSIGHT AGENCY (see Instructions)			
Is the proposed remediation associated with a(n):	<input checked="" type="checkbox"/> RCRA Site? ID Number: <u>UTD144751500</u>	<input type="checkbox"/> CERCLA (Superfund) Site? ID Number: _____	<input type="checkbox"/> Voluntary Clean Up? ID Number: _____
	<input type="checkbox"/> Independent Clean Up? ID Number: _____	<input type="checkbox"/> LUST? ID Number: _____	<input type="checkbox"/> Other? Describe: _____
	Regulatory Agency Providing Primary Oversight of this Remediation: <u>Division of Waste Management and Radiation Control</u>		
Project Manager in Oversight Agency:	<u>Eric Baiden</u>		Phone: <u>(801) 536-0216</u>
REMEDIATION ACTIVITY INVOLVING INJECTION WELLS (see Instructions)			
<input type="checkbox"/> Aquifer Test	<input type="checkbox"/> Tracer Test	<input type="checkbox"/> In-Situ Bioremediation	<input type="checkbox"/> In-Situ Chemical Oxidation
<input type="checkbox"/> Bioventing / Biosparging	<input type="checkbox"/> In Well Air Stripping	<input type="checkbox"/> In-Situ Flushing	<input type="checkbox"/> Remediation Waste Disposal
<input checked="" type="checkbox"/> Other: <u>In-situ Chemical Reduction (using zero valent iron)</u>			
INJECTION WELL OPERATING STATUS (indicate number of wells in appropriate category)			
31			
Proposed	Under Construction / Modification	Active	Temporarily Abandoned
INJECTION WELL CONSTRUCTION AND SUBSURFACE DETAILS (see Instructions)			
No actual wells will be constructed. The injections will be performed using temporary, direct-push, soil borings that will backfilled after the injections have been completed. Twenty-two borings will be completed, and injections performed at two-foot intervals, in the vadose zone (0 to 8 feet below ground surface). Nine borings will be completed, and injections performed at two-foot intervals, in the saturated zone (8 feet to 20 feet below ground surface). These injections will only affect the shallow, unconfined, valley fill aquifer.			
INJECTATE CHARACTERIZATION (see Instructions)			
Zero valent iron (ZVI) is a common reagent used to chemically reduce chlorinated solvents (such as those used in dry cleaning), to harmless breakdown products. Full reduction (or de-chlorination) transforms tetrachloroethene (PCE) used in dry cleaning, to ethane as an end product. ZVI has been successfully used for site remediation for several decades.			

HYDROGEOLOGIC CHARACTERIZATION
(see Instructions)

Soils at the Facility generally consist of silts (ML) with varying gravel and cobble content from 0 to 5 feet below ground surface (bgs); silts (ML) and clayey silts (CL-ML) from 5 to 10 feet bgs; and clayey sand (SC), sand with gravel (SP), silt with sand (SM), and sand with silt and gravel (SW) from 10 to 20 feet bgs. Depth to groundwater at the Facility varies from approximately 6 to 11 feet bgs with a hydraulic gradient of 0.007 feet per foot to the west. The nearest surface water body is Big Cottonwood Creek, located approximately 570 feet south of the Facility.

COMMENTS

Use this space for additional contact information and/or other important information about these SER wells.

SIGNATURE OF OWNER / OPERATOR or LEGAL REPRESENTATIVE

Jay Larsen, Construction Manager

Name & Title (print or type)

(801) 364-2602

Phone Number

 Construction Manager
Signature

August 8, 2018

Date Signed

Online Credit Card Payment of UIC Inventory Review Fee

To pay the UIC Inventory Review Fee online:

1. Go to this website: https://secure.utah.gov/cart/dwq_cart/products.html , the Products page.
2. Click on 'Payment for UIC Inventory Review Fee' under the UIC Inventory Review heading.
3. On the Product Detail page, enter the number of facilities (**not** the number of injection wells) for which you are submitting the UIC Inventory Review Fee. Click on the 'Add to cart' button.
4. On the Your Cart page, confirm the quantity and amount then click on the Checkout button.
5. On the Enter Your Shipping Address page, enter the contact information for the owner / operator of the UIC facility listed on the first page of the UIC Inventory Information Form in the Please Enter Shipping Info block even though nothing will be shipped out.
6. In the Additional Information block at the bottom of the page, enter the UIC Facility Name from the first page of the UIC Inventory Information Form.
7. Click on 'Proceed to Payment' button and complete the credit card information then click on the 'Continue' button.

Electronic Submittal of UIC Inventory Information Form

To submit the UIC Inventory Information Form using DWQ's Electronic Submissions web service:

1. Scan your completed, signed, and dated UIC Inventory Information Form and save as a .pdf document on your computer.
2. Go to this website: <https://deq.utah.gov/ProgramsServices/services/submissions/index.htm>
3. Enter 'UIC Inventory Information Form' in the 'Purpose of Submission' box.
4. Complete the 'Submitted By' section.
5. Select the file you created in Step 1, and hit the 'Click here to submit' button.

Submit UIC Inventory Review Fee and Inventory Information Form by Mail

To submit both the form and fee by mail, send your completed, signed and dated form along with a check made payable to **Utah Division of Water Quality** to:

Utah Department of Environmental Quality
Division of Water Quality, ATTN: UIC
P.O. Box 144870
Salt Lake City, Utah 84114-4870

Instructions for Completing the Utah Underground Injection Control Inventory Information Form
for
Subsurface Environmental Remediation (SER) Injection Wells
(UIC Well Code: 5B6)

~~~~~

Owners or operators of all Class V injection wells, existing and new, must submit inventory information according to Section R317-7-6.4(C) of the Utah Administrative Rules for the Underground Injection Control Program. Required information includes: facility name and location; name and address of legal contact; ownership of facility; nature and type of injection wells; and operating status of injection wells. The Utah UIC Inventory Information Form is designed to assist owners or operators to comply with this requirement, to collect sufficient information regarding the injection activity such that authorization-by-rule status can be assessed, and to coordinate UIC Program regulatory action with other agencies having regulatory authority over the subject facility. Inventory information must be submitted prior to injection for new wells.

**This submission does not relieve the applicant of any liability for ground water cleanup or any claim for resource damage if ground water contamination is traced to the injection wells shown on this form. Nor does authorization-by-rule under the UIC Program relieve the applicant, in any way, of obligations to comply with other applicable regulatory requirements, or to obtain other necessary applicable permits or authorizations from local or other agencies. The applicant may contact the local health department for compliance with local requirements.**

**Facility Location:**

**Physical Address:** Enter street address of facility or other description of physical location of facility that would enable someone to drive to the location of the facility. You may also choose to provide a photocopy of a road map (no greater than 11" x 17", preferably 8 1/2" x 11") with the facility location indicated if a street address is not available.

**Geographic Location:** Submit a map from Atlas Utah (<https://atlas.utah.gov>) or another online map service ( [Bing Maps](#), [Google Maps](#), [MapQuest](#) )

To use the Atlas Utah to locate your facility, go to this web site <https://atlas.utah.gov/> Use the stacked layer symbol in the upper right hand corner of the map to select the base map (Hybrid, Lite, Terrain, Topo, or Color IR) you would like to use in locating your facility. Then locate your facility by using the Find Address, Find Point of Interest or Find City in the search fields at the left of the map. Use the + and - signs in the upper left hand corner of the map to zoom to your facility boundary. Using the 'pull down' menu for the blue Print button in the upper left hand corner of the screen, select either Portrait or Landscape orientation for the map of your facility. While the service is preparing the printout the Print button will be gray and read 'Printing'. Once the Printout is finished the button will read 'Printout'. Click on Printout to open the map.

**Facility Contact:**

At least one of the contacts listed must be the owner/operator or legal representative of the owner/operator of the Class V injection well(s) for which the UIC Inventory Information is being submitted. The owner/operator or the legal representative must be the signatory for the form. Provide additional contacts capable of providing reliable information regarding the operation of the facility.

**Land Ownership at Facility:**

Self-explanatory

**Facility Description:**

Enter the 6-digit 2017 North American Industry Classification System (NAICS) code and the title of the 6-digit code describing the primary activity at your facility. You can find your NAICS code using the search tools at: <https://www.naics.com/search/> or you can download 2017 NAICS files at: <https://www.census.gov/eos/www/naics/downloadables/downloadables.html>

Include a description of the business activities performed at the facility. You may include the NAICS code description. You may wish to include additional narrative for clarity.

**Remediation Type and Oversight Agency**

Subsurface environmental remediation projects are conducted under the statutory authority of the federal Resource Conservation and Recovery Act (RCRA); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund; or some other statutory authority. Check the box that corresponds to the remediation type for this project and enter the ID number the regulatory oversight agency has assigned to this remediation project.

Primary regulatory oversight of subsurface environmental remediation projects is provided by programs and agencies other than the UIC Program and DWQ. Enter the oversight agency for the remediation project. Provide the name and contact information for the project manager in that agency.

**Remediation Activity Involving Injection Wells:**

Descriptions of a few of the commonly employed subsurface environmental remediation technologies involving injection wells are given below.

**Air Sparging** - Air sparging involves the injection of air or oxygen through a contaminated aquifer. Injected air traverses horizontally and vertically in channels through the soil column, creating an underground stripper that removes volatile and semivolatile organic contaminants by volatilization. The injected air helps to flush the contaminants into the unsaturated zone. SVE usually is implemented in conjunction with air sparging to remove the generated vapor-phase contamination from the vadose zone. Oxygen added to the contaminated groundwater and vadose-zone soils also can enhance biodegradation of contaminants below and above the water table.

**Bioventing / Biosparging** - Bioventing is a common form of in situ bioremediation. Oxygen is delivered to contaminated unsaturated soils by forced air movement (either extraction or injection of air) to increase oxygen concentrations and stimulate biodegradation.



**In-Situ Bioremediation** - Bioremediation uses microorganisms to degrade organic contaminants in soil, sludge, and solids either excavated or in situ. The microorganisms break down contaminants by using them as a food source or co-metabolizing them with a food source. Aerobic processes require an oxygen source, and the end products typically are carbon dioxide and water. Anaerobic processes are conducted in the absence of oxygen, and the end products can include methane, hydrogen gas, sulfide, elemental sulfur, and dinitrogen gas. In situ techniques stimulate and create a favorable environment for microorganisms to grow and use contaminants as a food and energy source. Generally, this means providing some combination of oxygen, nutrients, and moisture, and controlling the temperature and pH. Sometimes, microorganisms that have been adapted for degradation of specific contaminants are applied to enhance the process.

**In-Situ Chemical Oxidation** - Chemical oxidation typically involves reduction/oxidation (redox) reactions that chemically convert hazardous contaminants to nonhazardous or less toxic compounds that are more stable, less mobile, or inert. Redox reactions involve the transfer of electrons from one compound to another. Specifically, one reactant is oxidized (loses electrons) and one is reduced (gains electrons). The oxidizing agents most commonly used for treatment of hazardous contaminants in soil are ozone, hydrogen peroxide, hypochlorites, chlorine, chlorine dioxide, potassium permanganate, and Fentons reagent (hydrogen peroxide and iron). Cyanide oxidation and dechlorination are examples of chemical treatment. This method may be applied in situ or ex situ, to soils, sludges, sediments, and other solids, and may also be applied for the in situ treatment of groundwater.

**In-Situ Flushing** - For in situ soil flushing, large volumes of water, at times supplemented with surfactants, co-solvents, or treatment compounds, are applied to the soil or injected into the groundwater to raise the water table into the contaminated soil zone. Injected water and treatment agents are isolated within the underlying aquifer and recovered together with flushed contaminants.

Co-solvent flushing involves injecting a solvent mixture (e.g., water plus a miscible organic solvent such as alcohol) into either vadose zone, saturated zone, or both to extract organic contaminants. Co-solvent flushing can be applied to soils to dissolve either the source of contamination or the contaminant plume emanating from it. The co-solvent mixture is normally injected upgradient of the contaminated area, and the solvent with dissolved contaminants is extracted downgradient and treated above ground.

Recovered ground water and flushing fluids with the desorbed contaminants may need treatment to meet appropriate discharge standards prior to recycle or release to local, publicly owned wastewater treatment works or receiving streams. To the maximum extent practical, recovered fluids should be reused in the flushing process. The separation of surfactants from recovered flushing fluid, for reuse in the process, is a major factor in the cost of soil flushing. Treatment of the recovered fluids results in process sludges and residual solids, such as spent carbon and spent ion exchange resin, which must be appropriately treated before disposal. Air emissions of volatile contaminants from recovered flushing fluids should be collected and treated, as appropriate, to meet applicable regulatory standards. Residual flushing additives in the soil may be a concern and should be evaluated on a site-specific basis.

**In-Situ Thermally Enhanced Recovery** - Thermally enhanced recovery is an in situ treatment process that uses heat to increase the volatilization rate of organics and facilitate extraction. Volatilized contaminants are typically removed from the vadose zone using soil vapor extraction. Specific types of thermally enhanced recovery techniques include Contained Recovery of Oily Waste (CROWTM), radio frequency heating, conductive heating, steam heating, in situ steam stripping, hot air injection, dynamic underground stripping, in situ thermal desorption, and electrical resistance heating. Thermally enhanced recovery is usually applied to contaminated soil but may also be applied to groundwater.

**In Well Air Stripping** - Air is injected into a double screened well, lifting the water in the well and forcing it out the upper screen. Simultaneously, additional water is drawn in the lower screen. Once in the well, some of the VOCs in the contaminated ground water are transferred from the dissolved phase to the vapor phase by air bubbles. The contaminated air rises in the well to the water surface where vapors are drawn off and treated by a soil vapor extraction system.

## **Injection Well Operating Status**

Self explanatory.

## **Injection Well Construction and Subsurface Details**

Submit a plan view (not to exceed 11" x 17") of the facility property showing the location of the injection well(s). Also, submit a vertical cross-section (not to exceed 11" x 17") showing the details of the injection well(s). Include such details as unique injection well ID number; construction type; if pre-fab construction, indicate type; construction dimensions; depth of well if vertical construction; screened interval if vertical construction; and depth of engineered bottom if horizontal construction.

## **Injectate Characterization**

In the space provided or on an attached sheet, provide a narrative describing what is being injected to achieve subsurface environmental remediation.

## **Hydrogeologic Characterization**

In the space provided or on an attached sheet, provide information regarding the hydrogeology in the vicinity of the proposed remediation project such that DWQ can assess the potential for impact to groundwater and surface water resources. Include information such as depth to groundwater, distance to nearest surface water body, description of subsurface material, proximity to utility trenches, proximity to drinking water wells (public and private), etc.

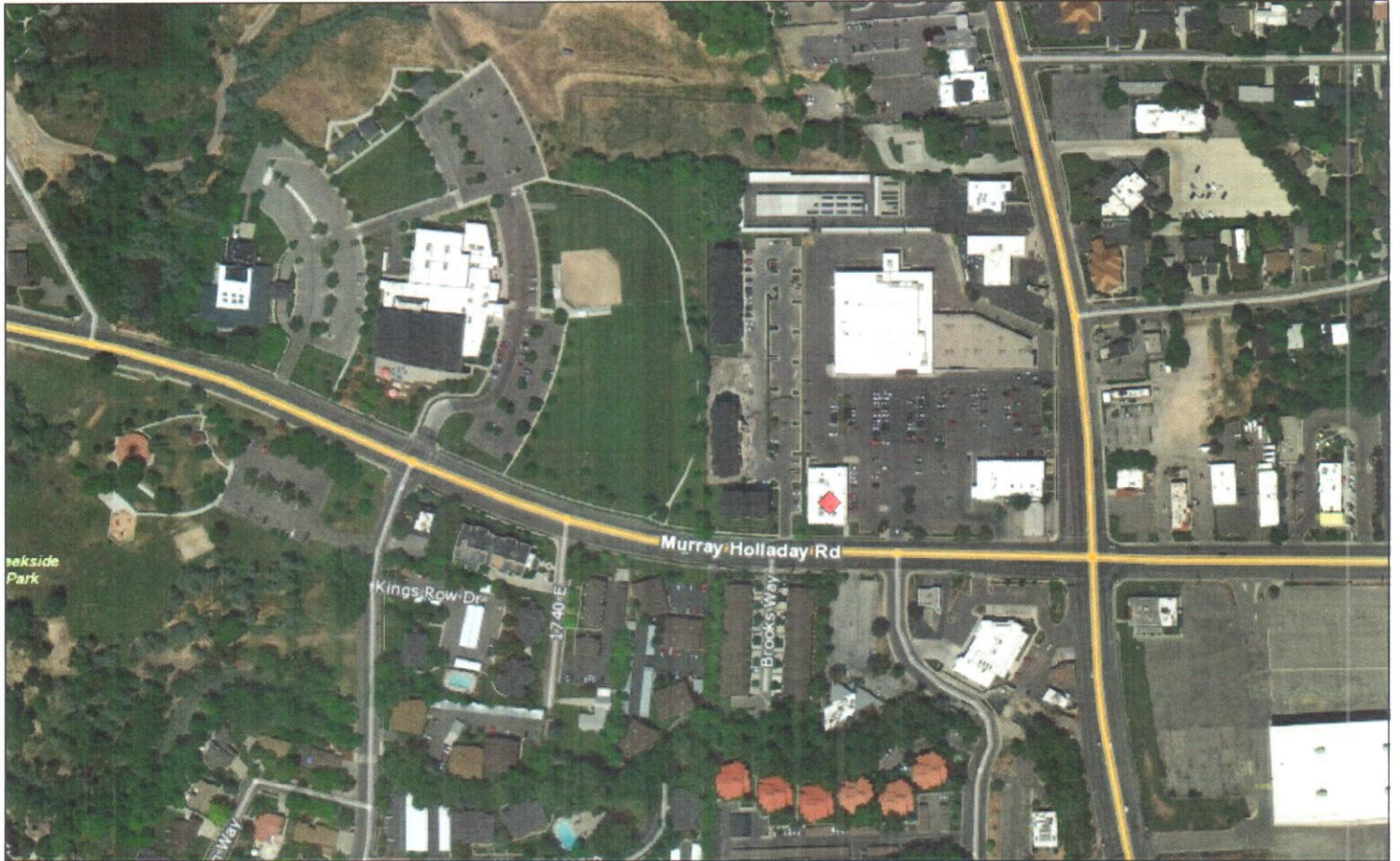
## **Comments**

Include additional contact information and/or any other relevant information not already addressed in the other sections of this form.

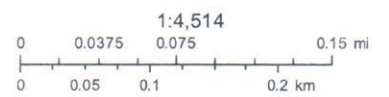
## **Signature of Owner / Operator**

In keeping with the requirement of Section R317-7-6.4(C) of the Utah Administrative Rules for the Underground Injection Control Program that the owner or operator must submit inventory information, the UIC Inventory Information Form **must** be signed by the **owner or operator (or his/her legal representative)** of the injection well(s) for which the inventory information is being submitted.





August 7, 2018



## **Appendix D**

### **Notification to Salt Lake County Health Department**

## Michael Cronin

---

**From:** Michael Cronin  
**Sent:** Thursday, August 23, 2018 9:21 AM  
**To:** 'gedwards@slco.org'; 'Eric Baiden'; 'bmaulding@utah.gov'  
**Cc:** Blake Downey; 'Jay Larsen'; Thom Williamsen  
**Subject:** Notification of Corrective Action - Former Henries Dry Cleaner, Cottonwood Square

Gentlemen,

This email serves as notification that Wasatch Environmental, Inc., will commence corrective action activities at the former Henries Dry Cleaner located at Cottonwood Square, 1781 East Murray-Holladay Road, Millcreek, Utah; on September 10, 2018. The corrective action is being conducted in accordance with a Corrective Action Plan (CAP) dated July 26, 2018. The CAP was approved by the Utah Department of Environmental Quality, Division of Waste Management and Radiation Control in a letter dated August 9, 2018. Please feel free to contact me at your convenience with any questions, comments, or concerns you may have regarding this corrective action.

Kind regards,

***Michael S. Cronin, P.G.***

Senior Geologist and Senior Project Manager

Wasatch Environmental, Inc.

Office: (801) 972-8400

Cell: (801) 209-5211

Email: mc@wasatch-environmental.com



## **Appendix E**

### **Public Notice**

# PUBLIC NOTICE

## Former Henries Dry Cleaner-Cottonwood Square Project (Located at 1781 East Murray-Holladay Road, Millcreek, Utah)

Chasebrook Company will be beginning remedial activities of the chlorinated solvent-contaminated soil and groundwater at the former Henries Dry Cleaner. The environmental consultant for this project is Wasatch Environmental, Inc.

### Site Description

The site is located at 1781 East Murray-Halladay Road, Millcreek, Utah. The facility most recently operated as a Henries Dry Cleaner. Henries Dry Cleaner occupied this site from 1982 until 2007 and performed dry cleaning on-site. The results of previous subsurface investigations have indicated the presence of chlorinated solvent impacts to soil, groundwater, soil gas, and indoor air at this site.

### Cleanup Measures and Tentative Schedule

The proposed cleanup approach is *in-situ* injection of zero valent iron into the impacted soil and groundwater, and will consist of the following tentative schedule:

1. August 29, 2018, delivery and storage of zero valent iron material at the site.
2. September 10, 2018, through September 15, 2018, conduct injection activities.
3. October 15, 2018, complete soil confirmation sampling at the site using direct-push drilling techniques, and complete concrete patching.
4. October 16, 2018, sub-slab passive vapor mitigation system installation.
5. November 15, 2018, through November 22, 2018, complete vapor barrier installation.

### For More Information

Please contact:

Michael Cronin, Wasatch Environmental Project Manager (801-972-8400).

Or

Blake Downey, Wasatch Environmental Field Supervisor (801-972-8400).

## **Appendix F**

### **Photographic Log**



Photo 1 – Former drain pipe trench within the former Henries tenant space



Photo 2 – Exposed trench pipe cut and plugged



Photo 3 – Additional pipe plugged within the former Henries tenant space



Photo 4 – Toilet drain plugged within the former Henries tenant space



Photo 5 – Private utility locating subcontractor



Photo 6 – Private utility locating subcontractor



Photo 7 – Utilities located the western portion of the release site



Photo 8 – Utilities located the western portion of the release site





Photo 9 – Unloading the injection pump



Photo 10 – Tote of gelling chemicals



Photo 11 – Storage of ZVI drums and bags



Photo 12 – Injection mixing area fencing



Photo 13 – Water supply truck



Photo 14 – Water storage bladder



Photo 15 – Mixing gel for injections



Photo 16 – Mixing ZVI for injections



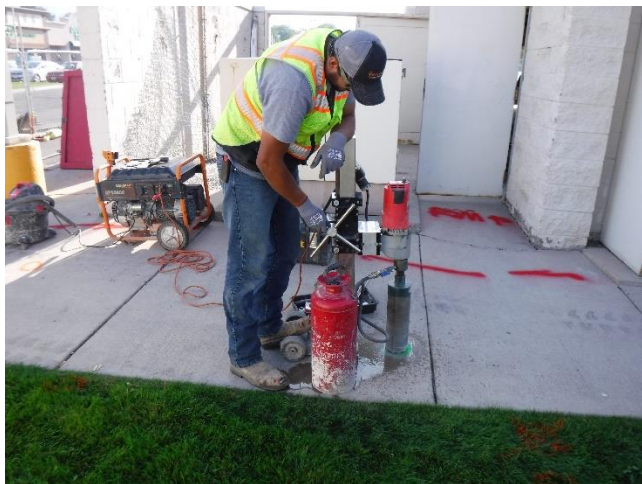


Photo 17 – Typical concrete coring to facilitate injections



Photo 18 – Typical temporary injection well head



Photo 19 – Typical temporary injection well head inside former Henries tenant space



Photo 20 – Typical concrete patch post injection activities





Photo 21 – Typical concrete coring for confirmation soil sampling activities



Photo 22 – Typical drilling for confirmation soil sampling activities

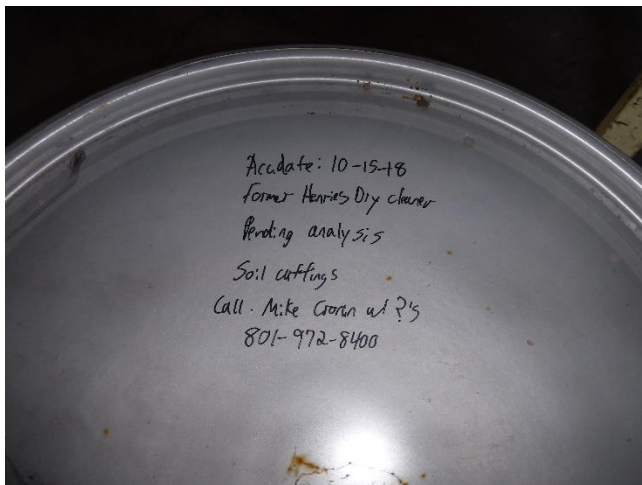


Photo 23 – Labeled soil drum containing soil cuttings from the soil sampling activities



Photo 24 – Typical groundwater sampling activities



Photo 25 – Groundwater sampling purge water drum located within the former Henries tenant space



Photo 26 – Perforated portion of the passive vapor mitigation system



Photo 27 – Core hole for the vapor mitigation system



Photo 28 – Interior piping for the vapor mitigation system



Photo 29 – Sampling ports for the vapor mitigation system

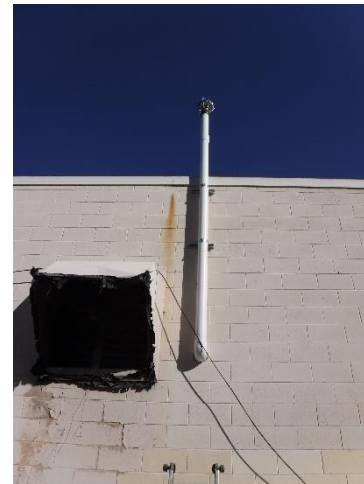


Photo 30 – Exterior piping and ventilation cap for the vapor mitigation system



Photo 31 – Vapor barrier installation floor preparation



Photo 32 – Typical vent sealing to facilitate the vapor barrier installation





Photo 33 – Typical crack and joint filling activities for the vapor barrier installation



Photo 34 – Typical crack and joint filling activities for the vapor barrier installation



Photo 35 – Typical primer coat installation activities for the vapor barrier installation



Photo 36 – Primer coat installed



Photo 37 – Mixing Retro-Coat vapor barrier material



Photo 38 – Typical Retro-Coat installation activity



Photo 39 – Retro-Coat mostly installed



Photo 40 – Indoor air sample collected within the former Henries tenant space post Retro-Coat installation



Photo 41 – Indoor air sample collected from the LA Nail Salon



Photo 42 – Indoor air sample collected from the southern vacant tenant space



Photo 43 – Typical emission sampling activities



## **Appendix G**

### **Zero Valent Iron Information GeoTactical Summary Report**



**ZVI**  
ZERO VALENT IRON

*Zero Valent Iron – High quality and purity iron powder and granules for water treatment or conditioning, permeable reactive barriers, and other soil remediation applications.*

## Benefits Include

Proven remediation technology since 1970's

Applicable in soil piles and insitu applications for groundwater treatment

Economical solution compared to other available products

Can combine with MTS for mixed contaminant plumes with metals and organics

## Proven Field Applications

Permeable reactive barriers (PRBs) and Funnel and Gate

Direct Push Injection of micron scale particles into groundwater zone

Trenching and aggregate scale particles PRB design

Deep Soil Mixing

Hydraulic Fracturing

## Applicable to Treatment of many contaminants including:

Chlorinated Solvents  
PCE, TCE, DCE  
And degradation products  
Other chlorinated compounds

## Heavy Metals

Arsenic  
Selenium  
Hexavalent Chromium (CrVI)  
Other heavy metals

## Other COCs

Cyanide  
Nitrate  
Uranium  
Technetium  
Pesticides (DDT, DDD, and DDE)

Our Zero valent iron powder is manufactured from 100% recycled virgin iron residual material from trusted OEM manufacturers with iron content up to 99% depending on specification requirements. We use high quality raw materials and proprietary grinding and pulverizing technology to produce ZVI powder with no appreciable surface oxides.



## Material

Iron  
Carbon  
Silicon  
Water

## % Composition

up to 99%  
minimal %  
minimal %  
less than 1%

## Physical Properties

Form: Fine Powder to aggregate  
Density: 2.2-3.6 g/cm<sup>3</sup>  
Odor: Odorless  
Color: Gray

## ZVI Size and Associated Application

### ULTRA-FINE ZVI POWDER

#### MICRO 20 (625 Mesh)

|                     |                |
|---------------------|----------------|
| >25 micron          | <7%            |
| <b>20-25 micron</b> | <b>&gt;90%</b> |
| <20 micron          | <7%            |

#### MICRO 40 (400 Mesh)

|                     |                |
|---------------------|----------------|
| >44 micron          | <5%            |
| <b>37-44 micron</b> | <b>&gt;90%</b> |
| <37 micron          | <7%            |

### STANDARD ZVI BLEND

#### MICRO BLEND (+/- 10%)

|               |        |
|---------------|--------|
| 88-177 micron | 30-35% |
| 88 micron     | 30-35% |
| 44-74 micron  | 30-35% |
| <44micron     | <5%    |

Other options available to meet specific design criteria.

*We love made to order opportunities. Let us help you!*

Technical support and reliable customer service available to all customers.



Wasatch Environmental, Inc.  
2410 West California Ave  
Salt Lake City, Utah  
84104

October 22, 2018  
J1804

Attention: Mr. Michael Cronin, P.G. – Senior Project Manager

**RE: REPORT ON THE ZERO-VALENT IRON EMPLACEMENT WORK FOR REMEDIATING CHLORINATED SOLVENTS AT THE FORMER HENRIES DRY CLEANER LOCATED IN MILLCREEK, UTAH**

Dear Mr. Cronin, P.G.:

Geo Tactical Remediation Ltd. (Geo Tactical) is pleased to present the following letter report on behalf of Frac Rite Remediation Inc. to Wasatch Environmental, Inc. (Wasatch) for the zero-valent iron fracturing completed at the former Henries Dry Cleaner located at 1781 East Murray-Holladay Road, Millcreek, Utah.

**Background**

- The site is a former dry cleaner.
- Soil and groundwater are contaminated with chlorinated solvents.
- The contamination is present between surface and 20 ft below ground surface (bgs).
- The soil stratigraphy at the site is variable; clay, silt, sand, and gravel are present at various depths.

**Objective**

The objective of the field program was to emplace zero-valent iron (ZVI) in the subsurface to assist in the degradation of chlorinated solvents that are present in the shallow soil and groundwater underlying the site.

**Design**

Two vertical zones were identified for ZVI treatment: the vadose zone between surface and 8 ft bgs, and the saturated zone between 8 and 20 ft bgs. The design areas were also identified as: north, west, and inside (see Figure 1).

The ZVI loading for each treatment zone in each design area was provided by C.E.R.E.S. Corporation. The ZVI mass for each zone and area are shown in Table 1 below.

**Table 1: ZVI Design Mass**

| Design Area    | North  |           | West   |           | Inside |           | Total Mass |
|----------------|--------|-----------|--------|-----------|--------|-----------|------------|
| Treatment Zone | Vadose | Saturated | Vadose | Saturated | Vadose | Saturated |            |
| ZVI Mass (lbs) | 3,800  | 3,450     | 2,850  | 2,600     | 3,400  | 3,100     | 19,200     |

### Field Program

The ZVI emplacement work was completed between September 10 and 13, 2018. Direct push drilling and concrete coring services were provided by Direct Push Services (DPS). Drilling was completed using their Geoprobe 7822DT drill rig.

The ZVI slurry was batch mixed aboard Geo Tactical's EF9300 fracturing unit (Photo 1) using potable water (provided by DPS) and Geo Tactical's GTR Enviro high viscosity fluid system. The high viscosity slurry carries the ZVI in suspension for even distribution throughout the fracture.

The emplacement process began with DPS driving Geo Tactical's fracture tool to the first emplacement depth. Geo Tactical's pressure rated hose and wellhead assembly were then connected to the direct push rods (Photo 2). The ZVI slurry was then pumped from the EF9300 through the rods to the fracture tool and propagated away from the borehole until the pre-determined volume of ZVI slurry was emplaced or fluid surfacing was observed. When the pumping ceased, the rods were advanced to the next emplacement depth and the process repeated until all the desired fractures were completed at the borehole. The rods and tooling were subsequently removed from the borehole and moved to the next location. Following ZVI emplacement, DPS abandoned the boreholes using hydrated bentonite.

During all pumping events at the site, pumping pressure and pump rate data were monitored and recorded.

### Results

A total of 158 ZVI fractures were initiated and propagated from 35 borehole locations (23 vadose and 12 saturated). The vadose fracture depths ranged from 2 to 8 ft bgs and the saturated fracture depths ranged from 8 to 20 ft bgs. The total volume of ZVI slurry pumped was approximately 6,640 gal and contained 19,200 lbs of ZVI. Table 2 shows the summary results of the ZVI emplacement program, a detailed table is attached (Table i).



**Table 2: Summary of ZVI Pumping**

| Design Area             | North  |           | West   |           | Inside |           | Total  |
|-------------------------|--------|-----------|--------|-----------|--------|-----------|--------|
| Treatment Zone          | Vadose | Saturated | Vadose | Saturated | Vadose | Saturated |        |
| # Borehole Locations    | 9      | 4         | 6      | 4         | 8      | 4         | 35     |
| ZVI Mass Pumped (lbs)   | 3,785  | 3,465     | 2,745  | 2,705     | 3,400  | 3,100     | 19,200 |
| Slurry Vol Pumped (gal) | 634    | 1,654     | 472    | 1,129     | 638    | 2,112     | 6,639  |

Fluid surfacing occurred during ZVI emplacement activities. A total of approximately 120 gal of ZVI slurry was lost to the surface. The surfacing was from either remote locations or from a loss of the annular seal around the direct push rods.

Fill-in borehole locations were used when significant fluid surfacing was observed at a borehole. The fill-in boreholes were located close to the original borehole. Four fill-in borehole locations were used at the site: one in the north-vadose area (VI4a), one in the north-saturated area (SI5a), and two in the west-saturated area (SI1a and SI2a). These borehole locations had limited to no fluid surfacing.

Four vadose borehole locations in the saturated zone in the north and west areas were used to emplace ZVI that was not pumped as planned at saturated depths. This mass was emplaced at 12 ft bgs at the four vadose borehole locations. The following boreholes were used to make up the saturated zone mass: VI1 and VI6 (north-vadose boreholes), and VI9 and VI13 (west-vadose boreholes).

### Summary

The total volume of ZVI slurry pumped at the site was approximately 6,640 gal and contained 19,200 lbs of ZVI. A total of 35 borehole locations were used to emplace the ZVI. Fluid surfacing was observed while pumping at most borehole locations. However, the total surfacing volume was only 120 gal because pumping was ceased when surfacing was observed. Fill-in boreholes were successful in emplacing ZVI in areas with significant fluid surfacing.

### Closure

Geo Tactical has extensive experience in advanced, *in situ* fracture and permeation emplacement of a wide variety of treatment amendments. However, Geo Tactical does not warrant or guarantee the long-term success of enhanced *in situ* remediation using any treatment amendment provided by third party vendors. Geo Tactical guarantees that the quality of its work is of the highest standard using our best practices and technical protocols.

Operational sites, or sites where past environmental impacts have been documented, may pose a continuous and ongoing risk of contaminant leakage and/or contaminant migration. Geo Tactical will not be held responsible for achieving any standard of remediation in consideration of the potential for on-going or future contaminant releases at the site.

We trust that this report meets your requirements. Should you have any questions or comments, please contact the undersigned. Thank you for retaining Geo Tactical on this innovative remedial project.

Yours truly,  
Geo Tactical Remediation Ltd.



Heather A. Sturm, P.Eng.  
Environmental Engineer



Gordon T. Guest, P.Geol.  
Principal

Attachments: Figure 1, Photo 1 and 2, and Table i.

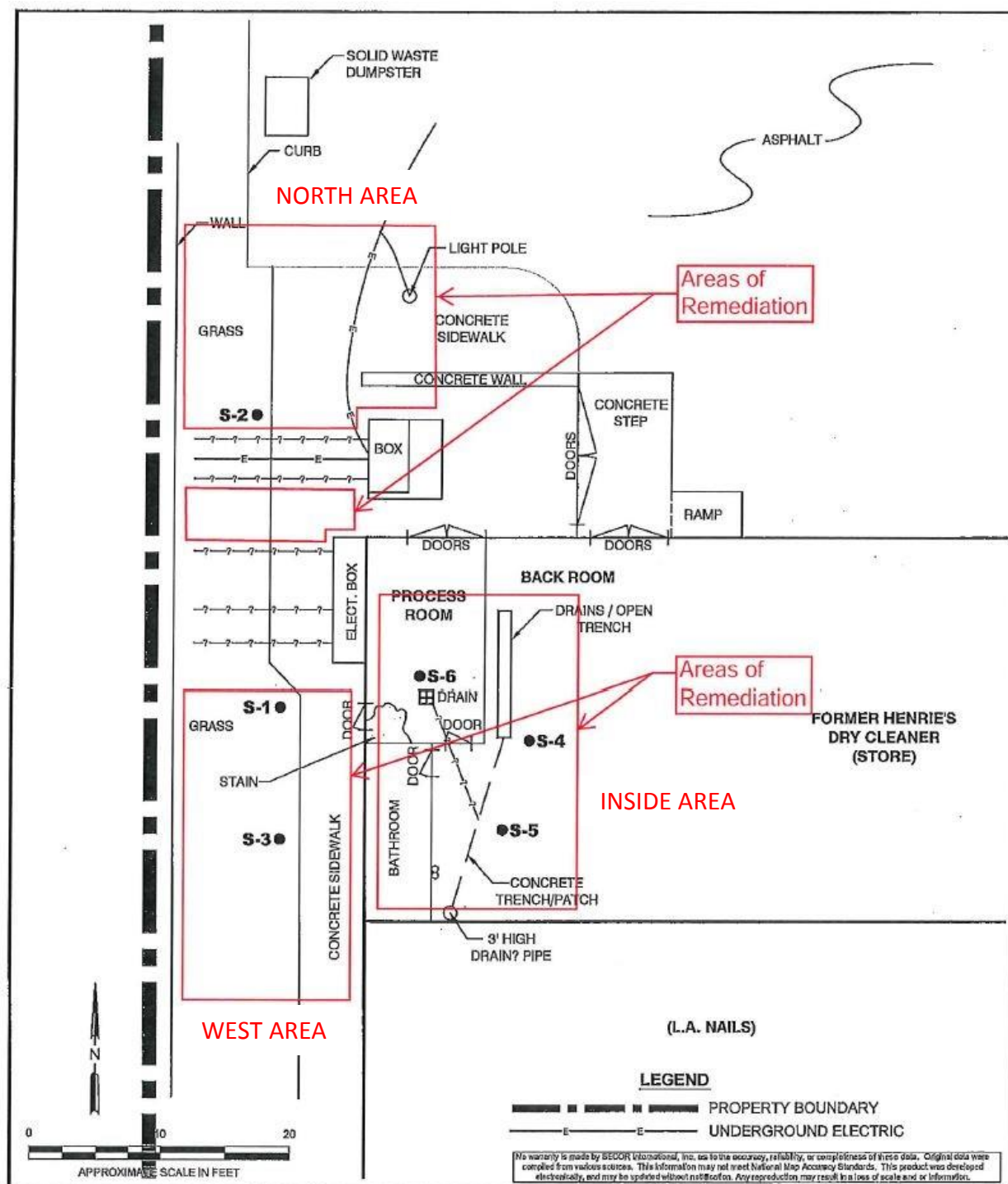


Figure 1 – Remediation Design Areas



**Photo 1 – EF9300 Mixing and Pumping Unit**



**Photo 2 – Wellhead Assembly**



## **TABLES**

Table i - ZVI Emplacement Results

| Design Area        | Treatment Zone | Fracture Borehole | Fracture I.D. | Date      | Depth (ft bgs) | Slurry Pumped (gal) | ZVI Mass Pumped (lbs) | Vent Volume (gal) | Emplaced Slurry Vol (gal) | ZVI Emplaced (lbs) |
|--------------------|----------------|-------------------|---------------|-----------|----------------|---------------------|-----------------------|-------------------|---------------------------|--------------------|
| North              | Vadose         | VI1               | VI1-1         | 11-Sep-18 | 2              | 20                  | 118                   | 2                 | 18                        | 106                |
|                    |                |                   | VI1-2         |           | 4              | 4                   | 24                    | 1                 | 3                         | 18                 |
|                    |                |                   | VI1-3         |           | 6              | 34                  | 204                   | 0                 | 34                        | 204                |
|                    |                |                   | VI1-4         |           | 8              | 20                  | 118                   | 0                 | 20                        | 118                |
|                    |                |                   | VI1-5         |           | 12             | 36                  | 212                   | 0                 | 36                        | 212                |
|                    |                | VI2               | VI2-1         | 11-Sep-18 | 2              | 20                  | 119                   | 1                 | 19                        | 113                |
|                    |                |                   | VI2-2         |           | 4              | 7                   | 40                    | 2                 | 5                         | 28                 |
|                    |                |                   | VI2-3         |           | 6              | 26                  | 158                   | 0                 | 26                        | 158                |
|                    |                |                   | VI2-4         |           | 8              | 26                  | 158                   | 0.25              | 25.75                     | 157                |
|                    |                | VI3               | VI3-1         | 11-Sep-18 | 2              | 13                  | 79                    | 0.1               | 12.9                      | 79                 |
|                    |                |                   | VI3-2         |           | 4              | 7                   | 40                    | 0.1               | 6.9                       | 39                 |
|                    |                |                   | VI3-3         |           | 6              | 33                  | 198                   | 0.1               | 32.9                      | 197                |
|                    |                |                   | VI3-4         |           | 8              | 26                  | 158                   | 0.5               | 25.5                      | 155                |
|                    |                | VI4               | VI4-1         | 11-Sep-18 | 2              | 3                   | 16                    | 3                 | 0                         | 0                  |
|                    |                |                   | VI4-2         |           | 4              | 3                   | 16                    | 2                 | 1                         | 5                  |
|                    |                |                   | VI4-3         |           | 6              | 34                  | 206                   | 4                 | 30                        | 182                |
|                    |                |                   | VI4-4         |           | 8              | 13                  | 79                    | 4                 | 9                         | 55                 |
|                    |                | VI4a              | VI4a-1        | 11-Sep-18 | 4              | 26                  | 158                   | 6                 | 20                        | 122                |
|                    |                | VI5               | VI5-1         | 11-Sep-18 | 2              | 20                  | 119                   | 0                 | 20                        | 119                |
|                    |                |                   | VI5-2         |           | 4              | 20                  | 119                   | 0                 | 20                        | 119                |
|                    |                |                   | VI5-3         |           | 6              | 20                  | 119                   | 0                 | 20                        | 119                |
|                    |                |                   | VI5-4         |           | 8              | 20                  | 119                   | 0                 | 20                        | 119                |
|                    |                | VI6               | VI6-1         | 11-Sep-18 | 2              | 20                  | 118                   | 1                 | 19                        | 112                |
|                    |                |                   | VI6-2         |           | 4              | 4                   | 24                    | 1                 | 3                         | 18                 |
|                    |                |                   | VI6-3         |           | 6              | 24                  | 141                   | 1                 | 23                        | 135                |
|                    |                |                   | VI6-4         |           | 8              | 32                  | 188                   | 0.25              | 31.75                     | 187                |
|                    |                |                   | VI6-5         |           | 12             | 34                  | 204                   | 0                 | 34                        | 204                |
|                    |                | VI7               | VI7-1         | 11-Sep-18 | 2              | 20                  | 119                   | 0                 | 20                        | 119                |
|                    |                |                   | VI7-2         |           | 4              | 20                  | 119                   | 1                 | 19                        | 113                |
|                    |                |                   | VI7-3         |           | 6              | 20                  | 119                   | 1                 | 19                        | 113                |
|                    |                |                   | VI7-4         |           | 8              | 20                  | 119                   | 5                 | 15                        | 89                 |
|                    |                | VI8               | VI8-1         | 11-Sep-18 | 2              | 20                  | 119                   | 0                 | 20                        | 119                |
|                    |                |                   | VI8-2         |           | 4              | 1                   | 8                     | 1                 | 0                         | 0                  |
|                    |                |                   | VI8-3         |           | 6              | 29                  | 174                   | 0.5               | 28.5                      | 171                |
|                    |                |                   | VI8-4         |           | 8              | 29                  | 174                   | 0                 | 29                        | 174                |
| North-Vadose Total |                |                   |               |           |                | 704                 | 4200                  | 38                | 666                       | 3978               |
| North              | Saturated      | SI3               | SI3-1         | 10-Sep-18 | 8              | 66                  | 119                   | 0                 | 66                        | 119                |
|                    |                |                   | SI3-2         |           | 10             | 42                  | 76                    | 3                 | 39                        | 71                 |
|                    |                |                   | SI3-3         |           | 12             | 90                  | 162                   | 0                 | 90                        | 162                |
|                    |                |                   | SI3-4         |           | 14             | 66                  | 119                   | 0                 | 66                        | 119                |
|                    |                |                   | SI3-5         |           | 16             | 106                 | 190                   | 0                 | 106                       | 190                |
|                    |                |                   | SI3-6         |           | 18             | 79                  | 143                   | 0                 | 79                        | 143                |
|                    |                |                   | SI3-7         |           | 20             | 79                  | 143                   | 0                 | 79                        | 143                |
|                    |                | SI4               | SI4-1         | 11-Sep-18 | 8              | 66                  | 119                   | 0                 | 66                        | 119                |
|                    |                |                   | SI4-2         |           | 10             | 55                  | 100                   | 1                 | 54                        | 98                 |
|                    |                |                   | SI4-3         |           | 12             | 77                  | 138                   | 0                 | 77                        | 138                |
|                    |                |                   | SI4-4         |           | 14             | 66                  | 119                   | 0                 | 66                        | 119                |
|                    |                |                   | SI4-5         |           | 16             | 106                 | 190                   | 0                 | 106                       | 190                |
|                    |                |                   | SI4-6         |           | 18             | 79                  | 143                   | 0                 | 79                        | 143                |
|                    |                |                   | SI4-7         |           | 20             | 79                  | 143                   | 0                 | 79                        | 143                |

Table i - ZVI Emplacement Results

| Design Area | Treatment Zone | Fracture Borehole     | Fracture I.D. | Date      | Depth (ft bgs) | Slurry Pumped (gal) | ZVI Mass Pumped (lbs) | Vent Volume (gal) | Emplaced Slurry Vol (gal) | ZVI Emplaced (lbs) |
|-------------|----------------|-----------------------|---------------|-----------|----------------|---------------------|-----------------------|-------------------|---------------------------|--------------------|
|             |                | SI5                   | SI5-1         | 11-Sep-18 | 8              | 33                  | 72                    | 1                 | 32                        | 70                 |
|             |                |                       | SI5-2         |           | 10             | 24                  | 52                    | 2                 | 22                        | 47                 |
|             |                |                       | SI5-3         |           | 12             | 17                  | 37                    | 2                 | 15                        | 33                 |
|             |                |                       | SI5-4         |           | 14             | 13                  | 29                    | 2                 | 11                        | 24                 |
|             |                | SI5a                  | SI5a-1        | 11-Sep-18 | 12             | 98                  | 213                   | 0                 | 98                        | 213                |
|             |                |                       | SI5a-2        |           | 14             | 53                  | 115                   | 4                 | 49                        | 106                |
|             |                |                       | SI5a-3        |           | 16             | 26                  | 58                    | 0                 | 26                        | 58                 |
|             |                |                       | SI5a-4        |           | 18             | 132                 | 288                   | 0                 | 132                       | 288                |
|             |                |                       | SI5a-5        |           | 20             | 132                 | 288                   | 0                 | 132                       | 288                |
|             |                | North-Saturated Total |               |           |                |                     | 1584                  | 3050              | 15                        | 1569               |

|                  |  |  |  |  |  |      |      |    |      |      |
|------------------|--|--|--|--|--|------|------|----|------|------|
| North Area Total |  |  |  |  |  | 2288 | 7250 | 53 | 2235 | 7002 |
|------------------|--|--|--|--|--|------|------|----|------|------|

|      |        |                   |        |           |    |    |     |      |      |     |
|------|--------|-------------------|--------|-----------|----|----|-----|------|------|-----|
| West | Vadose | VI9               | VI9-1  | 12-Sep-18 | 2  | 20 | 110 | 0    | 20   | 110 |
|      |        |                   | VI9-2  |           | 4  | 20 | 110 | 0    | 20   | 110 |
|      |        |                   | VI9-3  |           | 6  | 20 | 110 | 0    | 20   | 110 |
|      |        |                   | VI9-4  |           | 8  | 20 | 110 | 0    | 20   | 110 |
|      |        |                   | VI9-5  |           | 12 | 33 | 184 | 0    | 33   | 184 |
|      |        | VI10              | VI10-1 | 12-Sep-18 | 2  | 20 | 119 | 1    | 19   | 113 |
|      |        |                   | VI10-2 |           | 4  | 20 | 119 | 1    | 19   | 113 |
|      |        |                   | VI10-3 |           | 6  | 20 | 119 | 0    | 20   | 119 |
|      |        |                   | VI10-4 |           | 8  | 20 | 119 | 1    | 19   | 113 |
|      |        | VI11              | VI11-1 | 12-Sep-18 | 2  | 20 | 119 | 0    | 20   | 119 |
|      |        |                   | VI11-2 |           | 4  | 20 | 119 | 2    | 18   | 107 |
|      |        |                   | VI11-3 |           | 6  | 8  | 48  | 3    | 5    | 30  |
|      |        |                   | VI11-4 |           | 8  | 32 | 190 | 1    | 31   | 184 |
|      |        | VI12              | VI12-1 | 12-Sep-18 | 2  | 20 | 119 | 0    | 20   | 119 |
|      |        |                   | VI12-2 |           | 4  | 16 | 95  | 2    | 14   | 83  |
|      |        |                   | VI12-3 |           | 6  | 9  | 55  | 2    | 7    | 43  |
|      |        |                   | VI12-4 |           | 8  | 34 | 206 | 3    | 31   | 188 |
|      |        | VI13              | VI13-1 | 12-Sep-18 | 2  | 20 | 110 | 0.1  | 19.9 | 110 |
|      |        |                   | VI13-2 |           | 4  | 20 | 110 | 1    | 19   | 105 |
|      |        |                   | VI13-3 |           | 6  | 20 | 110 | 1    | 19   | 105 |
|      |        |                   | VI13-4 |           | 8  | 13 | 74  | 5    | 8    | 45  |
|      |        |                   | VI13-5 |           | 12 | 40 | 221 | 0    | 40   | 221 |
|      |        | VI14              | VI14-1 | 12-Sep-18 | 2  | 20 | 119 | 0.5  | 19.5 | 116 |
|      |        |                   | VI14-2 |           | 4  | 20 | 119 | 0    | 20   | 119 |
|      |        |                   | VI14-3 |           | 6  | 20 | 119 | 0    | 20   | 119 |
|      |        |                   | VI14-4 |           | 8  | 20 | 119 | 1    | 19   | 113 |
|      |        | West-Vadose Total |        |           |    |    | 545 | 3150 | 25   | 520 |

|      |           |      |        |           |    |     |     |   |     |     |
|------|-----------|------|--------|-----------|----|-----|-----|---|-----|-----|
| West | Saturated | SI1  | SI1-1  | 10-Sep-18 | 8  | 46  | 101 | 3 | 43  | 94  |
|      |           |      | SI1-2  |           | 10 | 17  | 37  | 1 | 16  | 35  |
|      |           |      | SI1-3  |           | 14 | 99  | 214 | 1 | 98  | 212 |
|      |           |      | SI1-4  |           | 16 | 102 | 223 | 0 | 102 | 223 |
|      |           |      | SI1-5  |           | 18 | 99  | 216 | 0 | 99  | 216 |
|      |           |      | SI1-6  |           | 20 | 99  | 216 | 0 | 99  | 216 |
|      |           | SI1a | SI1a-1 | 10-Sep-18 | 12 | 66  | 144 | 0 | 66  | 144 |
|      |           | SI2  | SI2-1  | 10-Sep-18 | 8  | 40  | 86  | 1 | 39  | 84  |
|      |           |      | SI2-2  |           | 10 | 34  | 75  | 1 | 33  | 73  |
|      |           |      | SI2-3  |           | 14 | 58  | 127 | 0 | 58  | 127 |
|      |           |      | SI2-4  |           | 16 | 46  | 101 | 0 | 46  | 101 |

Table i - ZVI Emplacement Results

| Design Area     | Treatment Zone | Fracture Borehole    | Fracture I.D. | Date      | Depth (ft bgs) | Slurry Pumped (gal) | ZVI Mass Pumped (lbs) | Vent Volume (gal) | Emplaced Slurry Vol (gal) | ZVI Emplaced (lbs) |
|-----------------|----------------|----------------------|---------------|-----------|----------------|---------------------|-----------------------|-------------------|---------------------------|--------------------|
|                 |                | SI2a                 | SI2a-1        | 10-Sep-18 | 12             | 132                 | 288                   | 0                 | 132                       | 288                |
|                 |                |                      | SI2a-2        |           | 18             | 132                 | 288                   | 0                 | 132                       | 288                |
|                 |                |                      | SI2a-3        |           | 20             | 86                  | 187                   | 0                 | 86                        | 187                |
|                 |                | West-Saturated Total |               |           |                |                     | 1056                  | 2300              | 7                         | 1049               |
| West Area Total |                |                      |               |           |                | 1601                | 5450                  | 32                | 1569                      | 5296               |

|                     |        |      |        |           |   |     |      |      |       |      |
|---------------------|--------|------|--------|-----------|---|-----|------|------|-------|------|
| Inside              | Vadose | VI15 | VI15-1 | 13-Sep-18 | 2 | 13  | 71   | 0.25 | 12.75 | 70   |
|                     |        |      | VI15-2 |           | 4 | 4   | 21   | 0.25 | 3.75  | 20   |
|                     |        |      | VI15-3 |           | 6 | 42  | 227  | 4    | 38    | 205  |
|                     |        |      | VI15-4 |           | 8 | 20  | 106  | 1    | 19    | 100  |
|                     |        | VI16 | VI16-1 | 13-Sep-18 | 2 | 13  | 71   | 0.5  | 12.5  | 70   |
|                     |        |      | VI16-2 |           | 4 | 9   | 50   | 0.5  | 8.5   | 45   |
|                     |        |      | VI16-3 |           | 6 | 37  | 198  | 0.5  | 36.5  | 195  |
|                     |        |      | VI16-4 |           | 8 | 20  | 106  | 0.1  | 19.9  | 105  |
|                     |        | VI17 | VI17-1 | 13-Sep-18 | 2 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI17-2 |           | 4 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI17-3 |           | 6 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI17-4 |           | 8 | 20  | 106  | 4    | 16    | 85   |
|                     |        | VI18 | VI18-1 | 13-Sep-18 | 2 | 3   | 14   | 0.5  | 2.5   | 10   |
|                     |        |      | VI18-2 |           | 4 | 37  | 198  | 0.5  | 36.5  | 195  |
|                     |        |      | VI18-3 |           | 6 | 20  | 106  | 3    | 17    | 90   |
|                     |        |      | VI18-4 |           | 8 | 20  | 106  | 3    | 17    | 90   |
|                     |        | VI19 | VI19-1 | 13-Sep-18 | 2 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI19-2 |           | 4 | 3   | 14   | 0.5  | 2.5   | 10   |
|                     |        |      | VI19-3 |           | 6 | 17  | 92   | 1    | 16    | 85   |
|                     |        |      | VI19-4 |           | 8 | 40  | 213  | 3    | 37    | 195  |
|                     |        | VI20 | VI20-1 | 13-Sep-18 | 2 | 20  | 106  | 2    | 18    | 95   |
|                     |        |      | VI20-2 |           | 4 | 20  | 106  | 4    | 16    | 85   |
|                     |        |      | VI20-3 |           | 6 | 3   | 14   | 3    | 0     | 0    |
|                     |        |      | VI20-4 |           | 8 | 37  | 198  | 0.1  | 36.9  | 200  |
|                     |        | VI21 | VI21-1 | 13-Sep-18 | 2 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI21-2 |           | 4 | 3   | 14   | 1    | 2     | 10   |
|                     |        |      | VI21-3 |           | 6 | 37  | 198  | 0.5  | 36.5  | 195  |
|                     |        |      | VI21-4 |           | 8 | 20  | 106  | 0    | 20    | 105  |
|                     |        | VI22 | VI22-1 | 13-Sep-18 | 2 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI22-2 |           | 4 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI22-3 |           | 6 | 20  | 106  | 0    | 20    | 105  |
|                     |        |      | VI22-4 |           | 8 | 20  | 106  | 0    | 20    | 105  |
| Inside-Vadose Total |        |      |        |           |   | 638 | 3400 | 33   | 605   | 3205 |

|  |  |     |       |           |    |     |     |      |       |     |
|--|--|-----|-------|-----------|----|-----|-----|------|-------|-----|
|  |  | SI6 | SI6-1 | 12-Sep-18 | 8  | 36  | 52  | 0.5  | 35.5  | 50  |
|  |  |     | SI6-2 |           | 10 | 83  | 122 | 0.5  | 82.5  | 120 |
|  |  |     | SI6-3 |           | 12 | 79  | 116 | 0.25 | 78.75 | 115 |
|  |  |     | SI6-4 |           | 14 | 66  | 97  | 0.1  | 65.9  | 95  |
|  |  |     | SI6-5 |           | 16 | 106 | 155 | 1    | 105   | 155 |
|  |  |     | SI6-6 |           | 18 | 79  | 116 | 0    | 79    | 115 |
|  |  |     | SI6-7 |           | 20 | 79  | 116 | 0    | 79    | 115 |



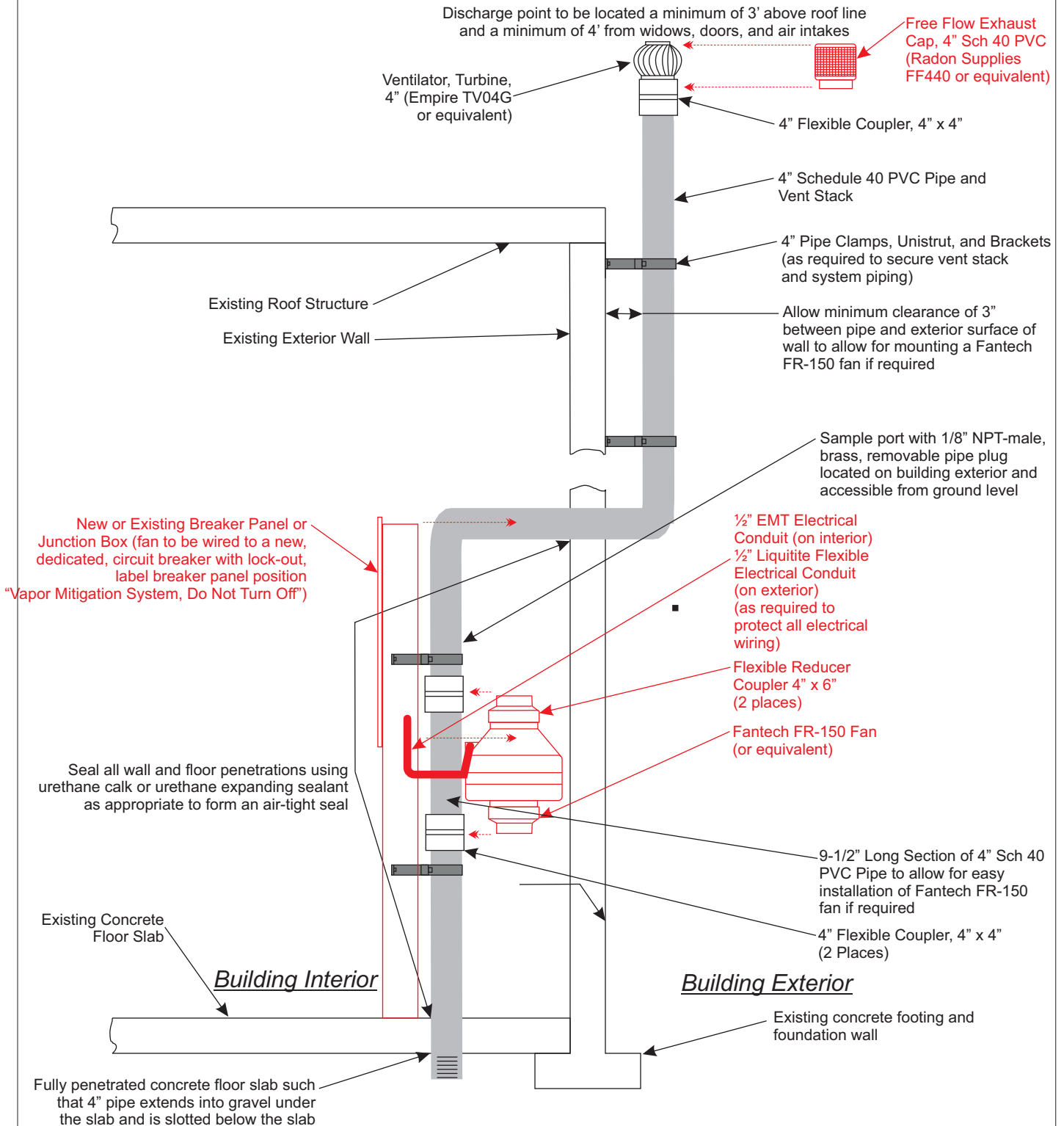
Table i - ZVI Emplacement Results

| Design Area            | Treatment Zone | Fracture Borehole | Fracture I.D. | Date      | Depth (ft bgs) | Slurry Pumped (gal) | ZVI Mass Pumped (lbs) | Vent Volume (gal) | Emplaced Slurry Vol (gal) | ZVI Emplaced (lbs) |
|------------------------|----------------|-------------------|---------------|-----------|----------------|---------------------|-----------------------|-------------------|---------------------------|--------------------|
| Inside                 | Saturated      | SI7               | SI7-1         | 12-Sep-18 | 8              | 66                  | 97                    | 0.05              | 65.95                     | 95                 |
|                        |                |                   | SI7-2         |           | 10             | 21                  | 31                    | 0.5               | 20.5                      | 30                 |
|                        |                |                   | SI7-3         |           | 12             | 111                 | 163                   | 0.5               | 110.5                     | 160                |
|                        |                |                   | SI7-4         |           | 14             | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI7-5         |           | 16             | 106                 | 155                   | 0                 | 106                       | 155                |
|                        |                |                   | SI7-6         |           | 18             | 79                  | 116                   | 0                 | 79                        | 115                |
|                        |                |                   | SI7-7         |           | 20             | 79                  | 116                   | 0                 | 79                        | 115                |
|                        |                | SI8               | SI8-1         | 13-Sep-18 | 8              | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI8-2         |           | 10             | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI8-3         |           | 12             | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI8-4         |           | 15             | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI8-5         |           | 16.5           | 106                 | 155                   | 0                 | 106                       | 155                |
|                        |                |                   | SI8-6         |           | 18             | 79                  | 116                   | 0                 | 79                        | 115                |
|                        |                |                   | SI8-7         |           | 20             | 79                  | 116                   | 0                 | 79                        | 115                |
|                        |                | SI9               | SI9-1         | 13-Sep-18 | 8              | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI9-2         |           | 10             | 66                  | 97                    | 0.1               | 65.9                      | 95                 |
|                        |                |                   | SI9-3         |           | 12             | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI9-4         |           | 14             | 66                  | 97                    | 0                 | 66                        | 95                 |
|                        |                |                   | SI9-5         |           | 16             | 106                 | 155                   | 0                 | 106                       | 155                |
|                        |                |                   | SI9-6         |           | 18             | 79                  | 116                   | 0                 | 79                        | 115                |
|                        |                |                   | SI9-7         |           | 20             | 79                  | 116                   | 0                 | 79                        | 115                |
| Inside-Saturated Total |                |                   |               |           |                | 2112                | 3100                  | 4                 | 2109                      | 3060               |
| Inside Area Total      |                |                   |               |           |                | 2750                | 6500                  | 37                | 2713                      | 6265               |
| SITE TOTAL             |                |                   |               |           |                | 6639                | 19200                 | 121               | 6518                      | 18563              |

Notes: Saturated Saturated ZVI mass and volume emplaced using vadose boreholes.

## **Appendix H**

### **Passive Vapor Mitigation System Construction**



Drawing is not to scale

**Note:** System components and notations shown in red are for converting the passive vapor mitigation system to an active vapor mitigation system.

## **Appendix I**

### **Vapor Barrier Specifications**



# Retro-Coat<sup>TM</sup>

Vapor Intrusion Coating

## Vapor Intrusion Coating System for Existing Structures



## Product Description

The Retro-Coat™ Vapor Intrusion Coating System is a complete product line that consists of chemically resistant materials to properly protect existing structures from the threat of contaminant vapor intrusion without the need for additional concrete protection. Developed by the R&D team of Land Science®, the Retro-Coat system has been subjected to rigorous testing procedures to prove its ability to combat the most aggressive chemical vapors. The main component of the Retro-Coat system is the Retro-Coat coating which is a two part, odorless, no VOC, 100% solids coating.

Retro-Coat finishes to a high gloss, easy-to-clean surface that is impervious to vapor and moisture transmission. Available in a variety of colors, Retro-Coat can be applied on damp as well as dry concrete, concrete masonry units, tile, brick and metal. For enhanced slip resistance, a suitable aggregate can be added. In addition, other additives or materials can be utilized to achieve a desired performance or aesthetic look.





## Typical Application

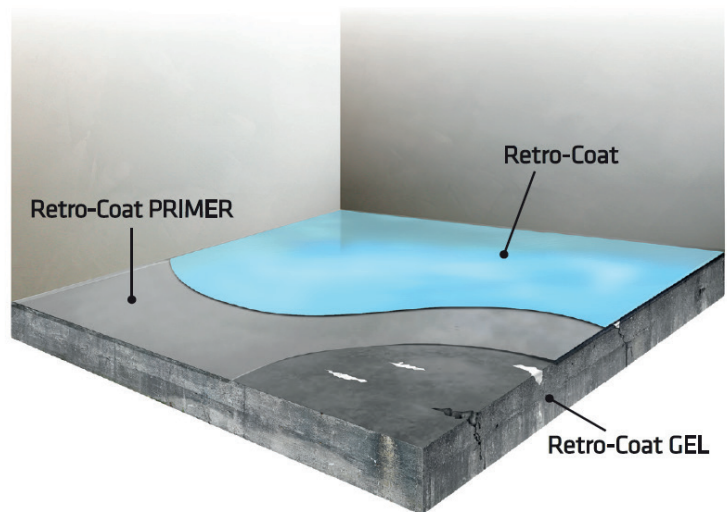
Retro-Coat is suitable as a barrier to block contaminated vapors from entering existing structures. Particular uses include coating the horizontal surfaces of existing structures where contamination under, or adjacent to, a structure can potentially migrate inside the structure and create a vapor encroachment condition. This condition is most commonly found when the existing structure was operated as a dry cleaner, gas station, manufacturing facility or located in close proximity to any structure where carcinogenic chemicals were utilized.

A typical application consists of a minimum 20 mil thick system; consisting of two 10 mil coats of Retro-Coat at 160 SF/gallon per coat and is recommended along with a 6 mil coat of Retro-Coat PRIMER. The typical 20 mil application can withstand forklift traffic, other machinery and even act as secondary containment. However, if Retro-Coat is exposed to harsh conditions over a longer period of time and/or used for a unique application, please consult with a LST representative to discuss options and a recommended approach.

## Retro-Coat Advantages

- Our R&D team developed all of the Retro-Coat system components specifically for vapor intrusion protection in existing structures
- Retro-Coat is resistant to both TCE and PCE, the vast majority of coatings cringe at such aggressive chemicals
- Retro-Coat is a wearing surface, meaning no additional concrete protection is necessary
- No odor and fast cure time reduce building downtime
- Carpet, tile, linoleum or other floor coverings can be applied directly over Retro-Coat, if desired
- Eliminates the need to remove the existing slab and when combined with *in situ* treatment, lowers overall remediation cost
- Retro-Coat can increase the performance of an existing active sub-slab depressurization system
- Retro-Coat can aid in the retiring of existing active systems
- Available and installed by Land Science certified contractors

## Retro-Coat™ Vapor Intrusion Coating



## Installation

Particular care must be taken to follow those instructions precisely to assure proper installation. These instructions pertain to a standard 20 mil application; please contact us if the desired application is different.

1. New concrete should be allowed to cure a minimum of 28 days and/or be checked with a rubber mat or plastic sheet to ensure adequate curing time has occurred.
2. All surfaces to be covered should be power washed, shot blasted, acid etched, scarified or sanded to present a clean, sound substrate to which to bond to. The prepared surface should have a ph of 7.
3. Any bugholes and cracks wider than 1/8" should be filled with Retro-Coat PREP and allowed to dry before coating. More severely damaged concrete or other special conditions will require the proper Retro-Coat product.
4. When installing the standard 20 mil application of Retro-Coat, apply a 6 mil coat of Retro-Coat PRIMER and allow to dry prior to applying the initial coat of Retro-Coat. Priming may not be necessary when Retro-Coat is applied to a thickness greater than 20 mils. On new concrete or old concrete with an open porosity and on wood surfaces apply Retro-Coat PRIMER and allow to dry.
5. The two Retro-Coat ingredients should be mixed in the prescribed ratios, using a low speed "jiffy-style" mixer, (maximum 750 rpm). Mix Part A for about 1 minute then, add Part B and mix until uniform in color and consistency (at least one additional minute.)
6. Do not mix less than the prescribed amount of any ingredient or add any solvent to the mix.
7. Apply the mixed Retro-Coat material with a short nap roller, a squeegee or a brush. Apply approximately 160 SF per gallon per coat to achieve 10 mils of coating.
8. Apply a second coat while the first coat is still tacky if using spike shoes or dry enough to walk on, but before 7 hours at 75°F. If the first coat has set and is no longer tacky then the first coat should be sanded before recoating.
9. A suitable aggregate may be broadcast onto the surface after backrolling to provide more anti-slip profile to the finished surface. It is advisable to test various types and sizes of aggregate to achieve the desired finished profile.







## Product Specification

The specified area shall receive an application of Retro-Coat as manufactured by Land Science. The material shall be installed by precisely following the manufacturer's published recommendations pertaining to surface preparation, mixing and application. The material shall be a low odor, two part, solvent free 100% solids, high gloss flexibilized system with good resilience to resist thermal and mechanical shock. It should be able to be roller applied at a minimum of 10 mils thickness per coat on vertical surfaces without sagging (at ambient conditions). The system must adhere to damp as well as dry concrete, wood, metal tile, terrazzo and sound existing epoxy and urethane coatings. It shall have tensile elongation of at least 6.0% when tested under ASTM-638. Its bond strength to quarry tile shall exceed 1000 psi when tested with an Elcometer pull test. Its hardness shall not exceed 83, as measured on the Shore D scale. The system shall be unaffected by oils and greases and shall withstand chemical attack for at least 72 hours against 98% sulfuric, 50% hydrofluoric acid, glacial acetic acid and acrylonitrile.

### Precautions

1. This is a fast reacting product; immediately pour onto floor after mixing and spread with notched squeegee.  
Recoat window without sanding at 70°F: 8 hours
2. A severe skin and eye irritant; check MSDS before use
3. Do not apply below 50°F

Note: Failure to follow the above instruction, unless expressly authorized by a Land Science Representative, will void our material warranty.

## Chemical Resistance

Retro-Coat™ is considered chemically resistant to neat concentrated acids, caustics and solvents. For permeation or diffusion coefficients please contact Land Science.

## Physical Properties

|                                                |                                             |
|------------------------------------------------|---------------------------------------------|
| Tensile Strength (ASTM D-638) : 9800 psi       | Bond Strength to Quarry Tile : >1000 psi    |
| Tensile Elongation (D-638) : 6.0%              | Vapor Transmission Rate (E-96) : .027 perms |
| Flexural Strength (D-790) : 7035 psi           | Water Absorption (D-570) : 0.2% in 24hrs.   |
| Hardness, Shore D (D-2240) : 83                | Taber Abrasion (D-1044) : 86 mg loss.       |
| Gardner Impact Strength (D-2794) : 80 in. lbs. | 60° Gloss : 100                             |

## Physical Characteristics

| Density, lbs/gal.             | Mixing Ratios                                                               | By Volume    | By Weight    |              |
|-------------------------------|-----------------------------------------------------------------------------|--------------|--------------|--------------|
| Pt. A : 11.0                  | Pt. A : Pt. B                                                               | 2:1          | 2.3:1        |              |
| Pt. B : 8.9                   |                                                                             |              |              |              |
| A&B Mixed : 9.3               | <b>Curing Times @</b>                                                       | <b>50° F</b> | <b>77° F</b> | <b>90° F</b> |
| <b>Viscosity @ 77° F, cps</b> | Pot Life                                                                    | 35 min.      | 30 min.      | 20 min.      |
| Pt. A : 18,400                | Working Times                                                               | 20 min.      | 20 min.      | 15 min.      |
| Pt. B : 500                   | Hard, Foot Traffic                                                          | 14 hrs.      | 7 hrs.       | 3 ½ hrs.     |
| A&B Mixed : 4800              | Maximum hardness and chemical resistance are achieved after 7 days at 77° F |              |              |              |

## Color Availability

Standard colors: beige, black, blue, dark gray,  
green, gray, red, white, yellow

**Shelf Life:** 1 Year at 77° F in unopened containers

## Packaging and Coverage Rates (for 20 mil coverage)

4 Gallon Kit : 320 SF  
20 Gallon Kit : 1600 SF  
100 Gallon Kit : 8,000 SF

The data, statements and recommendations set forth in this product information sheet are based on testing, research and other development work which has been carefully conducted by Land Science, and we believe such data, statements and recommendations will serve as reliable guidelines. However, this product is subject to numerable uses under varying conditions over which we have no control, and accordingly, we do NOT warrant that this product is suitable for any particular use. Users are advised to test the product in advance to make certain it is suitable for their particular production conditions and particular use or uses.

**WARRANTY** – All products manufactured by us are warranted to be first class material and free from defects in material and workmanship.

Liability under this warranty is limited to the net purchase price of any such products proven defective or, at our option, to the repair or replacement of said products upon their return to us transportation prepaid. All claims hereunder on defective products must be made in writing within 30 days after the receipt of such products in your plant and prior to further processing or combining with other materials and products. WE MAKE NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE SUITABILITY OF ANY OF OUR PRODUCTS FOR ANY PARTICULAR USE, AND WE SHALL NOT BE SUBJECT TO LIABILITY FROM ANY DAMAGES RESULTING FROM THEIR USE IN OPERATIONS NOT UNDER OUR DIRECT CONTROL.

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Environmental consultants, engineers, and real estate professionals trust Land Science to produce results knowing our expertise and industry knowledge has been proven time and again at the job site. Our world class clients include leaders in the food, banking, government, and housing industries.



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# Land Science Technologies

## Specifications for Retro-Coat™

### Version 1.0

#### Part 1 – Scope

##### 1.1 Product and Application

This specification describes the application of the Retro-Coat™ System. The minimum thickness of the system is between 25-30 mils, including a 20 mil minimum application of Retro-Coat.

##### 1.2 Acceptable Manufacturers

- A. Retro-Coat as manufactured by Land Science Technologies San Clemente, CA.

##### 1.3 Performance Criteria

- A. Retro-Coat as manufactured by Land Science Technologies San Clemente, CA.
  - 1. Diffusion Coefficient (Columbia Labs)  
PCE:  $7.6 \times 10^{-14} \text{ m}^2/\text{s}$   
TCE:  $8.2 \times 10^{-14} \text{ m}^2/\text{s}$
  - 2. Tensile Elongation (ASTM D-638)  
Minimum: 6000 psi
  - 3. Tensile Elongation (ASTM D-638)  
Minimum: 6 %
  - 4. Flexural Strength (ASTM D-790)  
Minimum: 7000 psi
  - 5. Hardness, Shore D (ASTM D-2240)  
Maximum: 85
  - 6. Gardner Impact (ASTM D-2794)  
Minimum: 80 inch-pounds
  - 7. Bond Strength to Quarry Tile  
Minimum: 1000 psi
  - 8. Vapor Transmission Rate (ASTM E-96)  
Maximum: .07 perms
  - 9. Water Absorption (ASTM D-570)  
Maximum: .02% in 24 hours
  - 10. 60° Gloss  
Minimum: 100.

##### 1.4 Materials

- A. Retro-Coat "A" shall be a modified epoxy containing special flexibilizers and specially formulated resins for superior chemical resistance and enhanced resilience. No solvents are allowed.
- B. Retro-Coat "B" shall be customized blend of hardeners specifically formulated to maximize chemical resistance. No solvents are allowed.

##### 1.5 Applicator

- A. Applicator must be a certified contractor of Land Science Technologies.

## **Part 2 – Application**

### **2.1 Surface Preparation**

- A. All existing surfaces that will be covered with the systems specified herein should be mechanically ground, shot blasted or sand blasted to yield a minimum 60 grit surface texture. All loosely adhered coatings will be removed. Any grease and other contaminants found on the concrete must also be removed.
- B. All open cracks 1/2" and greater should be v-notched to a 3/4" width by 1/2" depth and cleaned of any debris. Such cracks should be filled with Retro-Coat Gel and struck off flush with the surrounding surface.
- C. Cut back and/or remove any expansion joint backing or filler strips to a minimum of 1 1/2" deep. Insert disposable filler in the joints to prevent filling with the overlayment materials and to allow for accurate location of final saw cuts in the overlayment.

### **2.2 Material Application**

- A. Retro-Coat CAULK
  - 1. Apply Retro-Coat CAULK around the base of all pipe penetrations making sure to fill any gap between the penetration and concrete slab
  - 2. Apply Retro-Coat CAULK to the joint created between horizontal and vertical transitions. The caulking material should be applied and pressed into the joint filling any gaps that might be present.
- B. Retro-Coat PRIMER
  - 1. Apply Retro-Coat PRIMER to all areas at a thickness of 6 mil and allow to dry tack free. In areas where the concrete surface is in need of slight repair or needs to be leveled, a slurry form of Retro-Coat PRIMER called Retro-Coat PRIMER-S can be applied with a flat squeegee. Retro-Coat PRIMER-S is self priming and does not need to be primed again.
- C. Retro-Coat
  - 1. Mix Retro-Coat, Part A with a low-speed (<750 rpm) jiffy-style mixer for about 30 seconds, or until uniform in color, then mix in Retro-Coat Coating, Part B for another 30-60 seconds.
  - 2. Dump contents onto floor in a ribbon pattern, squeegee, and then back roll at a coverage rate of 160 SF/gallon to achieve a film thickness of 10 mils.
  - 3. Apply second coat 10 mil coat to achieve a total thickness of 20 mils. Repeat as necessary to achieve specified thickness.
  - 4. If a flooring material will be placed over Retro-Coat after it is applied, or appearance is not a priority, (1) 20 mil coat can be applied.

### **2.3 Protection of Finished Work**

- A. Prohibit foot traffic on floor for 24 hours after laying (at 70°F). At 50°F, this time should be extended to 48 hours.
- B. Rinse off any chemicals that may come in contact within 7 days of installation with the freshly laid floor immediately.

### **2.4 Cleanup**

- A. Properly dispose of all unused and waste materials.
- B. Tools can be washed in warm, soapy water when wet, but after drying, can only be cleaned by grinding or with a paint stripper.
- C. Unused resin can be set off with proper amount of hardener and disposed of in regular trash bins.

## **Part 3 – Quality Control**

### **3.1 Warranty**

- A. Installer shall provide a one year warranty against delamination, chemical attack and normal wear and tear.
- B. Manufacturer will provide a one year material warranty.

### **3.2 Quality Control**

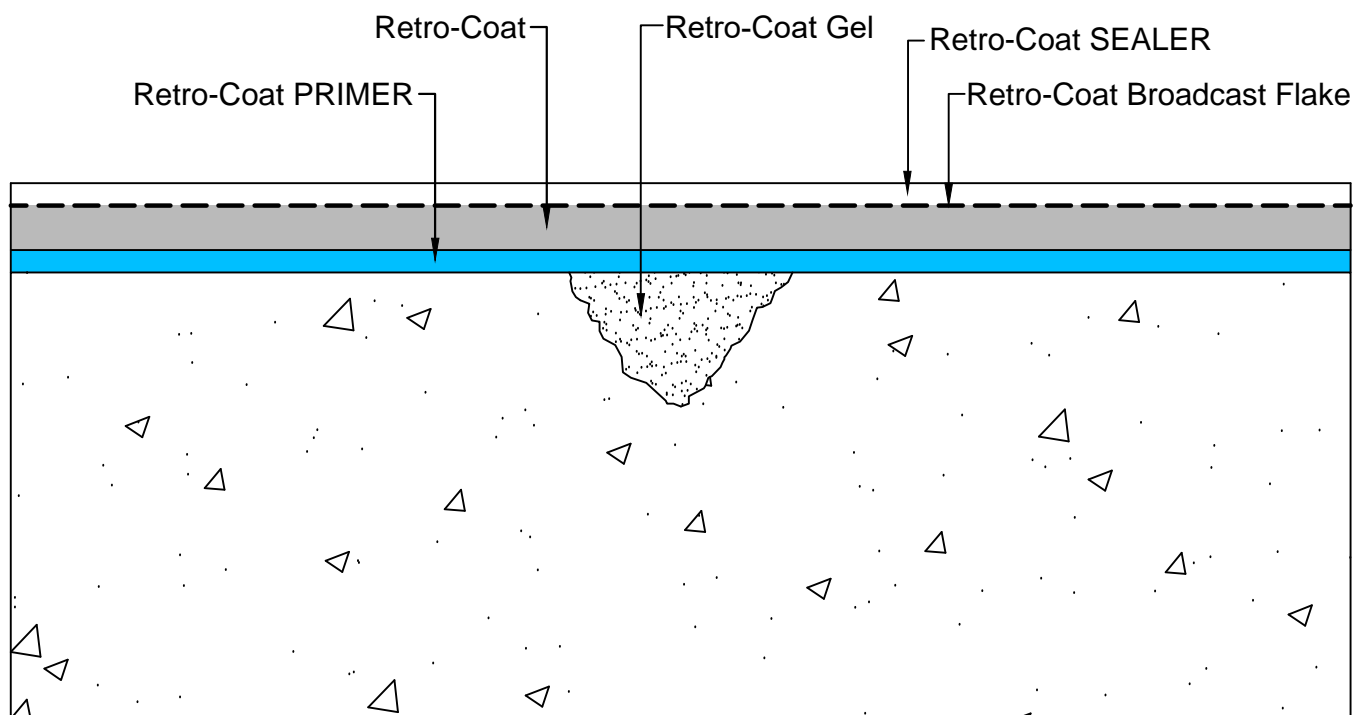
- A. Installer shall use a notched squeegee to apply Retro-Coat to the specified mil thickness and calculations shall be done to determine if the correct amount of material has been applied. Retro-Coat contains 100% solids at the time of application; therefore no material shrinkage will occur during the curing process. One gallon will cover 80 square feet.
- B. A wet mil film gauge can be used to spot check the Retro-Coat thickness to make certain the minimum 20 mil thickness has been applied, though some discretion should be used because high points or low points on the underlying surface can adversely affect the thickness measurements.

### **3.3 Floor Care**

- A. The standard smooth surface of Retro-Coat should be cleaned on a regular basis by damp mopping the floor with conventional commercial cleaners. It is important to first remove any grease or oils by a suitable cleaner, preferably a citrus based cleaner. Rinse with clear water to help eliminate film buildup and then allow to dry. Never use abrasive powder cleaners like Ajax or Comet as they tend to scratch the floor.
- B. Additional steps can also be taken to prolong the look and life of a seamless floor:
  - 1. Protect the floor during transference of heavy equipment
  - 2. Educate the drivers inside the building the importance of avoiding "jack-rabbit" starts and stops, as well as keeping the metal forks lifted
  - 3. Regular cleaning should take place as to not allow the buildup of abrasive material, such as sand or dirt, on the coating
  - 4. Eliminate all metal wheels
  - 5. Change over to light-colored polyurethane wheels
  - 6. Do not slide heavy metal totes, drums or bins across the floor
  - 7. Immediately hose down chemical spills, especially on newly laid floors.



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**Retro-Coat™**  
Vapor Intrusion Coating

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App by

Date

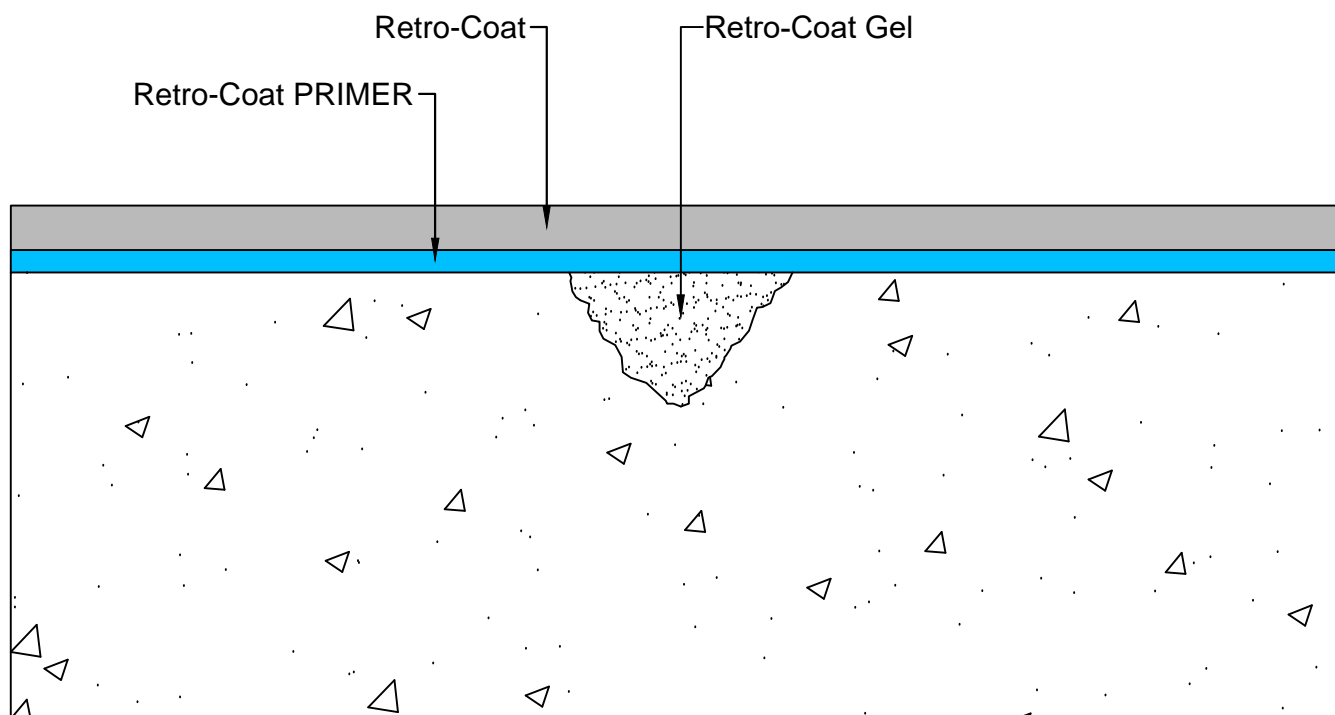
Scale

**Crack Repair**





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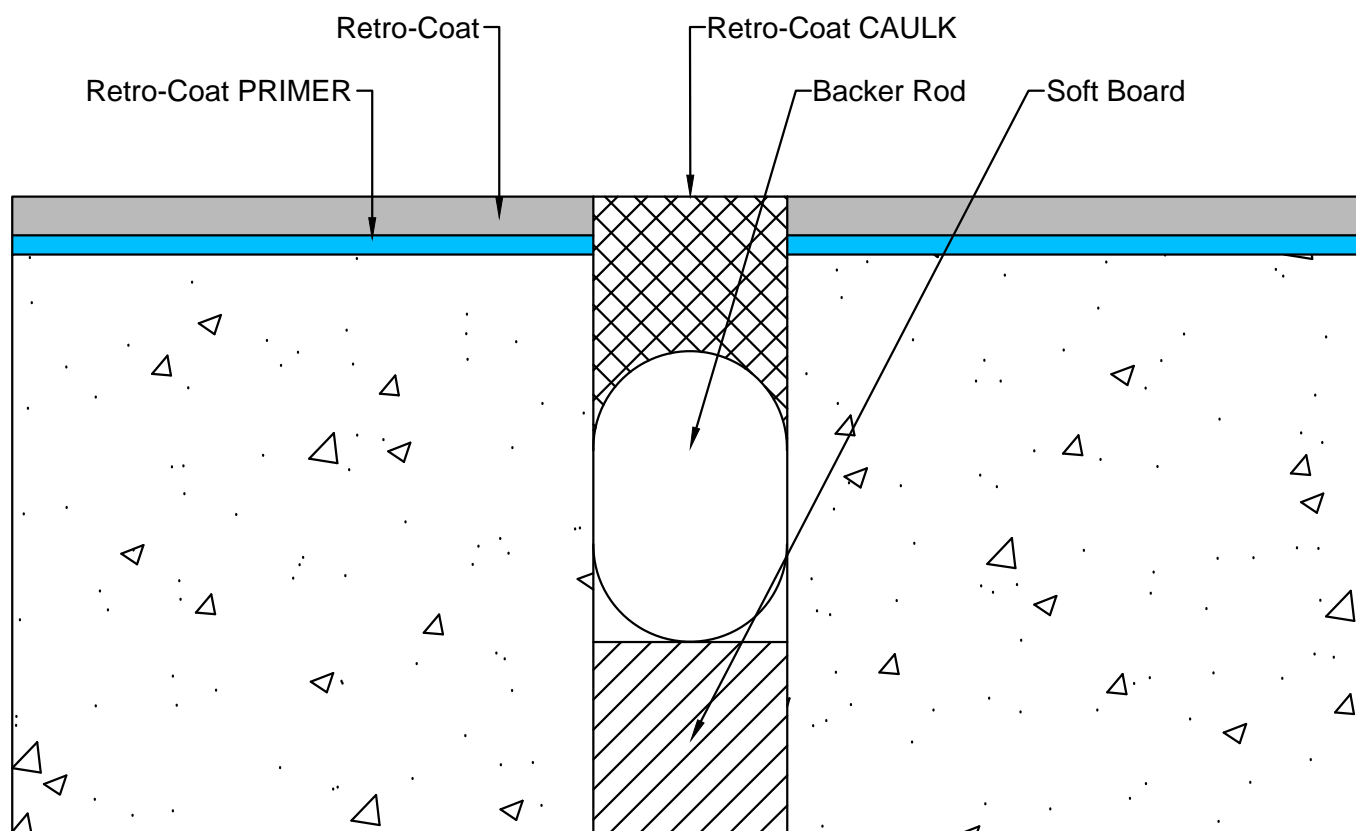
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**Crack Repair**



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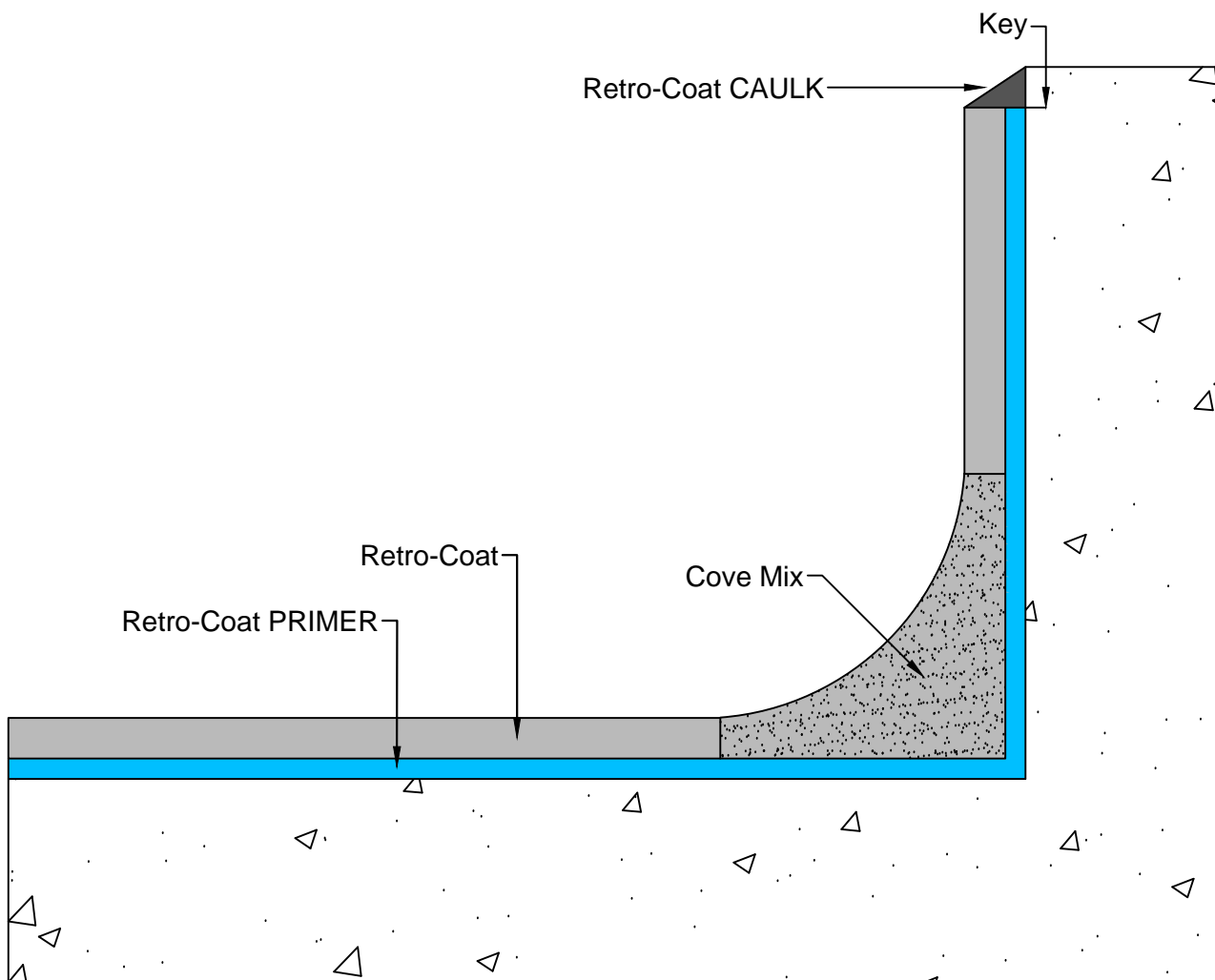
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**Expansion Joint**



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Horizontal to Vertical Transition



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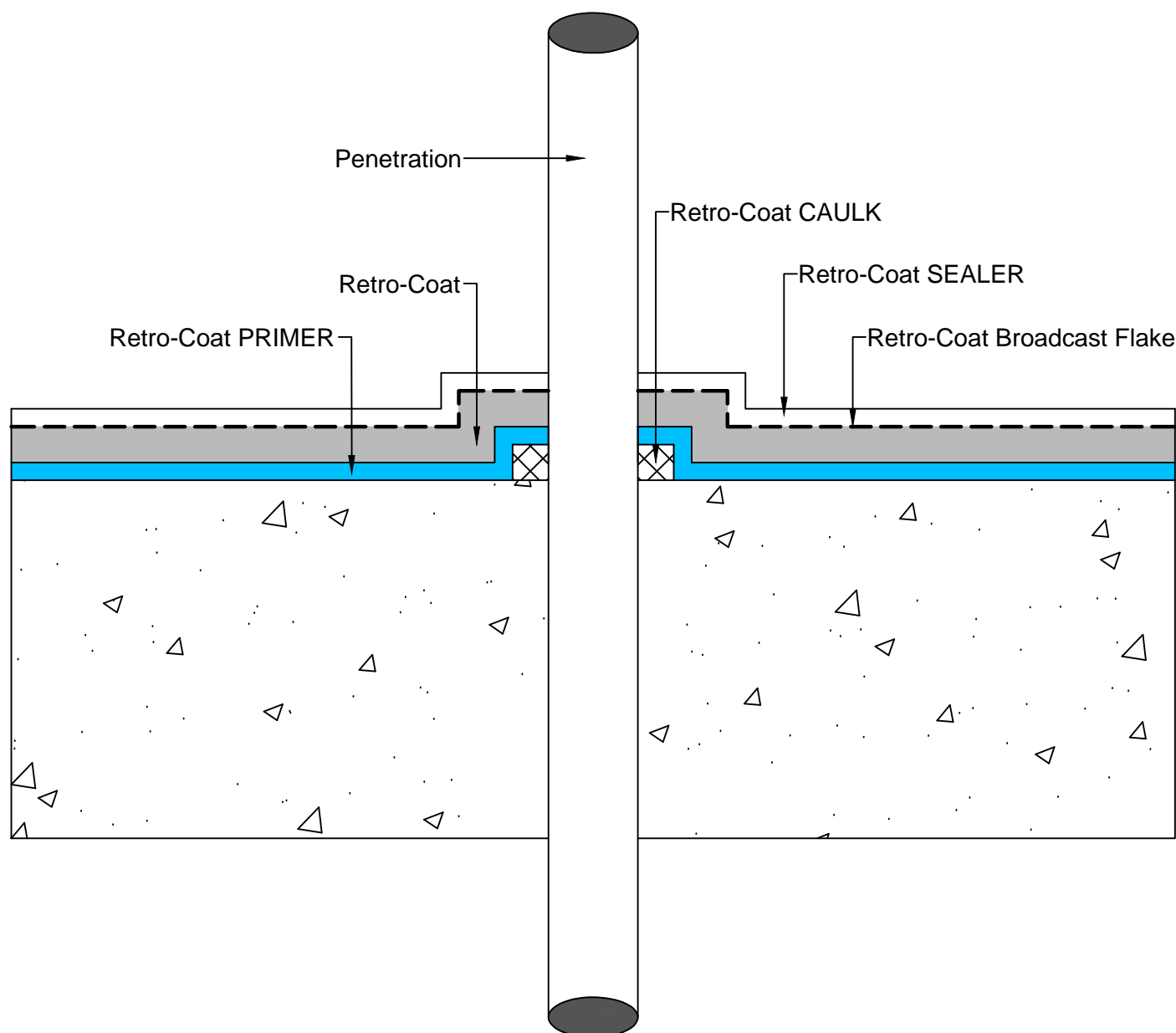
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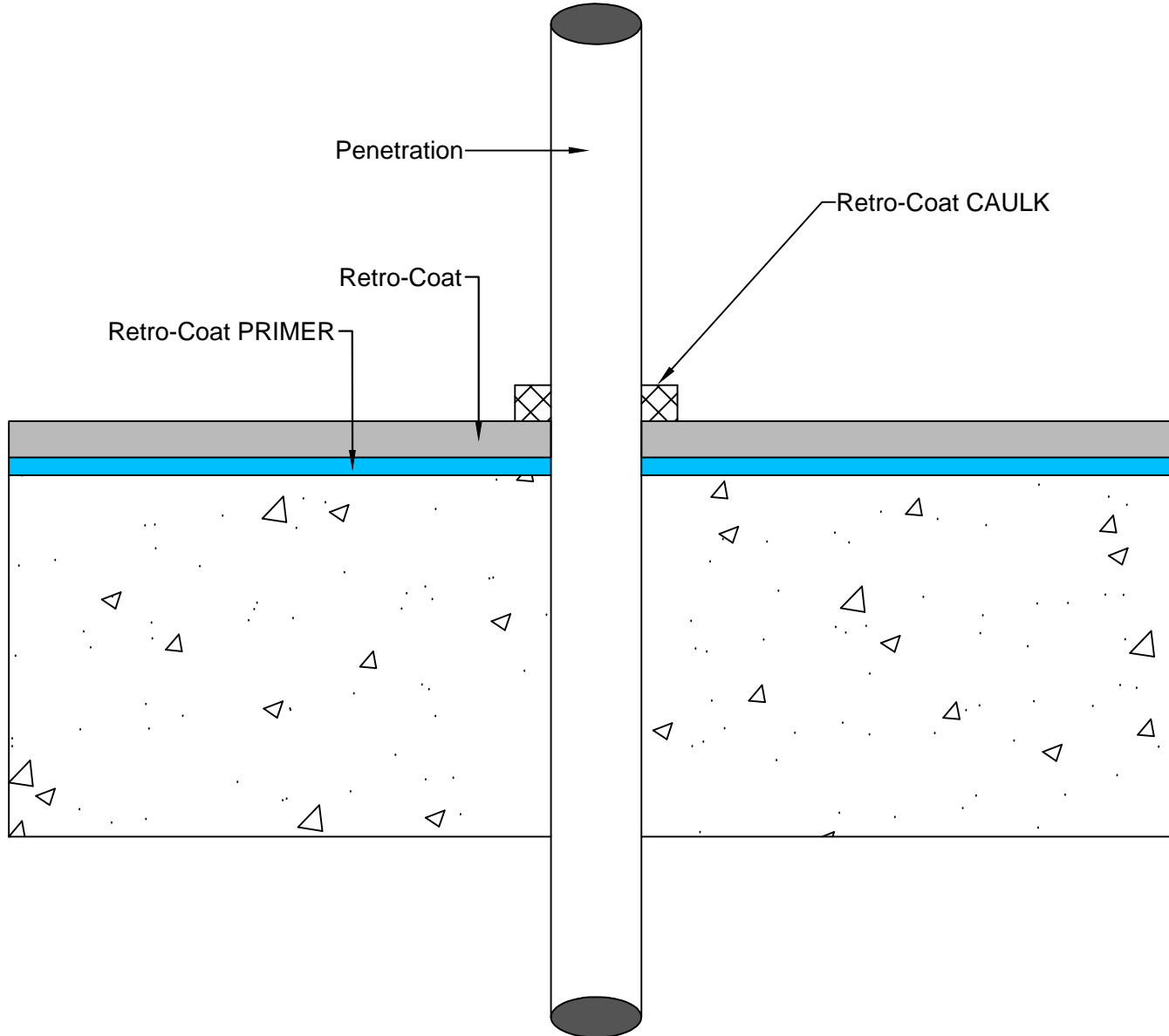
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Penetration







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**Penetration**



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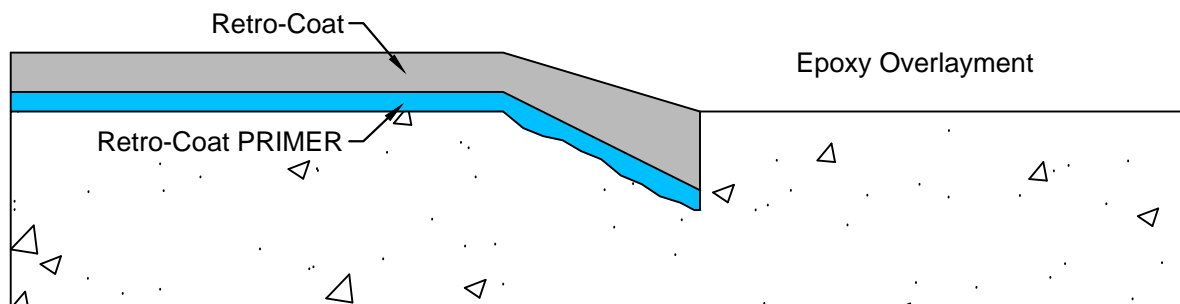
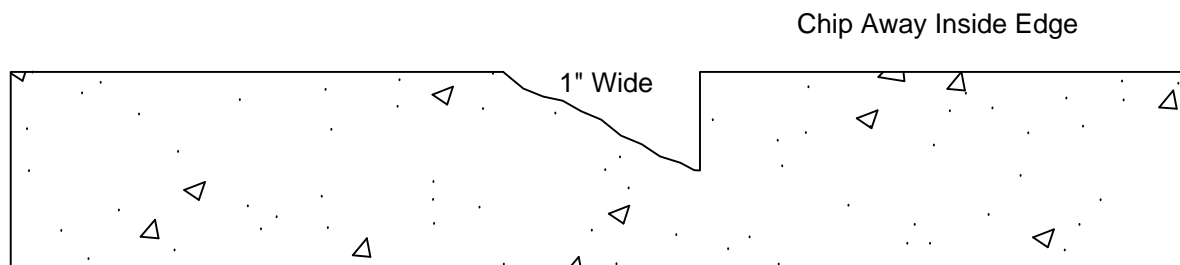
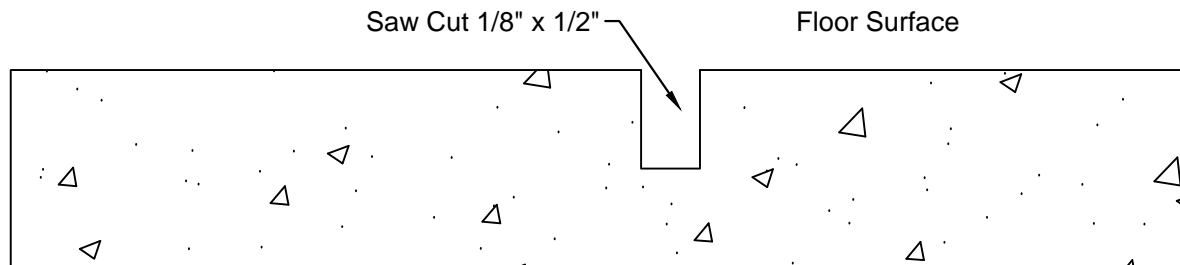
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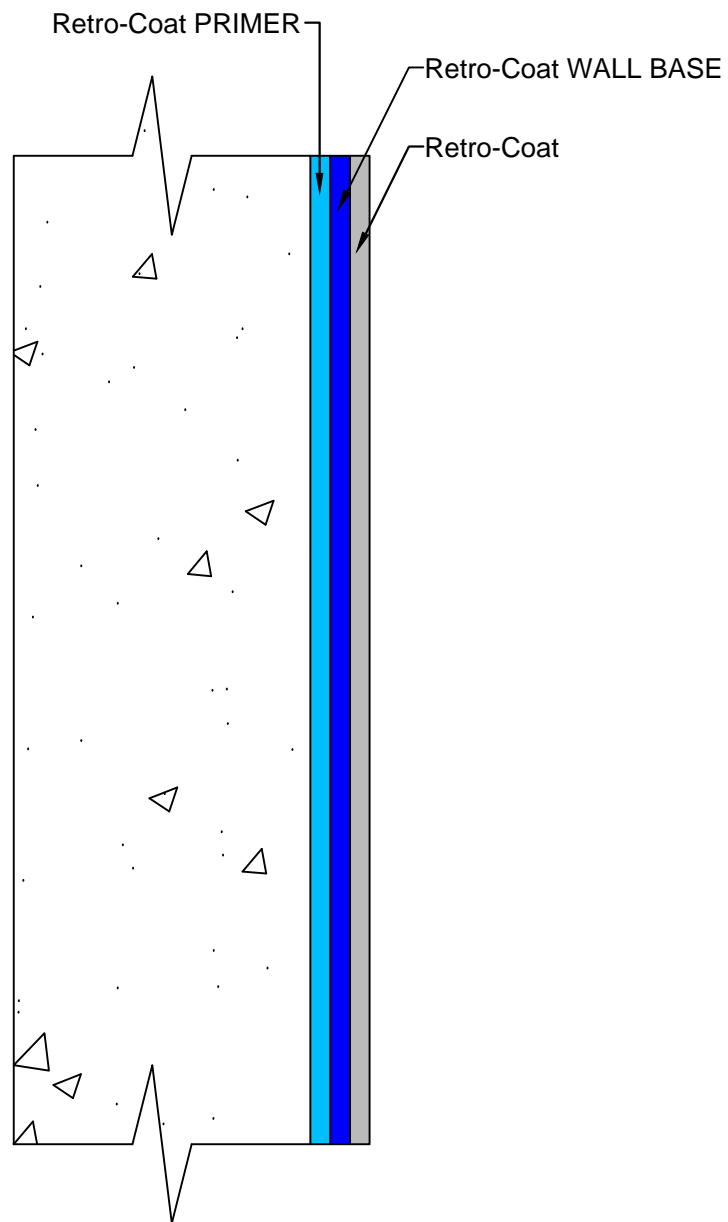
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**Permitter Key**





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**Wall Detail**

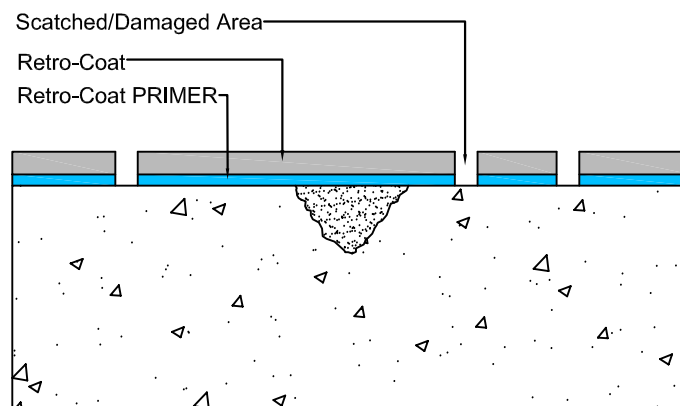


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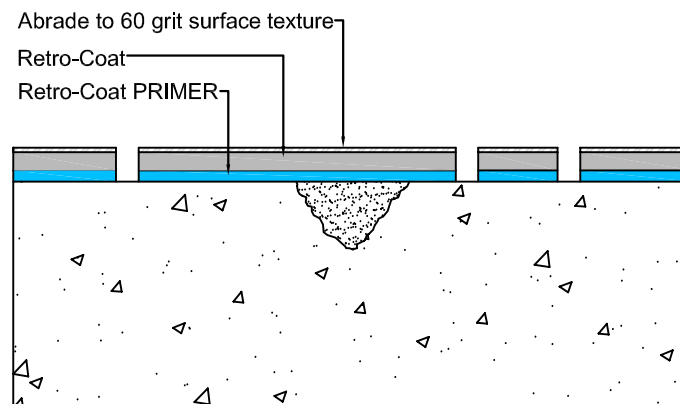
# Retro-Coat™

## Vapor Intrusion Coating

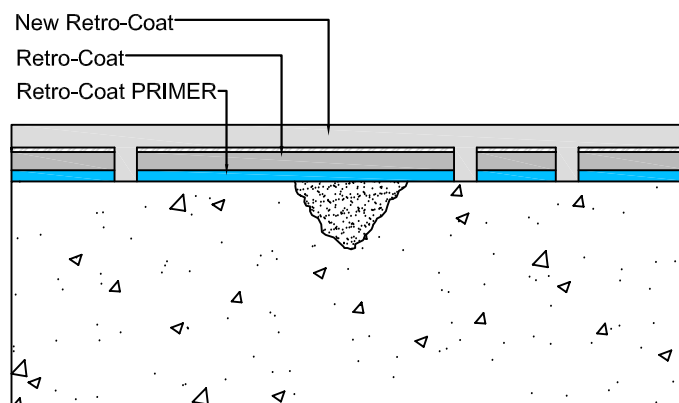
Step 1:



Step 2:



Step 3:



DATE

SCALE


TITLE


Retro-Coat  
Repair Seq




## **Appendix J**


### **Boring Logs**


|                                                                                                                        |             |           |              |                                                                                                    |         |            |                  |             |                             |
|------------------------------------------------------------------------------------------------------------------------|-------------|-----------|--------------|----------------------------------------------------------------------------------------------------|---------|------------|------------------|-------------|-----------------------------|
| DATE DRILLED: October 15, 2018                                                                                         |             |           |              | Depth (feet)                                                                                       | Sampler | Blows/Foot | PID (ppm)        | Water Level | Temporary Well Construction |
| LOGGED BY: Blake Downey, P.G.                                                                                          |             |           |              |                                                                                                    |         |            |                  |             |                             |
| REFERENCE ELEVATION: NA                                                                                                |             |           |              |                                                                                                    |         |            |                  |             |                             |
| DRILL RIG: Geoprobe 7822DT                                                                                             |             |           |              |                                                                                                    |         |            |                  |             |                             |
| TOTAL DEPTH: 8'                                                                                                        |             |           |              |                                                                                                    |         |            |                  |             |                             |
| DEPTH TO GROUNDWATER: 6'                                                                                               |             |           |              |                                                                                                    |         |            |                  |             |                             |
| DESCRIPTION AND CLASSIFICATION                                                                                         |             |           |              |                                                                                                    |         |            |                  |             |                             |
| Description and Remarks                                                                                                | Color       | Soil Type | Consist.     |                                                                                                    |         |            |                  |             |                             |
| Concrete top 5"                                                                                                        |             |           |              | 1                                                                                                  |         |            |                  |             |                             |
| Sandy Gravel (fill): fine to coarse-grained sand, small to medium sub-angular/round gravel, moist                      | Light Brown | GW        | Loose        |                                                                                                    |         |            |                  |             |                             |
| Silty Sand: fine-grained sand, some small sub-round gravel, moist, black staining present from 3.9' to 4.5'            | Light Brown | SM        | Medium Dense | 2                                                                                                  |         |            | 3.1              |             |                             |
|                                                                                                                        |             |           |              | 3                                                                                                  |         |            |                  |             |                             |
| 1-inch layer of coarse-grained sand                                                                                    | Black       |           |              | 4                                                                                                  |         |            | 27.1             |             |                             |
|                                                                                                                        | Light Brown |           |              | 5                                                                                                  |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 6                                                                                                  |         |            | 66.7             | ▼           |                             |
| Silt: some fine-grained sand, saturated                                                                                | Light Brown | ML        | Medium Dense | 7                                                                                                  |         |            |                  |             |                             |
|                                                                                                                        | Dark Grey   |           |              | 8                                                                                                  |         |            | 54.5             |             |                             |
| End of Boring                                                                                                          |             |           |              | 9                                                                                                  |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 10                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 11                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 12                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 13                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 14                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 15                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 16                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 17                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 18                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 19                                                                                                 |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | 20                                                                                                 |         |            |                  |             |                             |
| <br><b>WASATCH</b><br>ENVIRONMENTAL |             |           |              | WELL LOG                                                                                           |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | Former Henries Dry Cleaner, Cottonwood Square<br>1781 East Murray-Holladay Road<br>Millcreek, Utah |         |            |                  |             |                             |
|                                                                                                                        |             |           |              | PROJECT NO.: 2249-001D                                                                             |         |            | BORING NO.: CS-1 |             |                             |

| DATE DRILLED: October 15, 2018                                                                                                      |                           |                |              | Depth (feet)                                                                                       | Sampler | Blows/Foot | PID (ppm)        | Water Level |  |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------|--------------|----------------------------------------------------------------------------------------------------|---------|------------|------------------|-------------|--|
| LOGGED BY: Blake Downey, P.G.                                                                                                       |                           |                |              |                                                                                                    |         |            |                  |             |  |
| REFERENCE ELEVATION: NA                                                                                                             |                           |                |              |                                                                                                    |         |            |                  |             |  |
| DRILL RIG: Geoprobe 7822DT                                                                                                          |                           |                |              |                                                                                                    |         |            |                  |             |  |
| TOTAL DEPTH: 14'                                                                                                                    |                           |                |              |                                                                                                    |         |            |                  |             |  |
| DEPTH TO GROUNDWATER: 6'                                                                                                            |                           |                |              |                                                                                                    |         |            |                  |             |  |
| DESCRIPTION AND CLASSIFICATION                                                                                                      |                           |                |              |                                                                                                    |         |            |                  |             |  |
| Description and Remarks                                                                                                             | Color                     | Soil Type      | Consist.     |                                                                                                    |         |            |                  |             |  |
| Concrete top 5"                                                                                                                     |                           |                |              |                                                                                                    |         |            |                  |             |  |
| Sandy Gravel (fill): fine to coarse-grained sand, small to medium sub-angular/round gravel, moist                                   | Light Brown               | GW             | Loose        | 1                                                                                                  |         |            |                  |             |  |
| Silty Sand: fine-grained sand, some small sub-round gravel, moist, black staining present from 3.9' to 4.5'                         | Light Brown               | SM             | Medium Dense | 2                                                                                                  |         |            | 9.3              |             |  |
| 1-inch layer of coarse-grained sand                                                                                                 |                           |                |              | 3                                                                                                  |         |            | 10.0             |             |  |
|                                                                                                                                     | Black                     |                |              | 4                                                                                                  |         |            |                  |             |  |
|                                                                                                                                     | Light Brown               |                |              | 5                                                                                                  |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 6                                                                                                  |         |            |                  |             |  |
| Silt: some fine-grained sand, saturated                                                                                             | Light Brown<br>Dark Grey  | ML             | Medium Dense | 7                                                                                                  |         |            | 27.0             |             |  |
| Silty Sand/Sandy Silt: fine to medium-grained sand, some small sub-round gravel, saturated                                          | Light Brown<br>Light Grey | SM/ML<br>ML/SM | Medium Dense | 8                                                                                                  |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 9                                                                                                  |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 10                                                                                                 |         |            | 145.5            |             |  |
|                                                                                                                                     | Light Brown               |                |              | 11                                                                                                 |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 12                                                                                                 |         |            | 193.1            |             |  |
|                                                                                                                                     |                           |                |              | 13                                                                                                 |         |            |                  |             |  |
| End of Boring                                                                                                                       |                           |                |              | 14                                                                                                 |         |            | 0.51             |             |  |
|                                                                                                                                     |                           |                |              | 15                                                                                                 |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 16                                                                                                 |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 17                                                                                                 |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 18                                                                                                 |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 19                                                                                                 |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | 20                                                                                                 |         |            |                  |             |  |
| <br><i>Environmental Science and Engineering</i> |                           |                |              | WELL LOG                                                                                           |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | Former Henries Dry Cleaner, Cottonwood Square<br>1781 East Murray-Holladay Road<br>Millcreek, Utah |         |            |                  |             |  |
|                                                                                                                                     |                           |                |              | PROJECT NO.: 2249-001D                                                                             |         |            | BORING NO.: CS-2 |             |  |

| DATE DRILLED: October 15, 2018                                                                                                                 |             |           |              | Depth (feet)                                                                                       | Sampler | Blows/Foot | PID (ppm)        | Water Level |  |
|------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------|--------------|----------------------------------------------------------------------------------------------------|---------|------------|------------------|-------------|--|
| LOGGED BY: Blake Downey, P.G.                                                                                                                  |             |           |              |                                                                                                    |         |            |                  |             |  |
| REFERENCE ELEVATION: NA                                                                                                                        |             |           |              |                                                                                                    |         |            |                  |             |  |
| DRILL RIG: Geoprobe 7822DT                                                                                                                     |             |           |              |                                                                                                    |         |            |                  |             |  |
| TOTAL DEPTH: 14'                                                                                                                               |             |           |              |                                                                                                    |         |            |                  |             |  |
| DEPTH TO GROUNDWATER: 10'                                                                                                                      |             |           |              |                                                                                                    |         |            |                  |             |  |
| DESCRIPTION AND CLASSIFICATION                                                                                                                 |             |           |              |                                                                                                    |         |            |                  |             |  |
| Description and Remarks                                                                                                                        | Color       | Soil Type | Consist.     |                                                                                                    |         |            |                  |             |  |
| Grass/Roots top 2"                                                                                                                             |             |           |              |                                                                                                    |         |            |                  |             |  |
| Silty Sand: fine to medium-grained, moist, 10% recovery for the top 5'                                                                         | Dark Brown  | SM        | Medium Dense | 1                                                                                                  |         |            | 0.24             |             |  |
|                                                                                                                                                |             |           |              | 2                                                                                                  |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 3                                                                                                  |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 4                                                                                                  |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 5                                                                                                  |         |            |                  |             |  |
| Sandy Silt: fine-grained sand, moist                                                                                                           | Light Brown |           |              | 6                                                                                                  |         |            |                  |             |  |
|                                                                                                                                                | Dark Grey   | ML        | Medium Dense | 7                                                                                                  |         |            |                  |             |  |
| Silty Sand: fine to coarse-grained, some small sub-round gravel, moist, saturated at 10'                                                       |             |           |              | 8                                                                                                  |         |            | 28.3             |             |  |
|                                                                                                                                                | Light Brown | SM        | Medium Dense | 9                                                                                                  |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 10                                                                                                 |         |            | 14.7             | ▼           |  |
|                                                                                                                                                |             |           |              | 11                                                                                                 |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 12                                                                                                 |         |            | 13.7             |             |  |
|                                                                                                                                                |             |           |              | 13                                                                                                 |         |            | 4.4              |             |  |
|                                                                                                                                                |             |           |              | 14                                                                                                 |         |            |                  |             |  |
| End of Boring                                                                                                                                  |             |           |              | 15                                                                                                 |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 16                                                                                                 |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 17                                                                                                 |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 18                                                                                                 |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 19                                                                                                 |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | 20                                                                                                 |         |            |                  |             |  |
|                                                                                                                                                |             |           |              |                                                                                                    |         |            |                  |             |  |
| <div><div>Environmental Science and Engineering</div></div> |             |           |              | WELL LOG                                                                                           |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | Former Henries Dry Cleaner, Cottonwood Square<br>1781 East Murray-Holladay Road<br>Millcreek, Utah |         |            |                  |             |  |
|                                                                                                                                                |             |           |              | PROJECT NO.: 2249-001D                                                                             |         |            | BORING NO.: CS-3 |             |  |



|                                                                                                                        |                           |           |              |                                                                                                    |         |                  |           |             |
|------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|--------------|----------------------------------------------------------------------------------------------------|---------|------------------|-----------|-------------|
| DATE DRILLED: October 15, 2018                                                                                         |                           |           |              | Depth (feet)                                                                                       | Sampler | Blows/Foot       | PID (ppm) | Water Level |
| LOGGED BY: Blake Downey, P.G.                                                                                          |                           |           |              |                                                                                                    |         |                  |           |             |
| REFERENCE ELEVATION: NA                                                                                                |                           |           |              |                                                                                                    |         |                  |           |             |
| DRILL RIG: Geoprobe 7822DT                                                                                             |                           |           |              |                                                                                                    |         |                  |           |             |
| TOTAL DEPTH: 10'                                                                                                       |                           |           |              |                                                                                                    |         |                  |           |             |
| DEPTH TO GROUNDWATER: 10'                                                                                              |                           |           |              |                                                                                                    |         |                  |           |             |
| DESCRIPTION AND CLASSIFICATION                                                                                         |                           |           |              |                                                                                                    |         |                  |           |             |
| Description and Remarks                                                                                                | Color                     | Soil Type | Consist.     |                                                                                                    |         |                  |           |             |
| Grass/Roots top 2"                                                                                                     |                           |           |              | 1                                                                                                  |         |                  |           |             |
| Silty Sand: fine to coarse-grained, moist                                                                              | Dark Brown<br>Light Brown | SM        | Medium Dense | 2                                                                                                  |         | 0.40             |           |             |
|                                                                                                                        |                           |           |              | 3                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 4                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 5                                                                                                  |         | 9.5              |           |             |
| Sandy Silt: fine-grained sand, moist, some black staining                                                              | Dark Grey                 | ML        | Medium Dense | 6                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 7                                                                                                  |         |                  |           |             |
| Silty Sand: fine to coarse-grained, some small sub-round gravel, moist, saturated at 10'                               | Light Brown               | SM        | Medium Dense | 8                                                                                                  |         | 121.3            |           |             |
|                                                                                                                        |                           |           |              | 9                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 10                                                                                                 |         | 57.1             |           | ▼           |
| End of Boring                                                                                                          |                           |           |              | 11                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 12                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 13                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 14                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 15                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 16                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 17                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 18                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 19                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 20                                                                                                 |         |                  |           |             |
| <br><b>WASATCH</b><br>ENVIRONMENTAL |                           |           |              | WELL LOG                                                                                           |         |                  |           |             |
|                                                                                                                        |                           |           |              | Former Henries Dry Cleaner, Cottonwood Square<br>1781 East Murray-Holladay Road<br>Millcreek, Utah |         |                  |           |             |
|                                                                                                                        |                           |           |              | PROJECT NO.: 2249-001D                                                                             |         | BORING NO.: CS-4 |           |             |

|                                                                                                                        |                           |           |              |                                                                                                    |         |                  |           |             |
|------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------|--------------|----------------------------------------------------------------------------------------------------|---------|------------------|-----------|-------------|
| DATE DRILLED: October 15, 2018                                                                                         |                           |           |              | Depth (feet)                                                                                       | Sampler | Blows/Foot       | PID (ppm) | Water Level |
| LOGGED BY: Blake Downey, P.G.                                                                                          |                           |           |              |                                                                                                    |         |                  |           |             |
| REFERENCE ELEVATION: NA                                                                                                |                           |           |              |                                                                                                    |         |                  |           |             |
| DRILL RIG: Geoprobe 7822DT                                                                                             |                           |           |              |                                                                                                    |         |                  |           |             |
| TOTAL DEPTH: 10'                                                                                                       |                           |           |              |                                                                                                    |         |                  |           |             |
| DEPTH TO GROUNDWATER: 10'                                                                                              |                           |           |              |                                                                                                    |         |                  |           |             |
| DESCRIPTION AND CLASSIFICATION                                                                                         |                           |           |              |                                                                                                    |         |                  |           |             |
| Description and Remarks                                                                                                | Color                     | Soil Type | Consist.     |                                                                                                    |         |                  |           |             |
| Grass/Roots top 2"                                                                                                     |                           |           |              | 1                                                                                                  |         |                  |           |             |
| Silty Sand: fine to coarse-grained, moist                                                                              | Dark Brown<br>Light Brown | SM        | Medium Dense | 2                                                                                                  |         |                  | 3.3       |             |
|                                                                                                                        |                           |           |              | 3                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 4                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 5                                                                                                  |         |                  | 6.8       |             |
| 3-inch clean medium-grained sand layer                                                                                 |                           |           |              | 6                                                                                                  |         |                  | 18.7      |             |
| Sandy Silt: fine-grained sand, moist, some black staining                                                              | Dark Grey                 | ML        | Medium Dense | 7                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 8                                                                                                  |         |                  | 19.8      |             |
| Silty Sand: fine to coarse-grained, some small sub-round gravel, moist, saturated at 10'                               | Light Brown               | SM        | Medium Dense | 9                                                                                                  |         |                  |           |             |
|                                                                                                                        |                           |           |              | 10                                                                                                 |         |                  | 15.7      | ▼           |
| End of Boring                                                                                                          |                           |           |              | 11                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 12                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 13                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 14                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 15                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 16                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 17                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 18                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 19                                                                                                 |         |                  |           |             |
|                                                                                                                        |                           |           |              | 20                                                                                                 |         |                  |           |             |
| <br><b>WASATCH</b><br>ENVIRONMENTAL |                           |           |              | WELL LOG                                                                                           |         |                  |           |             |
|                                                                                                                        |                           |           |              | Former Henries Dry Cleaner, Cottonwood Square<br>1781 East Murray-Holladay Road<br>Millcreek, Utah |         |                  |           |             |
|                                                                                                                        |                           |           |              | PROJECT NO.: 2249-001D                                                                             |         | BORING NO.: CS-5 |           |             |

## **Appendix K**

### **Soil Laboratory Analytical Report**



Mike Cronin  
Wasatch Environmental  
2410 West California Avenue  
Salt Lake City, UT 84104  
TEL: (801) 972-8400

RE: Former Henries / 2249-001d

Dear Mike Cronin:

Lab Set ID: 1810374

3440 South 700 West  
Salt Lake City, UT 84119

American West Analytical Laboratories received sample(s) on 10/15/2018 for the analyses presented in the following report.

Phone: (801) 263-8686  
Toll Free: (888) 263-8686  
Fax: (801) 263-8687  
e-mail: [awal@awal-labs.com](mailto:awal@awal-labs.com)  
web: [www.awal-labs.com](http://www.awal-labs.com)

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Accreditation Program (NELAP) in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, Wyoming, and Missouri.

All analyses were performed in accordance to the NELAP protocols unless noted otherwise. Accreditation scope documents are available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

Thank You,

Approved by:

Jose G.  
Rocha

Digitally signed by Jose G. Rocha  
DN: cn=Jose G. Rocha,  
o=American West Analytical  
Laboratories, ou,  
email=jose@awal-labs.com,  
c=US  
Date: 2018.10.22 15:46:32  
-06'00'

Laboratory Director or designee





## Volatile Case Narrative

**Client:** Wasatch Environmental  
**Contact:** Mike Cronin  
**Project:** Former Henries / 2249-001d  
**Lab Set ID:** 1810374

---

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Salt Lake City, UT 84119

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web: www.awal-labs.com

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

### **Sample Receipt Information:**

|                               |                                                            |
|-------------------------------|------------------------------------------------------------|
| <b>Date of Receipt:</b>       | 10/15/2018                                                 |
| <b>Date(s) of Collection:</b> | 10/15/2018                                                 |
| <b>Sample Condition:</b>      | Intact                                                     |
| <b>C-O-C Discrepancies:</b>   | None                                                       |
| <b>Method:</b>                | SW-846 8260C/5035A (solid)<br>SW-846 8260C/5030C (aqueous) |
| <b>Analysis:</b>              | Volatile Organic Compounds                                 |

**General Set Comments:** Multiple target analytes were observed above reporting limits.

**Holding Time and Preservation Requirements:** All samples were received in appropriate containers and properly preserved. The analysis and preparation of all samples were performed within the method holding times following the methods stated on the analytical reports.

**Analytical QC Requirements:** All instrument calibration and calibration check requirements were met. All internal standard recoveries met method criterion.

**Batch QC Requirements:** MB, LCS, MS, MSD, RPD, and Surrogates:

**Method Blanks (MBs):** No target analytes were detected above reporting limits, indicating that the procedure was free from contamination.

**Laboratory Control Sample (LCSs):** All LCS recoveries were within control limits, indicating that the preparation and analysis were in control.

**Matrix Spike / Matrix Spike Duplicate (MS/MSD):** All percent recoveries and RPDs (Relative Percent Differences) were inside established limits, indicating no apparent matrix interferences.

**Surrogates:** All surrogate recoveries were within established limits.

**Corrective Action:** None required.



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-001A  
**Client Sample ID:** CS-1-5'  
**Collection Date:** 10/15/2018 1000h  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/16/2018 1631h

**Units:** µg/kg-dry

**Dilution Factor:** 46.95

**Method:** SW8260C

| Compound                    |                  | CAS<br>Number |        | Reporting<br>Limit |       | Analytical<br>Result | Qual |
|-----------------------------|------------------|---------------|--------|--------------------|-------|----------------------|------|
| Tetrachloroethene           |                  | 127-18-4      |        | 110                |       | 1,690                | ~    |
| Trichloroethene             |                  | 79-01-6       |        | 110                |       | 644                  | ~    |
| Surrogate                   | Units: µg/kg-dry | CAS           | Result | Amount Spiked      | % REC | Limits               | Qual |
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0    | 3,110  | 2,753              | 113   | 51-170               |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4      | 2,620  | 2,753              | 95.2  | 50-140               |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7     | 2,810  | 2,753              | 102   | 50-140               |      |
| Surr: Toluene-d8            |                  | 2037-26-5     | 2,660  | 2,753              | 96.8  | 50-140               |      |

~ - The reporting limits were raised due to high analyte concentrations.

Sampling and analytical preparation performed by method 5035A.

**Analyzed:** 10/16/2018 1346h

**Units:** µg/kg-dry

**Dilution Factor:** 0.85

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 1.99            | < 1.99            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 1.99            | < 1.99            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 1.99            | < 1.99            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 1.99            | < 1.99            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 1.99            | < 1.99            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 1.99            | < 1.99            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 1.99            | < 1.99            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 4.98            | < 4.98            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 1.99            | < 1.99            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 1.99            | < 1.99            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 1.99            | < 1.99            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 1.99            | < 1.99            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 1.99            | < 1.99            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 1.99            | < 1.99            |      |
| 2-Butanone                            | 78-93-3    | 9.97            | < 9.97            |      |
| 2-Hexanone                            | 591-78-6   | 4.98            | < 4.98            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 4.98            | < 4.98            |      |

Report Date: 10/22/2018 Page 3 of 59

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1810374-001A

**Client Sample ID:** CS-1-5'

**Analyzed:** 10/16/2018 1346h

**Units:** µg/kg-dry

**Dilution Factor:** 0.85

**Method:** SW8260C

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| Acetone                   | 67-64-1    | 9.97            | < 9.97            |      |
| Benzene                   | 71-43-2    | 1.99            | < 1.99            |      |
| Bromodichloromethane      | 75-27-4    | 1.99            | < 1.99            |      |
| Bromoform                 | 75-25-2    | 1.99            | < 1.99            |      |
| Bromomethane              | 74-83-9    | 4.98            | < 4.98            |      |
| Carbon disulfide          | 75-15-0    | 1.99            | < 1.99            |      |
| Carbon tetrachloride      | 56-23-5    | 1.99            | < 1.99            |      |
| Chlorobenzene             | 108-90-7   | 1.99            | < 1.99            |      |
| Chloroethane              | 75-00-3    | 1.99            | < 1.99            |      |
| Chloroform                | 67-66-3    | 1.99            | < 1.99            |      |
| Chloromethane             | 74-87-3    | 2.99            | < 2.99            |      |
| cis-1,2-Dichloroethene    | 156-59-2   | 1.99            | <b>63.5</b>       |      |
| cis-1,3-Dichloropropene   | 10061-01-5 | 1.99            | < 1.99            |      |
| Cyclohexane               | 110-82-7   | 1.99            | < 1.99            |      |
| Dibromochloromethane      | 124-48-1   | 1.99            | < 1.99            |      |
| Dichlorodifluoromethane   | 75-71-8    | 1.99            | < 1.99            |      |
| Ethylbenzene              | 100-41-4   | 1.99            | < 1.99            |      |
| Isopropylbenzene          | 98-82-8    | 1.99            | < 1.99            |      |
| Methyl Acetate            | 79-20-9    | 4.98            | < 4.98            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 1.99            | < 1.99            |      |
| Methylcyclohexane         | 108-87-2   | 1.99            | < 1.99            |      |
| Methylene chloride        | 75-09-2    | 4.98            | < 4.98            |      |
| Naphthalene               | 91-20-3    | 1.99            | < 1.99            |      |
| Styrene                   | 100-42-5   | 1.99            | < 1.99            |      |
| Toluene                   | 108-88-3   | 1.99            | < 1.99            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 1.99            | <b>3.67</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 1.99            | < 1.99            |      |
| Trichlorofluoromethane    | 75-69-4    | 1.99            | < 1.99            |      |
| Vinyl chloride            | 75-01-4    | 0.997           | < 0.997           |      |
| Xylenes, Total            | 1330-20-7  | 1.99            | < 1.99            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 59.4   | 49.84         | 119   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 49.2   | 49.84         | 98.8  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 51.9   | 49.84         | 104   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 47.3   | 49.84         | 95.0  | 50-140 |      |

*Sampling and analytical preparation performed by method 5035A.*



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-002A  
**Client Sample ID:** CS-2-3'  
**Collection Date:** 10/15/2018 1015h  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/16/2018 1732h

**Units:** µg/kg-dry

**Dilution Factor:** 45.87

**Method:** SW8260C

| Compound          | CAS Number | Reporting Limit | Analytical Result | Qual |
|-------------------|------------|-----------------|-------------------|------|
| Tetrachloroethene | 127-18-4   | 112             | 283               | ~    |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 3,210  | 2,789         | 115   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 2,680  | 2,789         | 96.1  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 2,880  | 2,789         | 103   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 2,700  | 2,789         | 96.8  | 50-140 |      |

~ - The reporting limits were raised due to high analyte concentrations.

Sampling and analytical preparation performed by method 5035A.

**Analyzed:** 10/16/2018 1448h

**Units:** µg/kg-dry

**Dilution Factor:** 0.84

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.04            | < 2.04            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.04            | < 2.04            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.04            | < 2.04            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.04            | < 2.04            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.04            | < 2.04            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.04            | < 2.04            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.04            | < 2.04            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.11            | < 5.11            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.04            | < 2.04            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.04            | < 2.04            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.04            | < 2.04            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.04            | < 2.04            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.04            | < 2.04            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.04            | < 2.04            |      |
| 2-Butanone                            | 78-93-3    | 10.2            | < 10.2            |      |
| 2-Hexanone                            | 591-78-6   | 5.11            | < 5.11            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.11            | < 5.11            |      |
| Acetone                               | 67-64-1    | 10.2            | < 10.2            |      |

Report Date: 10/22/2018 Page 5 of 59



**Lab Sample ID:** 1810374-002A

**Client Sample ID:** CS-2-3'

**Analyzed:** 10/16/2018 1448h

**Units:** µg/kg-dry

**Dilution Factor:** 0.84

**Method:** SW8260C

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| Benzene                   | 71-43-2    | 2.04            | < 2.04            |      |
| Bromodichloromethane      | 75-27-4    | 2.04            | < 2.04            |      |
| Bromoform                 | 75-25-2    | 2.04            | < 2.04            |      |
| Bromomethane              | 74-83-9    | 5.11            | < 5.11            |      |
| Carbon disulfide          | 75-15-0    | 2.04            | < 2.04            |      |
| Carbon tetrachloride      | 56-23-5    | 2.04            | < 2.04            |      |
| Chlorobenzene             | 108-90-7   | 2.04            | < 2.04            |      |
| Chloroethane              | 75-00-3    | 2.04            | < 2.04            |      |
| Chloroform                | 67-66-3    | 2.04            | < 2.04            |      |
| Chloromethane             | 74-87-3    | 3.06            | < 3.06            |      |
| cis-1,2-Dichloroethene    | 156-59-2   | 2.04            | <b>16.3</b>       |      |
| cis-1,3-Dichloropropene   | 10061-01-5 | 2.04            | < 2.04            |      |
| Cyclohexane               | 110-82-7   | 2.04            | < 2.04            |      |
| Dibromochloromethane      | 124-48-1   | 2.04            | < 2.04            |      |
| Dichlorodifluoromethane   | 75-71-8    | 2.04            | < 2.04            |      |
| Ethylbenzene              | 100-41-4   | 2.04            | < 2.04            |      |
| Isopropylbenzene          | 98-82-8    | 2.04            | < 2.04            |      |
| Methyl Acetate            | 79-20-9    | 5.11            | < 5.11            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 2.04            | < 2.04            |      |
| Methylcyclohexane         | 108-87-2   | 2.04            | < 2.04            |      |
| Methylene chloride        | 75-09-2    | 5.11            | < 5.11            |      |
| Naphthalene               | 91-20-3    | 2.04            | < 2.04            |      |
| Styrene                   | 100-42-5   | 2.04            | < 2.04            |      |
| Toluene                   | 108-88-3   | 2.04            | < 2.04            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 2.04            | < 2.04            |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 2.04            | < 2.04            |      |
| Trichloroethene           | 79-01-6    | 2.04            | <b>12.9</b>       |      |
| Trichlorofluoromethane    | 75-69-4    | 2.04            | < 2.04            |      |
| Vinyl chloride            | 75-01-4    | 1.02            | < 1.02            |      |
| Xylenes, Total            | 1330-20-7  | 2.04            | < 2.04            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 61.0   | 51.08         | 119   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 50.7   | 51.08         | 99.3  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 53.0   | 51.08         | 104   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 47.3   | 51.08         | 92.5  | 50-140 |      |

*Sampling and analytical preparation performed by method 5035A.*





# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-003A  
**Client Sample ID:** CS-2-12'  
**Collection Date:** 10/15/2018 1035h  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/16/2018 1753h

**Units:** µg/kg-dry

**Dilution Factor:** 42.96

**Method:** SW8260C

| Compound               | CAS Number | Reporting Limit | Analytical Result | Qual |
|------------------------|------------|-----------------|-------------------|------|
| cis-1,2-Dichloroethene | 156-59-2   | 101             | 5,570             | ~    |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 2,930  | 2,521         | 116   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 2,430  | 2,521         | 96.4  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 2,510  | 2,521         | 99.7  | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 2,340  | 2,521         | 93.0  | 50-140 |      |

~ - The reporting limits were raised due to high analyte concentrations.

Sampling and analytical preparation performed by method 5035A.

**Analyzed:** 10/16/2018 1508h

**Units:** µg/kg-dry

**Dilution Factor:** 0.78

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 1.83            | < 1.83            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 1.83            | < 1.83            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 1.83            | < 1.83            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 1.83            | < 1.83            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 1.83            | < 1.83            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 1.83            | < 1.83            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 1.83            | < 1.83            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 4.58            | < 4.58            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 1.83            | < 1.83            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 1.83            | < 1.83            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 1.83            | < 1.83            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 1.83            | < 1.83            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 1.83            | < 1.83            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 1.83            | < 1.83            |      |
| 2-Butanone                            | 78-93-3    | 9.15            | < 9.15            |      |
| 2-Hexanone                            | 591-78-6   | 4.58            | < 4.58            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 4.58            | < 4.58            |      |
| Acetone                               | 67-64-1    | 9.15            | 17.6              |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1810374-003A

**Client Sample ID:** CS-2-12'

**Analyzed:** 10/16/2018 1508h

**Units:** µg/kg-dry

**Dilution Factor:** 0.78

**Method:** SW8260C

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Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| Benzene                   | 71-43-2    | 1.83            | < 1.83            |      |
| Bromodichloromethane      | 75-27-4    | 1.83            | < 1.83            |      |
| Bromoform                 | 75-25-2    | 1.83            | < 1.83            |      |
| Bromomethane              | 74-83-9    | 4.58            | < 4.58            |      |
| Carbon disulfide          | 75-15-0    | 1.83            | < 1.83            |      |
| Carbon tetrachloride      | 56-23-5    | 1.83            | < 1.83            |      |
| Chlorobenzene             | 108-90-7   | 1.83            | < 1.83            |      |
| Chloroethane              | 75-00-3    | 1.83            | < 1.83            |      |
| Chloroform                | 67-66-3    | 1.83            | < 1.83            |      |
| Chloromethane             | 74-87-3    | 2.75            | < 2.75            |      |
| cis-1,3-Dichloropropene   | 10061-01-5 | 1.83            | < 1.83            |      |
| Cyclohexane               | 110-82-7   | 1.83            | < 1.83            |      |
| Dibromochloromethane      | 124-48-1   | 1.83            | < 1.83            |      |
| Dichlorodifluoromethane   | 75-71-8    | 1.83            | < 1.83            |      |
| Ethylbenzene              | 100-41-4   | 1.83            | < 1.83            |      |
| Isopropylbenzene          | 98-82-8    | 1.83            | < 1.83            |      |
| Methyl Acetate            | 79-20-9    | 4.58            | < 4.58            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 1.83            | < 1.83            |      |
| Methylcyclohexane         | 108-87-2   | 1.83            | < 1.83            |      |
| Methylene chloride        | 75-09-2    | 4.58            | < 4.58            |      |
| Naphthalene               | 91-20-3    | 1.83            | < 1.83            |      |
| Styrene                   | 100-42-5   | 1.83            | < 1.83            |      |
| Tetrachloroethene         | 127-18-4   | 1.83            | <b>3.11</b>       |      |
| Toluene                   | 108-88-3   | 1.83            | < 1.83            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 1.83            | <b>63.3</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 1.83            | < 1.83            |      |
| Trichloroethene           | 79-01-6    | 1.83            | < 1.83            |      |
| Trichlorofluoromethane    | 75-69-4    | 1.83            | < 1.83            |      |
| Vinyl chloride            | 75-01-4    | 0.915           | <b>31.5</b>       |      |
| Xylenes, Total            | 1330-20-7  | 1.83            | < 1.83            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 53.9   | 45.76         | 118   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 44.5   | 45.76         | 97.3  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 46.4   | 45.76         | 101   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 41.1   | 45.76         | 89.8  | 50-140 |      |

*Sampling and analytical preparation performed by method 5035A.*



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-004A  
**Client Sample ID:** CS-3-8'  
**Collection Date:** 10/15/2018 1155h  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/16/2018 1529h

**Units:** µg/kg-dry

**Dilution Factor:** 0.92

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.32            | < 2.32            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.32            | < 2.32            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.32            | < 2.32            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.32            | < 2.32            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.32            | < 2.32            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.32            | < 2.32            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.32            | < 2.32            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.80            | < 5.80            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.32            | < 2.32            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.32            | < 2.32            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.32            | < 2.32            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.32            | < 2.32            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.32            | < 2.32            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.32            | < 2.32            |      |
| 2-Butanone                            | 78-93-3    | 11.6            | < 11.6            |      |
| 2-Hexanone                            | 591-78-6   | 5.80            | < 5.80            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.80            | < 5.80            |      |
| Acetone                               | 67-64-1    | 11.6            | < 11.6            |      |
| Benzene                               | 71-43-2    | 2.32            | < 2.32            |      |
| Bromodichloromethane                  | 75-27-4    | 2.32            | < 2.32            |      |
| Bromoform                             | 75-25-2    | 2.32            | < 2.32            |      |
| Bromomethane                          | 74-83-9    | 5.80            | < 5.80            |      |
| Carbon disulfide                      | 75-15-0    | 2.32            | < 2.32            |      |
| Carbon tetrachloride                  | 56-23-5    | 2.32            | < 2.32            |      |
| Chlorobenzene                         | 108-90-7   | 2.32            | < 2.32            |      |
| Chloroethane                          | 75-00-3    | 2.32            | < 2.32            |      |
| Chloroform                            | 67-66-3    | 2.32            | < 2.32            |      |
| Chloromethane                         | 74-87-3    | 3.48            | < 3.48            |      |
| cis-1,2-Dichloroethene                | 156-59-2   | 2.32            | <b>242</b>        |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1810374-004A

**Client Sample ID:** CS-3-8'

**Analyzed:** 10/16/2018 1529h

**Units:** µg/kg-dry

**Dilution Factor:** 0.92

**Method:** SW8260C

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| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| cis-1,3-Dichloropropene   | 10061-01-5 | 2.32            | < 2.32            |      |
| Cyclohexane               | 110-82-7   | 2.32            | < 2.32            |      |
| Dibromochloromethane      | 124-48-1   | 2.32            | < 2.32            |      |
| Dichlorodifluoromethane   | 75-71-8    | 2.32            | < 2.32            |      |
| Ethylbenzene              | 100-41-4   | 2.32            | < 2.32            |      |
| Isopropylbenzene          | 98-82-8    | 2.32            | < 2.32            |      |
| Methyl Acetate            | 79-20-9    | 5.80            | < 5.80            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 2.32            | < 2.32            |      |
| Methylcyclohexane         | 108-87-2   | 2.32            | < 2.32            |      |
| Methylene chloride        | 75-09-2    | 5.80            | < 5.80            |      |
| Naphthalene               | 91-20-3    | 2.32            | < 2.32            |      |
| Styrene                   | 100-42-5   | 2.32            | < 2.32            |      |
| Tetrachloroethene         | 127-18-4   | 2.32            | <b>41.8</b>       |      |
| Toluene                   | 108-88-3   | 2.32            | < 2.32            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 2.32            | < 2.32            |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 2.32            | < 2.32            |      |
| Trichloroethene           | 79-01-6    | 2.32            | <b>9.21</b>       |      |
| Trichlorofluoromethane    | 75-69-4    | 2.32            | < 2.32            |      |
| Vinyl chloride            | 75-01-4    | 1.16            | <b>4.33</b>       |      |
| Xylenes, Total            | 1330-20-7  | 2.32            | < 2.32            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 66.6   | 58.03         | 115   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 57.3   | 58.03         | 98.7  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 58.2   | 58.03         | 100   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 55.4   | 58.03         | 95.5  | 50-140 |      |

*Sampling and analytical preparation performed by method 5035A.*



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-005A  
**Client Sample ID:** CS-3-12'  
**Collection Date:** 10/15/2018 1205h  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/16/2018 1550h

**Units:** µg/kg-dry

**Dilution Factor:** 0.78

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 1.80            | < 1.80            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 1.80            | < 1.80            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 1.80            | < 1.80            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 1.80            | < 1.80            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 1.80            | < 1.80            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 1.80            | < 1.80            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 1.80            | < 1.80            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 4.51            | < 4.51            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 1.80            | < 1.80            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 1.80            | < 1.80            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 1.80            | < 1.80            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 1.80            | < 1.80            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 1.80            | < 1.80            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 1.80            | < 1.80            |      |
| 2-Butanone                            | 78-93-3    | 9.02            | < 9.02            |      |
| 2-Hexanone                            | 591-78-6   | 4.51            | < 4.51            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 4.51            | < 4.51            |      |
| Acetone                               | 67-64-1    | 9.02            | <b>9.38</b>       |      |
| Benzene                               | 71-43-2    | 1.80            | < 1.80            |      |
| Bromodichloromethane                  | 75-27-4    | 1.80            | < 1.80            |      |
| Bromoform                             | 75-25-2    | 1.80            | < 1.80            |      |
| Bromomethane                          | 74-83-9    | 4.51            | < 4.51            |      |
| Carbon disulfide                      | 75-15-0    | 1.80            | < 1.80            |      |
| Carbon tetrachloride                  | 56-23-5    | 1.80            | < 1.80            |      |
| Chlorobenzene                         | 108-90-7   | 1.80            | < 1.80            |      |
| Chloroethane                          | 75-00-3    | 1.80            | < 1.80            |      |
| Chloroform                            | 67-66-3    | 1.80            | < 1.80            |      |
| Chloromethane                         | 74-87-3    | 2.71            | < 2.71            |      |
| cis-1,2-Dichloroethene                | 156-59-2   | 1.80            | <b>149</b>        |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer





**Lab Sample ID:** 1810374-005A

**Client Sample ID:** CS-3-12'

**Analyzed:** 10/16/2018 1550h

**Units:** µg/kg-dry

**Dilution Factor:** 0.78

**Method:** SW8260C

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| cis-1,3-Dichloropropene   | 10061-01-5 | 1.80            | < 1.80            |      |
| Cyclohexane               | 110-82-7   | 1.80            | < 1.80            |      |
| Dibromochloromethane      | 124-48-1   | 1.80            | < 1.80            |      |
| Dichlorodifluoromethane   | 75-71-8    | 1.80            | < 1.80            |      |
| Ethylbenzene              | 100-41-4   | 1.80            | < 1.80            |      |
| Isopropylbenzene          | 98-82-8    | 1.80            | < 1.80            |      |
| Methyl Acetate            | 79-20-9    | 4.51            | < 4.51            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 1.80            | < 1.80            |      |
| Methylcyclohexane         | 108-87-2   | 1.80            | < 1.80            |      |
| Methylene chloride        | 75-09-2    | 4.51            | < 4.51            |      |
| Naphthalene               | 91-20-3    | 1.80            | < 1.80            |      |
| Styrene                   | 100-42-5   | 1.80            | < 1.80            |      |
| Tetrachloroethene         | 127-18-4   | 1.80            | <b>52.8</b>       |      |
| Toluene                   | 108-88-3   | 1.80            | < 1.80            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 1.80            | < 1.80            |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 1.80            | < 1.80            |      |
| Trichloroethene           | 79-01-6    | 1.80            | <b>15.2</b>       |      |
| Trichlorofluoromethane    | 75-69-4    | 1.80            | < 1.80            |      |
| Vinyl chloride            | 75-01-4    | 0.902           | <b>2.77</b>       |      |
| Xylenes, Total            | 1330-20-7  | 1.80            | < 1.80            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 53.9   | 45.09         | 120   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 45.0   | 45.09         | 99.8  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 47.8   | 45.09         | 106   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 43.7   | 45.09         | 97.0  | 50-140 |      |

*Sampling and analytical preparation performed by method 5035A.*



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-006A  
**Client Sample ID:** CS-4-8'  
**Collection Date:** 10/15/2018 1230h  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/16/2018 1915h

**Units:** µg/kg-dry

**Dilution Factor:** 48.83

**Method:** SW8260C

| Compound               | CAS Number | Reporting Limit | Analytical Result | Qual |
|------------------------|------------|-----------------|-------------------|------|
| cis-1,2-Dichloroethene | 156-59-2   | 126             | 8,170             | ~    |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 3,780  | 3,144         | 120   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 3,040  | 3,144         | 96.7  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 3,290  | 3,144         | 105   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 3,040  | 3,144         | 96.7  | 50-140 |      |

~ - The reporting limits were raised due to high analyte concentrations.

Sampling and analytical preparation performed by method 5035A.

**Analyzed:** 10/16/2018 1611h

**Units:** µg/kg-dry

**Dilution Factor:** 0.82

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.11            | < 2.11            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.11            | < 2.11            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.11            | < 2.11            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.11            | < 2.11            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.11            | < 2.11            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.11            | < 2.11            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.11            | < 2.11            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.28            | < 5.28            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.11            | < 2.11            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.11            | < 2.11            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.11            | < 2.11            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.11            | < 2.11            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.11            | < 2.11            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.11            | < 2.11            |      |
| 2-Butanone                            | 78-93-3    | 10.6            | < 10.6            |      |
| 2-Hexanone                            | 591-78-6   | 5.28            | < 5.28            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.28            | < 5.28            |      |
| Acetone                               | 67-64-1    | 10.6            | 34.3              |      |

Report Date: 10/22/2018 Page 13 of 59



**Lab Sample ID:** 1810374-006A

**Client Sample ID:** CS-4-8'

**Analyzed:** 10/16/2018 1611h

**Units:** µg/kg-dry

**Dilution Factor:** 0.82

**Method:** SW8260C

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Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| Benzene                   | 71-43-2    | 2.11            | < 2.11            |      |
| Bromodichloromethane      | 75-27-4    | 2.11            | < 2.11            |      |
| Bromoform                 | 75-25-2    | 2.11            | < 2.11            |      |
| Bromomethane              | 74-83-9    | 5.28            | < 5.28            |      |
| Carbon disulfide          | 75-15-0    | 2.11            | <b>2.53</b>       |      |
| Carbon tetrachloride      | 56-23-5    | 2.11            | < 2.11            |      |
| Chlorobenzene             | 108-90-7   | 2.11            | < 2.11            |      |
| Chloroethane              | 75-00-3    | 2.11            | < 2.11            |      |
| Chloroform                | 67-66-3    | 2.11            | < 2.11            |      |
| Chloromethane             | 74-87-3    | 3.17            | < 3.17            |      |
| cis-1,3-Dichloropropene   | 10061-01-5 | 2.11            | < 2.11            |      |
| Cyclohexane               | 110-82-7   | 2.11            | < 2.11            |      |
| Dibromochloromethane      | 124-48-1   | 2.11            | < 2.11            |      |
| Dichlorodifluoromethane   | 75-71-8    | 2.11            | < 2.11            |      |
| Ethylbenzene              | 100-41-4   | 2.11            | < 2.11            |      |
| Isopropylbenzene          | 98-82-8    | 2.11            | < 2.11            |      |
| Methyl Acetate            | 79-20-9    | 5.28            | < 5.28            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 2.11            | < 2.11            |      |
| Methylcyclohexane         | 108-87-2   | 2.11            | < 2.11            |      |
| Methylene chloride        | 75-09-2    | 5.28            | < 5.28            |      |
| Naphthalene               | 91-20-3    | 2.11            | < 2.11            |      |
| Styrene                   | 100-42-5   | 2.11            | < 2.11            |      |
| Tetrachloroethene         | 127-18-4   | 2.11            | < 2.11            |      |
| Toluene                   | 108-88-3   | 2.11            | < 2.11            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 2.11            | <b>73.7</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 2.11            | < 2.11            |      |
| Trichloroethene           | 79-01-6    | 2.11            | < 2.11            |      |
| Trichlorofluoromethane    | 75-69-4    | 2.11            | < 2.11            |      |
| Vinyl chloride            | 75-01-4    | 1.06            | <b>6.77</b>       |      |
| Xylenes, Total            | 1330-20-7  | 2.11            | < 2.11            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 62.9   | 52.79         | 119   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 51.9   | 52.79         | 98.2  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 54.7   | 52.79         | 104   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 50.0   | 52.79         | 94.6  | 50-140 |      |

*Sampling and analytical preparation performed by method 5035A.*



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-007A  
**Client Sample ID:** CS-5-8'  
**Collection Date:** 10/15/2018 1245h  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/17/2018 1431h

**Units:** µg/kg-dry

**Dilution Factor:** 47.21

**Method:** SW8260C

| Compound               | CAS Number | Reporting Limit | Analytical Result | Qual |
|------------------------|------------|-----------------|-------------------|------|
| cis-1,2-Dichloroethene | 156-59-2   | 119             | 1,280             | ~    |
| Tetrachloroethene      | 127-18-4   | 119             | 634               | ~    |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 3,400  | 2,964         | 115   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 2,900  | 2,964         | 97.8  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 3,060  | 2,964         | 103   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 2,930  | 2,964         | 98.7  | 50-140 |      |

~ - The reporting limits were raised due to high analyte concentrations.

Sampling and analytical preparation performed by method 5035A.

**Analyzed:** 10/16/2018 1834h

**Units:** µg/kg-dry

**Dilution Factor:** 0.92

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.31            | < 2.31            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.31            | < 2.31            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.31            | < 2.31            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.31            | < 2.31            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.31            | < 2.31            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.31            | < 2.31            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.31            | < 2.31            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.78            | < 5.78            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.31            | < 2.31            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.31            | < 2.31            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.31            | < 2.31            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.31            | < 2.31            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.31            | < 2.31            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.31            | < 2.31            |      |
| 2-Butanone                            | 78-93-3    | 11.6            | < 11.6            |      |
| 2-Hexanone                            | 591-78-6   | 5.78            | < 5.78            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.78            | < 5.78            |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1810374-007A

**Client Sample ID:** CS-5-8'

**Analyzed:** 10/16/2018 1834h

**Units:** µg/kg-dry

**Dilution Factor:** 0.92

**Method:** SW8260C

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| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| Acetone                   | 67-64-1    | 11.6            | < 11.6            |      |
| Benzene                   | 71-43-2    | 2.31            | < 2.31            |      |
| Bromodichloromethane      | 75-27-4    | 2.31            | < 2.31            |      |
| Bromoform                 | 75-25-2    | 2.31            | < 2.31            |      |
| Bromomethane              | 74-83-9    | 5.78            | < 5.78            |      |
| Carbon disulfide          | 75-15-0    | 2.31            | < 2.31            |      |
| Carbon tetrachloride      | 56-23-5    | 2.31            | < 2.31            |      |
| Chlorobenzene             | 108-90-7   | 2.31            | < 2.31            |      |
| Chloroethane              | 75-00-3    | 2.31            | < 2.31            |      |
| Chloroform                | 67-66-3    | 2.31            | < 2.31            |      |
| Chloromethane             | 74-87-3    | 3.47            | < 3.47            |      |
| cis-1,3-Dichloropropene   | 10061-01-5 | 2.31            | < 2.31            |      |
| Cyclohexane               | 110-82-7   | 2.31            | < 2.31            |      |
| Dibromochloromethane      | 124-48-1   | 2.31            | < 2.31            |      |
| Dichlorodifluoromethane   | 75-71-8    | 2.31            | < 2.31            |      |
| Ethylbenzene              | 100-41-4   | 2.31            | < 2.31            |      |
| Isopropylbenzene          | 98-82-8    | 2.31            | < 2.31            |      |
| Methyl Acetate            | 79-20-9    | 5.78            | < 5.78            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 2.31            | < 2.31            |      |
| Methylcyclohexane         | 108-87-2   | 2.31            | < 2.31            |      |
| Methylene chloride        | 75-09-2    | 5.78            | < 5.78            |      |
| Naphthalene               | 91-20-3    | 2.31            | < 2.31            |      |
| Styrene                   | 100-42-5   | 2.31            | < 2.31            |      |
| Toluene                   | 108-88-3   | 2.31            | < 2.31            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 2.31            | <b>17.5</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 2.31            | < 2.31            |      |
| Trichloroethene           | 79-01-6    | 2.31            | <b>154</b>        |      |
| Trichlorofluoromethane    | 75-69-4    | 2.31            | < 2.31            |      |
| Vinyl chloride            | 75-01-4    | 1.16            | <b>2.78</b>       |      |
| Xylenes, Total            | 1330-20-7  | 2.31            | < 2.31            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 72.6   | 57.77         | 126   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 60.2   | 57.77         | 104   | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 64.3   | 57.77         | 111   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 57.7   | 57.77         | 99.8  | 50-140 |      |





# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental **Contact:** Mike Cronin  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-008A  
**Client Sample ID:** CS-20-12'  
**Collection Date:** 10/15/2018 930h  
**Received Date:** 10/15/2018 1553h

Test Code: 8260-S

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C

**Analyzed:** 10/17/2018 1532h

**Units:** µg/kg-dry

**Dilution Factor:** 45.25

**Method:** SW8260C

| Compound               | CAS Number | Reporting Limit | Analytical Result | Qual |
|------------------------|------------|-----------------|-------------------|------|
| cis-1,2-Dichloroethene | 156-59-2   | 109             | 4,340             | ~    |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 3,250  | 2,732         | 119   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 2,510  | 2,732         | 91.9  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 2,770  | 2,732         | 102   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 2,570  | 2,732         | 94.0  | 50-140 |      |

~ - The reporting limits were raised due to high analyte concentrations.

Sampling and analytical preparation performed by method 5035A.

**Analyzed:** 10/16/2018 1855h

**Units:** µg/kg-dry

**Dilution Factor:** 0.78

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 1.88            | < 1.88            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 1.88            | < 1.88            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 1.88            | < 1.88            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 1.88            | < 1.88            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 1.88            | < 1.88            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 1.88            | < 1.88            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 1.88            | < 1.88            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 4.71            | < 4.71            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 1.88            | < 1.88            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 1.88            | < 1.88            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 1.88            | < 1.88            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 1.88            | < 1.88            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 1.88            | < 1.88            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 1.88            | < 1.88            |      |
| 2-Butanone                            | 78-93-3    | 9.42            | < 9.42            |      |
| 2-Hexanone                            | 591-78-6   | 4.71            | < 4.71            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 4.71            | < 4.71            |      |
| Acetone                               | 67-64-1    | 9.42            | 11.1              |      |

Report Date: 10/22/2018 Page 17 of 59



**Lab Sample ID:** 1810374-008A

**Client Sample ID:** CS-20-12'

**Analyzed:** 10/16/2018 1855h

**Units:** µg/kg-dry

**Dilution Factor:** 0.78

**Method:** SW8260C

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Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| Benzene                   | 71-43-2    | 1.88            | < 1.88            |      |
| Bromodichloromethane      | 75-27-4    | 1.88            | < 1.88            |      |
| Bromoform                 | 75-25-2    | 1.88            | < 1.88            |      |
| Bromomethane              | 74-83-9    | 4.71            | < 4.71            |      |
| Carbon disulfide          | 75-15-0    | 1.88            | <b>4.69</b>       |      |
| Carbon tetrachloride      | 56-23-5    | 1.88            | < 1.88            |      |
| Chlorobenzene             | 108-90-7   | 1.88            | < 1.88            |      |
| Chloroethane              | 75-00-3    | 1.88            | < 1.88            |      |
| Chloroform                | 67-66-3    | 1.88            | < 1.88            |      |
| Chloromethane             | 74-87-3    | 2.83            | < 2.83            |      |
| cis-1,3-Dichloropropene   | 10061-01-5 | 1.88            | < 1.88            |      |
| Cyclohexane               | 110-82-7   | 1.88            | < 1.88            |      |
| Dibromochloromethane      | 124-48-1   | 1.88            | < 1.88            |      |
| Dichlorodifluoromethane   | 75-71-8    | 1.88            | < 1.88            |      |
| Ethylbenzene              | 100-41-4   | 1.88            | < 1.88            |      |
| Isopropylbenzene          | 98-82-8    | 1.88            | < 1.88            |      |
| Methyl Acetate            | 79-20-9    | 4.71            | < 4.71            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 1.88            | < 1.88            |      |
| Methylcyclohexane         | 108-87-2   | 1.88            | < 1.88            |      |
| Methylene chloride        | 75-09-2    | 4.71            | < 4.71            |      |
| Naphthalene               | 91-20-3    | 1.88            | < 1.88            |      |
| Styrene                   | 100-42-5   | 1.88            | < 1.88            |      |
| Tetrachloroethene         | 127-18-4   | 1.88            | <b>2.88</b>       |      |
| Toluene                   | 108-88-3   | 1.88            | < 1.88            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 1.88            | <b>53.7</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 1.88            | < 1.88            |      |
| Trichloroethene           | 79-01-6    | 1.88            | < 1.88            |      |
| Trichlorofluoromethane    | 75-69-4    | 1.88            | < 1.88            |      |
| Vinyl chloride            | 75-01-4    | 0.942           | <b>34.4</b>       |      |
| Xylenes, Total            | 1330-20-7  | 1.88            | < 1.88            |      |

| Surrogate                   | Units: µg/kg-dry | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|------------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |                  | 17060-07-0 | 57.7   | 47.09         | 122   | 51-170 |      |
| Surr: 4-Bromofluorobenzene  |                  | 460-00-4   | 46.9   | 47.09         | 99.6  | 50-140 |      |
| Surr: Dibromofluoromethane  |                  | 1868-53-7  | 49.7   | 47.09         | 106   | 50-140 |      |
| Surr: Toluene-d8            |                  | 2037-26-5  | 43.0   | 47.09         | 91.3  | 50-140 |      |



## ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Former Henries / 2249-001d  
**Lab Sample ID:** 1810374-009A  
**Client Sample ID:** Trip Blank  
**Collection Date:** 10/15/2018  
**Received Date:** 10/15/2018 1553h

**Contact:** Mike Cronin

Test Code: 8260-W

### Analytical Results

VOAs AWAL List by GC/MS Method 8260C/5030C

**Analyzed:** 10/16/2018 1333h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.00            | < 2.00            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.00            | < 2.00            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.00            | < 2.00            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.00            | < 5.00            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.00            | < 2.00            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.00            | < 2.00            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.00            | < 2.00            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.00            | < 2.00            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.00            | < 2.00            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.00            | < 2.00            |      |
| 2-Butanone                            | 78-93-3    | 10.0            | < 10.0            |      |
| 2-Hexanone                            | 591-78-6   | 5.00            | < 5.00            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.00            | < 5.00            |      |
| Acetone                               | 67-64-1    | 10.0            | < 10.0            |      |
| Benzene                               | 71-43-2    | 2.00            | < 2.00            |      |
| Bromodichloromethane                  | 75-27-4    | 2.00            | < 2.00            |      |
| Bromoform                             | 75-25-2    | 2.00            | < 2.00            |      |
| Bromomethane                          | 74-83-9    | 5.00            | < 5.00            |      |
| Carbon disulfide                      | 75-15-0    | 2.00            | < 2.00            |      |
| Carbon tetrachloride                  | 56-23-5    | 2.00            | < 2.00            |      |
| Chlorobenzene                         | 108-90-7   | 2.00            | < 2.00            |      |
| Chloroethane                          | 75-00-3    | 2.00            | < 2.00            |      |
| Chloroform                            | 67-66-3    | 2.00            | < 2.00            |      |
| Chloromethane                         | 74-87-3    | 5.00            | < 5.00            |      |
| cis-1,2-Dichloroethene                | 156-59-2   | 2.00            | < 2.00            |      |

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web: www.awal-labs.com

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1810374-009A

**Client Sample ID:** Trip Blank

**Analyzed:** 10/16/2018 1333h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

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| Compound                  | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------|------------|-----------------|-------------------|------|
| cis-1,3-Dichloropropene   | 10061-01-5 | 2.00            | < 2.00            |      |
| Cyclohexane               | 110-82-7   | 2.00            | < 2.00            |      |
| Dibromochloromethane      | 124-48-1   | 2.00            | < 2.00            |      |
| Dichlorodifluoromethane   | 75-71-8    | 2.00            | < 2.00            |      |
| Ethylbenzene              | 100-41-4   | 2.00            | < 2.00            |      |
| Isopropylbenzene          | 98-82-8    | 2.00            | < 2.00            |      |
| Methyl Acetate            | 79-20-9    | 5.00            | < 5.00            |      |
| Methyl tert-butyl ether   | 1634-04-4  | 2.00            | < 2.00            |      |
| Methylcyclohexane         | 108-87-2   | 2.00            | < 2.00            |      |
| Methylene chloride        | 75-09-2    | 2.00            | < 2.00            |      |
| Naphthalene               | 91-20-3    | 2.00            | < 2.00            |      |
| Styrene                   | 100-42-5   | 2.00            | < 2.00            |      |
| Tetrachloroethene         | 127-18-4   | 2.00            | < 2.00            |      |
| Toluene                   | 108-88-3   | 2.00            | < 2.00            |      |
| trans-1,2-Dichloroethene  | 156-60-5   | 2.00            | < 2.00            |      |
| trans-1,3-Dichloropropene | 10061-02-6 | 2.00            | < 2.00            |      |
| Trichloroethene           | 79-01-6    | 2.00            | < 2.00            |      |
| Trichlorofluoromethane    | 75-69-4    | 2.00            | < 2.00            |      |
| Vinyl chloride            | 75-01-4    | 1.00            | < 1.00            |      |
| Xylenes, Total            | 1330-20-7  | 2.00            | < 2.00            |      |

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 55.8   | 50.00         | 112   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 56.4   | 50.00         | 113   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 51.5   | 50.00         | 103   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 49.6   | 50.00         | 99.1  | 80-124 |      |

*Insufficient sample volume was received to perform MS/MSD analysis. An LCSD was added to provide precision data.*



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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** LCS

| Analyte                     |                   | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|-------------------|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | LCS VOC-3 101618A | Date Analyzed: | 10/16/2018 1225h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-S            |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane       |                   | 20.1           | µg/kg            | SW8260C | 0.125  | 2.00            | 20.00         | 0                 | 100  | 70 - 140 |              |       |           |      |
| 1,1-Dichloroethene          |                   | 15.9           | µg/kg            | SW8260C | 0.329  | 2.00            | 20.00         | 0                 | 79.3 | 36 - 147 |              |       |           |      |
| 1,2-Dichlorobenzene         |                   | 15.4           | µg/kg            | SW8260C | 0.0742 | 2.00            | 20.00         | 0                 | 77.0 | 62 - 137 |              |       |           |      |
| 1,2-Dichloroethane          |                   | 20.3           | µg/kg            | SW8260C | 0.157  | 2.00            | 20.00         | 0                 | 102  | 79 - 126 |              |       |           |      |
| 1,2-Dichloropropane         |                   | 19.6           | µg/kg            | SW8260C | 0.113  | 2.00            | 20.00         | 0                 | 97.8 | 77 - 126 |              |       |           |      |
| Benzene                     |                   | 17.2           | µg/kg            | SW8260C | 0.174  | 2.00            | 20.00         | 0                 | 85.9 | 69 - 135 |              |       |           |      |
| Chlorobenzene               |                   | 16.0           | µg/kg            | SW8260C | 0.109  | 2.00            | 20.00         | 0                 | 80.2 | 59 - 127 |              |       |           |      |
| Chloroform                  |                   | 19.6           | µg/kg            | SW8260C | 0.138  | 2.00            | 20.00         | 0                 | 98.2 | 68 - 128 |              |       |           |      |
| Ethylbenzene                |                   | 14.9           | µg/kg            | SW8260C | 1.95   | 2.00            | 20.00         | 0                 | 74.7 | 52 - 147 |              |       |           |      |
| Isopropylbenzene            |                   | 15.1           | µg/kg            | SW8260C | 0.131  | 2.00            | 20.00         | 0                 | 75.5 | 44 - 140 |              |       |           |      |
| Methyl tert-butyl ether     |                   | 19.1           | µg/kg            | SW8260C | 0.182  | 2.00            | 20.00         | 0                 | 95.3 | 73 - 135 |              |       |           |      |
| Methylene chloride          |                   | 17.9           | µg/kg            | SW8260C | 1.53   | 5.00            | 20.00         | 0                 | 89.4 | 47 - 172 |              |       |           |      |
| Naphthalene                 |                   | 14.4           | µg/kg            | SW8260C | 0.272  | 2.00            | 20.00         | 0                 | 72.2 | 57 - 140 |              |       |           |      |
| Toluene                     |                   | 16.6           | µg/kg            | SW8260C | 0.393  | 2.00            | 20.00         | 0                 | 83.0 | 63 - 135 |              |       |           |      |
| Trichloroethene             |                   | 16.5           | µg/kg            | SW8260C | 0.185  | 2.00            | 20.00         | 0                 | 82.7 | 51 - 150 |              |       |           |      |
| Xylenes, Total              |                   | 46.4           | µg/kg            | SW8260C | 0.393  | 2.00            | 60.00         | 0                 | 77.3 | 50 - 145 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                   | 54.6           | µg/kg            | SW8260C |        |                 | 50.00         |                   | 109  | 72 - 140 |              |       |           |      |
| Surr: 4-Bromofluorobenzene  |                   | 48.0           | µg/kg            | SW8260C |        |                 | 50.00         |                   | 96.1 | 67 - 145 |              |       |           |      |
| Surr: Dibromofluoromethane  |                   | 50.0           | µg/kg            | SW8260C |        |                 | 50.00         |                   | 99.9 | 70 - 130 |              |       |           |      |
| Surr: Toluene-d8            |                   | 48.1           | µg/kg            | SW8260C |        |                 | 50.00         |                   | 96.2 | 61 - 134 |              |       |           |      |

|                                  |      |                |                  |        |      |       |   |      |          |  |  |  |  |
|----------------------------------|------|----------------|------------------|--------|------|-------|---|------|----------|--|--|--|--|
| Lab Sample ID: LCS VOC-3 101718A |      | Date Analyzed: | 10/17/2018 1219h |        |      |       |   |      |          |  |  |  |  |
| Test Code: 8260-S                |      |                |                  |        |      |       |   |      |          |  |  |  |  |
| 1,1,1-Trichloroethane            | 22.8 | µg/kg          | SW8260C          | 0.125  | 2.00 | 20.00 | 0 | 114  | 70 - 140 |  |  |  |  |
| 1,1-Dichloroethene               | 19.0 | µg/kg          | SW8260C          | 0.329  | 2.00 | 20.00 | 0 | 95.2 | 36 - 147 |  |  |  |  |
| 1,2-Dichlorobenzene              | 17.6 | µg/kg          | SW8260C          | 0.0742 | 2.00 | 20.00 | 0 | 88.0 | 62 - 137 |  |  |  |  |
| 1,2-Dichloroethane               | 21.6 | µg/kg          | SW8260C          | 0.157  | 2.00 | 20.00 | 0 | 108  | 79 - 126 |  |  |  |  |
| 1,2-Dichloropropane              | 21.2 | µg/kg          | SW8260C          | 0.113  | 2.00 | 20.00 | 0 | 106  | 77 - 126 |  |  |  |  |

Report Date: 10/22/2018 Page 21 of 59





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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** LCS

| Analyte                     |                   | Result         | Units            | Method | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC     | Limits | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|-------------------|----------------|------------------|--------|------|-----------------|---------------|-------------------|----------|--------|--------------|-------|-----------|------|
| Lab Sample ID:              | LCS VOC-3 101718A | Date Analyzed: | 10/17/2018 1219h |        |      |                 |               |                   |          |        |              |       |           |      |
| Test Code:                  | 8260-S            |                |                  |        |      |                 |               |                   |          |        |              |       |           |      |
| Benzene                     | 18.8              | µg/kg          | SW8260C          | 0.174  | 2.00 | 20.00           | 0             | 93.9              | 69 - 135 |        |              |       |           |      |
| Chlorobenzene               | 18.0              | µg/kg          | SW8260C          | 0.109  | 2.00 | 20.00           | 0             | 90.2              | 59 - 127 |        |              |       |           |      |
| Chloroform                  | 21.0              | µg/kg          | SW8260C          | 0.138  | 2.00 | 20.00           | 0             | 105               | 68 - 128 |        |              |       |           |      |
| Ethylbenzene                | 17.4              | µg/kg          | SW8260C          | 1.95   | 2.00 | 20.00           | 0             | 87.0              | 52 - 147 |        |              |       |           |      |
| Isopropylbenzene            | 17.9              | µg/kg          | SW8260C          | 0.131  | 2.00 | 20.00           | 0             | 89.3              | 44 - 140 |        |              |       |           |      |
| Methyl tert-butyl ether     | 20.5              | µg/kg          | SW8260C          | 0.182  | 2.00 | 20.00           | 0             | 103               | 73 - 135 |        |              |       |           |      |
| Methylene chloride          | 19.3              | µg/kg          | SW8260C          | 1.53   | 5.00 | 20.00           | 0             | 96.4              | 47 - 172 |        |              |       |           |      |
| Naphthalene                 | 15.7              | µg/kg          | SW8260C          | 0.272  | 2.00 | 20.00           | 0             | 78.4              | 57 - 140 |        |              |       |           |      |
| Tetrahydrofuran             | 15.2              | µg/kg          | SW8260C          | 1.55   | 2.00 | 20.00           | 0             | 76.2              | 53 - 138 |        |              |       |           |      |
| Toluene                     | 18.2              | µg/kg          | SW8260C          | 0.393  | 2.00 | 20.00           | 0             | 90.8              | 63 - 135 |        |              |       |           |      |
| Trichloroethene             | 18.4              | µg/kg          | SW8260C          | 0.185  | 2.00 | 20.00           | 0             | 91.8              | 51 - 150 |        |              |       |           |      |
| Xylenes, Total              | 53.6              | µg/kg          | SW8260C          | 0.393  | 2.00 | 60.00           | 0             | 89.3              | 50 - 145 |        |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 | 58.0              | µg/kg          | SW8260C          |        |      | 50.00           |               | 116               | 72 - 140 |        |              |       |           |      |
| Surr: 4-Bromofluorobenzene  | 46.9              | µg/kg          | SW8260C          |        |      | 50.00           |               | 93.9              | 67 - 145 |        |              |       |           |      |
| Surr: Dibromofluoromethane  | 53.4              | µg/kg          | SW8260C          |        |      | 50.00           |               | 107               | 70 - 130 |        |              |       |           |      |
| Surr: Toluene-d8            | 47.9              | µg/kg          | SW8260C          |        |      | 50.00           |               | 95.8              | 61 - 134 |        |              |       |           |      |



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Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                               |  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|---------------------------------------|--|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|--------|--------------|-------|-----------|------|
| Lab Sample ID: MB VOC-3 101618A       |  | Date Analyzed: | 10/16/2018 1305h |         |        |                 |               |                   |      |        |              |       |           |      |
| Test Code: 8260-S                     |  |                |                  |         |        |                 |               |                   |      |        |              |       |           |      |
| 1,1,1-Trichloroethane                 |  | < 2.00         | µg/kg            | SW8260C | 0.125  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2,2-Tetrachloroethane             |  | < 2.00         | µg/kg            | SW8260C | 0.159  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane |  | < 2.00         | µg/kg            | SW8260C | 1.93   | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloroethane                 |  | < 2.00         | µg/kg            | SW8260C | 0.127  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethane                    |  | < 2.00         | µg/kg            | SW8260C | 0.0988 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethene                    |  | < 2.00         | µg/kg            | SW8260C | 0.329  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2,4-Trichlorobenzene                |  | < 2.00         | µg/kg            | SW8260C | 0.161  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromo-3-chloropropane           |  | < 5.00         | µg/kg            | SW8260C | 0.632  | 5.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromoethane                     |  | < 2.00         | µg/kg            | SW8260C | 0.186  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichlorobenzene                   |  | < 2.00         | µg/kg            | SW8260C | 0.0742 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloroethane                    |  | < 2.00         | µg/kg            | SW8260C | 0.157  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloropropane                   |  | < 2.00         | µg/kg            | SW8260C | 0.113  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,3-Dichlorobenzene                   |  | < 2.00         | µg/kg            | SW8260C | 0.105  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,4-Dichlorobenzene                   |  | < 2.00         | µg/kg            | SW8260C | 0.244  | 2.00            |               |                   |      |        |              |       |           |      |
| 2-Butanone                            |  | < 10.0         | µg/kg            | SW8260C | 1.40   | 10.0            |               |                   |      |        |              |       |           |      |
| 2-Hexanone                            |  | < 5.00         | µg/kg            | SW8260C | 0.705  | 5.00            |               |                   |      |        |              |       |           |      |
| 4-Methyl-2-pentanone                  |  | < 5.00         | µg/kg            | SW8260C | 1.08   | 5.00            |               |                   |      |        |              |       |           |      |
| Acetone                               |  | < 10.0         | µg/kg            | SW8260C | 3.90   | 10.0            |               |                   |      |        |              |       |           |      |
| Benzene                               |  | < 2.00         | µg/kg            | SW8260C | 0.174  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromodichloromethane                  |  | < 2.00         | µg/kg            | SW8260C | 0.158  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromoform                             |  | < 2.00         | µg/kg            | SW8260C | 0.164  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromomethane                          |  | < 5.00         | µg/kg            | SW8260C | 1.58   | 5.00            |               |                   |      |        |              |       |           |      |
| Carbon disulfide                      |  | < 2.00         | µg/kg            | SW8260C | 0.170  | 2.00            |               |                   |      |        |              |       |           |      |
| Carbon tetrachloride                  |  | < 2.00         | µg/kg            | SW8260C | 0.197  | 2.00            |               |                   |      |        |              |       |           |      |
| Chlorobenzene                         |  | < 2.00         | µg/kg            | SW8260C | 0.109  | 2.00            |               |                   |      |        |              |       |           |      |
| Chloroethane                          |  | < 2.00         | µg/kg            | SW8260C | 0.644  | 2.00            |               |                   |      |        |              |       |           |      |
| Chloroform                            |  | < 2.00         | µg/kg            | SW8260C | 0.138  | 2.00            |               |                   |      |        |              |       |           |      |



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Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                         |  | Result         | Units            | Method  | MDL   | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|---------------------------------|--|----------------|------------------|---------|-------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID: MB VOC-3 101618A |  | Date Analyzed: | 10/16/2018 1305h |         |       |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-S               |  |                |                  |         |       |                 |               |                   |      |          |              |       |           |      |
| Chloromethane                   |  | < 3.00         | µg/kg            | SW8260C | 0.572 | 3.00            |               |                   |      |          |              |       |           |      |
| cis-1,2-Dichloroethene          |  | < 2.00         | µg/kg            | SW8260C | 0.194 | 2.00            |               |                   |      |          |              |       |           |      |
| cis-1,3-Dichloropropene         |  | < 2.00         | µg/kg            | SW8260C | 0.153 | 2.00            |               |                   |      |          |              |       |           |      |
| Cyclohexane                     |  | < 2.00         | µg/kg            | SW8260C | 0.302 | 2.00            |               |                   |      |          |              |       |           |      |
| Dibromochloromethane            |  | < 2.00         | µg/kg            | SW8260C | 0.137 | 2.00            |               |                   |      |          |              |       |           |      |
| Dichlorodifluoromethane         |  | < 2.00         | µg/kg            | SW8260C | 0.142 | 2.00            |               |                   |      |          |              |       |           |      |
| Ethylbenzene                    |  | < 2.00         | µg/kg            | SW8260C | 1.95  | 2.00            |               |                   |      |          |              |       |           |      |
| Isopropylbenzene                |  | < 2.00         | µg/kg            | SW8260C | 0.131 | 2.00            |               |                   |      |          |              |       |           |      |
| Methyl Acetate                  |  | < 5.00         | µg/kg            | SW8260C | 1.33  | 5.00            |               |                   |      |          |              |       |           |      |
| Methyl tert-butyl ether         |  | < 2.00         | µg/kg            | SW8260C | 0.182 | 2.00            |               |                   |      |          |              |       |           |      |
| Methylcyclohexane               |  | < 2.00         | µg/kg            | SW8260C | 0.420 | 2.00            |               |                   |      |          |              |       |           |      |
| Methylene chloride              |  | < 5.00         | µg/kg            | SW8260C | 1.53  | 5.00            |               |                   |      |          |              |       |           |      |
| Naphthalene                     |  | < 2.00         | µg/kg            | SW8260C | 0.272 | 2.00            |               |                   |      |          |              |       |           |      |
| Styrene                         |  | < 2.00         | µg/kg            | SW8260C | 0.170 | 2.00            |               |                   |      |          |              |       |           |      |
| Tetrachloroethene               |  | < 2.00         | µg/kg            | SW8260C | 0.287 | 2.00            |               |                   |      |          |              |       |           |      |
| Toluene                         |  | < 2.00         | µg/kg            | SW8260C | 0.393 | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,2-Dichloroethene        |  | < 2.00         | µg/kg            | SW8260C | 0.196 | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,3-Dichloropropene       |  | < 2.00         | µg/kg            | SW8260C | 0.170 | 2.00            |               |                   |      |          |              |       |           |      |
| Trichloroethene                 |  | < 2.00         | µg/kg            | SW8260C | 0.185 | 2.00            |               |                   |      |          |              |       |           |      |
| Trichlorofluoromethane          |  | < 2.00         | µg/kg            | SW8260C | 0.101 | 2.00            |               |                   |      |          |              |       |           |      |
| Vinyl chloride                  |  | < 1.00         | µg/kg            | SW8260C | 0.121 | 1.00            |               |                   |      |          |              |       |           |      |
| Xylenes, Total                  |  | < 2.00         | µg/kg            | SW8260C | 0.393 | 2.00            |               |                   |      |          |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4     |  | 58.7           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 117  | 72 - 140 |              |       |           |      |
| Surr: 4-Bromofluorobenzene      |  | 49.7           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 99.5 | 67 - 145 |              |       |           |      |
| Surr: Dibromofluoromethane      |  | 53.7           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 107  | 70 - 130 |              |       |           |      |
| Surr: Toluene-d8                |  | 48.9           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 97.8 | 61 - 134 |              |       |           |      |



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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                     |                  | Result         | Units            | Method  | MDL   | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|------------------|----------------|------------------|---------|-------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | MB VOC-3 101718A | Date Analyzed: | 10/17/2018 1300h |         |       |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-S           |                |                  |         |       |                 |               |                   |      |          |              |       |           |      |
| cis-1,2-Dichloroethene      |                  | < 2.00         | µg/kg            | SW8260C | 0.194 | 2.00            |               |                   |      |          |              |       |           |      |
| Tetrachloroethene           |                  | < 2.00         | µg/kg            | SW8260C | 0.287 | 2.00            |               |                   |      |          |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                  | 59.2           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 118  | 72 - 140 |              |       |           |      |
| Surr: 4-Bromofluorobenzene  |                  | 48.1           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 96.1 | 67 - 145 |              |       |           |      |
| Surr: Dibromofluoromethane  |                  | 53.2           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 106  | 70 - 130 |              |       |           |      |
| Surr: Toluene-d8            |                  | 48.6           | µg/kg            | SW8260C |       |                 | 50.00         |                   | 97.2 | 61 - 134 |              |       |           |      |



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MS

| Analyte                                                              | Result | Units     | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|----------------------------------------------------------------------|--------|-----------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| <b>Lab Sample ID: 1810374-001AMS</b> Date Analyzed: 10/16/2018 1652h |        |           |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-S                                                    |        |           |         |      |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane                                                | 1,190  | µg/kg-dry | SW8260C | 6.88 | 110             | 1,101         | 0                 | 108  | 20 - 144 |              |       |           |      |
| 1,1-Dichloroethene                                                   | 986    | µg/kg-dry | SW8260C | 18.1 | 110             | 1,101         | 0                 | 89.5 | 24 - 174 |              |       |           |      |
| 1,2-Dichlorobenzene                                                  | 1,030  | µg/kg-dry | SW8260C | 4.09 | 110             | 1,101         | 0                 | 93.9 | 10 - 148 |              |       |           |      |
| 1,2-Dichloroethane                                                   | 1,130  | µg/kg-dry | SW8260C | 8.64 | 110             | 1,101         | 0                 | 102  | 54 - 133 |              |       |           |      |
| 1,2-Dichloropropane                                                  | 1,120  | µg/kg-dry | SW8260C | 6.22 | 110             | 1,101         | 0                 | 102  | 28 - 140 |              |       |           |      |
| Benzene                                                              | 1,060  | µg/kg-dry | SW8260C | 9.58 | 110             | 1,101         | 0                 | 96.7 | 17 - 138 |              |       |           |      |
| Chlorobenzene                                                        | 989    | µg/kg-dry | SW8260C | 6.00 | 110             | 1,101         | 0                 | 89.8 | 13 - 150 |              |       |           |      |
| Chloroform                                                           | 1,110  | µg/kg-dry | SW8260C | 7.60 | 110             | 1,101         | 0                 | 101  | 21 - 147 |              |       |           |      |
| Ethylbenzene                                                         | 989    | µg/kg-dry | SW8260C | 107  | 110             | 1,101         | 0                 | 89.9 | 10 - 164 |              |       |           |      |
| Isopropylbenzene                                                     | 1,030  | µg/kg-dry | SW8260C | 7.21 | 110             | 1,101         | 0                 | 93.5 | 26 - 146 |              |       |           |      |
| Methyl tert-butyl ether                                              | 1,100  | µg/kg-dry | SW8260C | 10.0 | 110             | 1,101         | 0                 | 99.8 | 28 - 137 |              |       |           |      |
| Methylene chloride                                                   | 1,100  | µg/kg-dry | SW8260C | 84.2 | 275             | 1,101         | 0                 | 100  | 10 - 217 |              |       |           |      |
| Naphthalene                                                          | 991    | µg/kg-dry | SW8260C | 15.0 | 110             | 1,101         | 0                 | 90.0 | 13 - 156 |              |       |           |      |
| Toluene                                                              | 986    | µg/kg-dry | SW8260C | 21.6 | 110             | 1,101         | 0                 | 89.5 | 23 - 168 |              |       |           |      |
| Trichloroethene                                                      | 1,720  | µg/kg-dry | SW8260C | 10.2 | 110             | 1,101         | 644               | 97.3 | 14 - 161 |              |       |           |      |
| Xylenes, Total                                                       | 3,060  | µg/kg-dry | SW8260C | 21.6 | 110             | 3,303         | 0                 | 92.5 | 10 - 160 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4                                          | 3,220  | µg/kg-dry | SW8260C |      |                 | 2,753         |                   | 117  | 51 - 170 |              |       |           |      |
| Surr: 4-Bromofluorobenzene                                           | 2,540  | µg/kg-dry | SW8260C |      |                 | 2,753         |                   | 92.3 | 50 - 140 |              |       |           |      |
| Surr: Dibromofluoromethane                                           | 2,890  | µg/kg-dry | SW8260C |      |                 | 2,753         |                   | 105  | 50 - 140 |              |       |           |      |
| Surr: Toluene-d8                                                     | 2,610  | µg/kg-dry | SW8260C |      |                 | 2,753         |                   | 95.0 | 50 - 140 |              |       |           |      |
| <b>Lab Sample ID: 1810374-007AMS</b> Date Analyzed: 10/17/2018 1451h |        |           |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-S                                                    |        |           |         |      |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane                                                | 1,260  | µg/kg-dry | SW8260C | 7.41 | 119             | 1,186         | 0                 | 106  | 20 - 144 |              |       |           |      |
| 1,1-Dichloroethene                                                   | 1,060  | µg/kg-dry | SW8260C | 19.5 | 119             | 1,186         | 0                 | 89.5 | 24 - 174 |              |       |           |      |
| 1,2-Dichlorobenzene                                                  | 1,080  | µg/kg-dry | SW8260C | 4.40 | 119             | 1,186         | 0                 | 90.9 | 10 - 148 |              |       |           |      |
| 1,2-Dichloroethane                                                   | 1,180  | µg/kg-dry | SW8260C | 9.31 | 119             | 1,186         | 0                 | 99.5 | 54 - 133 |              |       |           |      |
| 1,2-Dichloropropane                                                  | 1,120  | µg/kg-dry | SW8260C | 6.70 | 119             | 1,186         | 0                 | 94.2 | 28 - 140 |              |       |           |      |





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Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MS

| Analyte                       |  | Result         | Units            | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-------------------------------|--|----------------|------------------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID: 1810374-007AMS |  | Date Analyzed: | 10/17/2018 1451h |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-S             |  |                |                  |         |      |                 |               |                   |      |          |              |       |           |      |
| Benzene                       |  | 1,050          | µg/kg-dry        | SW8260C | 10.3 | 119             | 1,186         | 0                 | 88.1 | 17 - 138 |              |       |           |      |
| Chlorobenzene                 |  | 1,050          | µg/kg-dry        | SW8260C | 6.46 | 119             | 1,186         | 0                 | 88.7 | 13 - 150 |              |       |           |      |
| Chloroform                    |  | 1,150          | µg/kg-dry        | SW8260C | 8.18 | 119             | 1,186         | 0                 | 96.8 | 21 - 147 |              |       |           |      |
| Ethylbenzene                  |  | 1,010          | µg/kg-dry        | SW8260C | 116  | 119             | 1,186         | 0                 | 85.5 | 10 - 164 |              |       |           |      |
| Isopropylbenzene              |  | 1,090          | µg/kg-dry        | SW8260C | 7.77 | 119             | 1,186         | 0                 | 92.1 | 26 - 146 |              |       |           |      |
| Methyl tert-butyl ether       |  | 1,050          | µg/kg-dry        | SW8260C | 10.8 | 119             | 1,186         | 0                 | 88.3 | 28 - 137 |              |       |           |      |
| Methylene chloride            |  | 1,080          | µg/kg-dry        | SW8260C | 90.7 | 296             | 1,186         | 0                 | 90.7 | 10 - 217 |              |       |           |      |
| Naphthalene                   |  | 924            | µg/kg-dry        | SW8260C | 16.1 | 119             | 1,186         | 0                 | 77.9 | 13 - 156 |              |       |           |      |
| Tetrahydrofuran               |  | 851            | µg/kg-dry        | SW8260C | 91.9 | 119             | 1,186         | 0                 | 71.7 | 10 - 136 |              |       |           |      |
| Toluene                       |  | 1,040          | µg/kg-dry        | SW8260C | 23.3 | 119             | 1,186         | 0                 | 87.7 | 23 - 168 |              |       |           |      |
| Trichloroethene               |  | 1,220          | µg/kg-dry        | SW8260C | 11.0 | 119             | 1,186         | 154               | 90.1 | 14 - 161 |              |       |           |      |
| Xylenes, Total                |  | 3,250          | µg/kg-dry        | SW8260C | 23.3 | 119             | 3,557         | 0                 | 91.2 | 10 - 160 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4   |  | 3,290          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 111  | 51 - 170 |              |       |           |      |
| Surr: 4-Bromofluorobenzene    |  | 2,620          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 88.2 | 50 - 140 |              |       |           |      |
| Surr: Dibromofluoromethane    |  | 3,030          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 102  | 50 - 140 |              |       |           |      |
| Surr: Toluene-d8              |  | 2,810          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 94.7 | 50 - 140 |              |       |           |      |



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MSD

| Analyte                               | Result | Units                           | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|---------------------------------------|--------|---------------------------------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| <b>Lab Sample ID: 1810374-001AMSD</b> |        |                                 |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-S                     |        | Date Analyzed: 10/16/2018 1712h |         |      |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane                 | 1,120  | µg/kg-dry                       | SW8260C | 6.88 | 110             | 1,101         | 0                 | 102  | 20 - 144 | 1190         | 5.73  | 35        |      |
| 1,1-Dichloroethene                    | 966    | µg/kg-dry                       | SW8260C | 18.1 | 110             | 1,101         | 0                 | 87.8 | 24 - 174 | 986          | 1.97  | 35        |      |
| 1,2-Dichlorobenzene                   | 1,010  | µg/kg-dry                       | SW8260C | 4.09 | 110             | 1,101         | 0                 | 91.4 | 10 - 148 | 1030         | 2.70  | 35        |      |
| 1,2-Dichloroethane                    | 1,070  | µg/kg-dry                       | SW8260C | 8.64 | 110             | 1,101         | 0                 | 97.5 | 54 - 133 | 1130         | 4.81  | 35        |      |
| 1,2-Dichloropropane                   | 1,070  | µg/kg-dry                       | SW8260C | 6.22 | 110             | 1,101         | 0                 | 97.1 | 28 - 140 | 1120         | 4.63  | 35        |      |
| Benzene                               | 1,000  | µg/kg-dry                       | SW8260C | 9.58 | 110             | 1,101         | 0                 | 90.8 | 17 - 138 | 1060         | 6.29  | 35        |      |
| Chlorobenzene                         | 964    | µg/kg-dry                       | SW8260C | 6.00 | 110             | 1,101         | 0                 | 87.5 | 13 - 150 | 989          | 2.59  | 35        |      |
| Chloroform                            | 1,050  | µg/kg-dry                       | SW8260C | 7.60 | 110             | 1,101         | 0                 | 95.0 | 21 - 147 | 1110         | 5.73  | 35        |      |
| Ethylbenzene                          | 962    | µg/kg-dry                       | SW8260C | 107  | 110             | 1,101         | 0                 | 87.4 | 10 - 164 | 989          | 2.76  | 35        |      |
| Isopropylbenzene                      | 1,000  | µg/kg-dry                       | SW8260C | 7.21 | 110             | 1,101         | 0                 | 91.2 | 26 - 146 | 1030         | 2.55  | 35        |      |
| Methyl tert-butyl ether               | 1,030  | µg/kg-dry                       | SW8260C | 10.0 | 110             | 1,101         | 0                 | 93.3 | 28 - 137 | 1100         | 6.74  | 35        |      |
| Methylene chloride                    | 1,040  | µg/kg-dry                       | SW8260C | 84.2 | 275             | 1,101         | 0                 | 94.5 | 10 - 217 | 1100         | 5.66  | 35        |      |
| Naphthalene                           | 910    | µg/kg-dry                       | SW8260C | 15.0 | 110             | 1,101         | 0                 | 82.6 | 13 - 156 | 991          | 8.57  | 35        |      |
| Toluene                               | 962    | µg/kg-dry                       | SW8260C | 21.6 | 110             | 1,101         | 0                 | 87.4 | 23 - 168 | 986          | 2.37  | 35        |      |
| Trichloroethene                       | 1,600  | µg/kg-dry                       | SW8260C | 10.2 | 110             | 1,101         | 644               | 86.8 | 14 - 161 | 1720         | 6.98  | 35        |      |
| Xylenes, Total                        | 3,000  | µg/kg-dry                       | SW8260C | 21.6 | 110             | 3,303         | 0                 | 90.8 | 10 - 160 | 3060         | 1.91  | 35        |      |
| Surr: 1,2-Dichloroethane-d4           | 2,960  | µg/kg-dry                       | SW8260C |      |                 | 2,753         |                   | 108  | 51 - 170 |              |       |           |      |
| Surr: 4-Bromofluorobenzene            | 2,530  | µg/kg-dry                       | SW8260C |      |                 | 2,753         |                   | 92.0 | 50 - 140 |              |       |           |      |
| Surr: Dibromofluoromethane            | 2,780  | µg/kg-dry                       | SW8260C |      |                 | 2,753         |                   | 101  | 50 - 140 |              |       |           |      |
| Surr: Toluene-d8                      | 2,660  | µg/kg-dry                       | SW8260C |      |                 | 2,753         |                   | 96.8 | 50 - 140 |              |       |           |      |

|                                       |       |                                 |         |      |     |       |   |      |          |      |       |    |  |
|---------------------------------------|-------|---------------------------------|---------|------|-----|-------|---|------|----------|------|-------|----|--|
| <b>Lab Sample ID: 1810374-007AMSD</b> |       |                                 |         |      |     |       |   |      |          |      |       |    |  |
| Test Code: 8260-S                     |       | Date Analyzed: 10/17/2018 1512h |         |      |     |       |   |      |          |      |       |    |  |
| 1,1,1-Trichloroethane                 | 1,160 | µg/kg-dry                       | SW8260C | 7.41 | 119 | 1,186 | 0 | 97.4 | 20 - 144 | 1260 | 8.87  | 35 |  |
| 1,1-Dichloroethene                    | 943   | µg/kg-dry                       | SW8260C | 19.5 | 119 | 1,186 | 0 | 79.5 | 24 - 174 | 1060 | 11.9  | 35 |  |
| 1,2-Dichlorobenzene                   | 1,070 | µg/kg-dry                       | SW8260C | 4.40 | 119 | 1,186 | 0 | 90.2 | 10 - 148 | 1080 | 0.718 | 35 |  |
| 1,2-Dichloroethane                    | 1,130 | µg/kg-dry                       | SW8260C | 9.31 | 119 | 1,186 | 0 | 94.9 | 54 - 133 | 1180 | 4.73  | 35 |  |
| 1,2-Dichloropropane                   | 1,070 | µg/kg-dry                       | SW8260C | 6.70 | 119 | 1,186 | 0 | 90.0 | 28 - 140 | 1120 | 4.61  | 35 |  |

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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MSD

| Analyte                        |  | Result         | Units            | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|--------------------------------|--|----------------|------------------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID: 1810374-007AMSD |  | Date Analyzed: | 10/17/2018 1512h |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-S              |  |                |                  |         |      |                 |               |                   |      |          |              |       |           |      |
| Benzene                        |  | 963            | µg/kg-dry        | SW8260C | 10.3 | 119             | 1,186         | 0                 | 81.2 | 17 - 138 | 1050         | 8.15  | 35        |      |
| Chlorobenzene                  |  | 1,030          | µg/kg-dry        | SW8260C | 6.46 | 119             | 1,186         | 0                 | 87.1 | 13 - 150 | 1050         | 1.76  | 35        |      |
| Chloroform                     |  | 1,070          | µg/kg-dry        | SW8260C | 8.18 | 119             | 1,186         | 0                 | 90.5 | 21 - 147 | 1150         | 6.67  | 35        |      |
| Ethylbenzene                   |  | 1,000          | µg/kg-dry        | SW8260C | 116  | 119             | 1,186         | 0                 | 84.6 | 10 - 164 | 1010         | 1.06  | 35        |      |
| Isopropylbenzene               |  | 1,040          | µg/kg-dry        | SW8260C | 7.77 | 119             | 1,186         | 0                 | 88.0 | 26 - 146 | 1090         | 4.55  | 35        |      |
| Methyl tert-butyl ether        |  | 1,040          | µg/kg-dry        | SW8260C | 10.8 | 119             | 1,186         | 0                 | 87.5 | 28 - 137 | 1050         | 0.910 | 35        |      |
| Methylene chloride             |  | 1,010          | µg/kg-dry        | SW8260C | 90.7 | 296             | 1,186         | 0                 | 84.9 | 10 - 217 | 1080         | 6.61  | 35        |      |
| Naphthalene                    |  | 982            | µg/kg-dry        | SW8260C | 16.1 | 119             | 1,186         | 0                 | 82.8 | 13 - 156 | 924          | 6.09  | 35        |      |
| Tetrahydrofuran                |  | 881            | µg/kg-dry        | SW8260C | 91.9 | 119             | 1,186         | 0                 | 74.3 | 10 - 136 | 851          | 3.49  | 35        |      |
| Toluene                        |  | 1,010          | µg/kg-dry        | SW8260C | 23.3 | 119             | 1,186         | 0                 | 85.3 | 23 - 168 | 1040         | 2.77  | 35        |      |
| Trichloroethene                |  | 1,110          | µg/kg-dry        | SW8260C | 11.0 | 119             | 1,186         | 154               | 80.7 | 14 - 161 | 1220         | 9.50  | 35        |      |
| Xylenes, Total                 |  | 3,130          | µg/kg-dry        | SW8260C | 23.3 | 119             | 3,557         | 0                 | 87.9 | 10 - 160 | 3250         | 3.76  | 35        |      |
| Surr: 1,2-Dichloroethane-d4    |  | 3,270          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 110  | 51 - 170 |              |       |           |      |
| Surr: 4-Bromofluorobenzene     |  | 2,730          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 92.0 | 50 - 140 |              |       |           |      |
| Surr: Dibromofluoromethane     |  | 2,900          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 98.0 | 50 - 140 |              |       |           |      |
| Surr: Toluene-d8               |  | 2,810          | µg/kg-dry        | SW8260C |      |                 | 2,964         |                   | 94.9 | 50 - 140 |              |       |           |      |



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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** LCS

| Analyte                     |                   | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|-------------------|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | LCS VOC-1 101618A | Date Analyzed: | 10/16/2018 1123h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-W            |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane       |                   | 23.5           | µg/L             | SW8260C | 0.142  | 2.00            | 20.00         | 0                 | 118  | 73 - 139 |              |       |           |      |
| 1,1-Dichloroethene          |                   | 20.7           | µg/L             | SW8260C | 0.275  | 2.00            | 20.00         | 0                 | 104  | 37 - 144 |              |       |           |      |
| 1,2-Dichlorobenzene         |                   | 20.4           | µg/L             | SW8260C | 0.105  | 2.00            | 20.00         | 0                 | 102  | 70 - 130 |              |       |           |      |
| 1,2-Dichloroethane          |                   | 22.1           | µg/L             | SW8260C | 0.0988 | 2.00            | 20.00         | 0                 | 110  | 76 - 132 |              |       |           |      |
| 1,2-Dichloropropane         |                   | 21.2           | µg/L             | SW8260C | 0.0968 | 2.00            | 20.00         | 0                 | 106  | 81 - 121 |              |       |           |      |
| Benzene                     |                   | 20.7           | µg/L             | SW8260C | 0.0956 | 2.00            | 20.00         | 0                 | 104  | 82 - 132 |              |       |           |      |
| Chlorobenzene               |                   | 19.7           | µg/L             | SW8260C | 0.0832 | 2.00            | 20.00         | 0                 | 98.7 | 74 - 126 |              |       |           |      |
| Chloroform                  |                   | 22.1           | µg/L             | SW8260C | 0.0998 | 2.00            | 20.00         | 0                 | 111  | 85 - 124 |              |       |           |      |
| Ethylbenzene                |                   | 19.9           | µg/L             | SW8260C | 0.103  | 2.00            | 20.00         | 0                 | 99.4 | 67 - 118 |              |       |           |      |
| Isopropylbenzene            |                   | 20.2           | µg/L             | SW8260C | 0.131  | 2.00            | 20.00         | 0                 | 101  | 68 - 127 |              |       |           |      |
| Methyl tert-butyl ether     |                   | 21.2           | µg/L             | SW8260C | 0.206  | 2.00            | 20.00         | 0                 | 106  | 58 - 131 |              |       |           |      |
| Methylene chloride          |                   | 21.8           | µg/L             | SW8260C | 0.400  | 2.00            | 20.00         | 0                 | 109  | 65 - 154 |              |       |           |      |
| Naphthalene                 |                   | 14.4           | µg/L             | SW8260C | 0.159  | 2.00            | 20.00         | 0                 | 72.1 | 63 - 129 |              |       |           |      |
| Toluene                     |                   | 20.1           | µg/L             | SW8260C | 0.0858 | 2.00            | 20.00         | 0                 | 101  | 69 - 129 |              |       |           |      |
| Trichloroethene             |                   | 20.5           | µg/L             | SW8260C | 0.105  | 2.00            | 20.00         | 0                 | 103  | 75 - 136 |              |       |           |      |
| Xylenes, Total              |                   | 61.1           | µg/L             | SW8260C | 0.310  | 2.00            | 60.00         | 0                 | 102  | 66 - 124 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                   | 56.9           | µg/L             | SW8260C |        |                 | 50.00         |                   | 114  | 80 - 136 |              |       |           |      |
| Surr: 4-Bromofluorobenzene  |                   | 48.7           | µg/L             | SW8260C |        |                 | 50.00         |                   | 97.4 | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane  |                   | 53.0           | µg/L             | SW8260C |        |                 | 50.00         |                   | 106  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8            |                   | 48.9           | µg/L             | SW8260C |        |                 | 50.00         |                   | 97.8 | 81 - 123 |              |       |           |      |



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Kyle F. Gross

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Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** LCSD

| Analyte                           |  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------------|--|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID: LCSD VOC-1 101618A |  | Date Analyzed: | 10/16/2018 1234h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W                 |  |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane             |  | 21.2           | µg/L             | SW8260C | 0.142  | 2.00            | 20.00         | 0                 | 106  | 73 - 139 | 23.5         | 10.2  | 25        |      |
| 1,1-Dichloroethene                |  | 18.6           | µg/L             | SW8260C | 0.275  | 2.00            | 20.00         | 0                 | 92.8 | 37 - 144 | 20.7         | 11.0  | 25        |      |
| 1,2-Dichlorobenzene               |  | 19.5           | µg/L             | SW8260C | 0.105  | 2.00            | 20.00         | 0                 | 97.7 | 70 - 130 | 20.4         | 4.45  | 25        |      |
| 1,2-Dichloroethane                |  | 21.4           | µg/L             | SW8260C | 0.0988 | 2.00            | 20.00         | 0                 | 107  | 76 - 132 | 22.1         | 3.08  | 25        |      |
| 1,2-Dichloropropane               |  | 20.4           | µg/L             | SW8260C | 0.0968 | 2.00            | 20.00         | 0                 | 102  | 81 - 121 | 21.2         | 3.61  | 25        |      |
| Benzene                           |  | 19.4           | µg/L             | SW8260C | 0.0956 | 2.00            | 20.00         | 0                 | 96.8 | 82 - 132 | 20.7         | 6.69  | 25        |      |
| Chlorobenzene                     |  | 19.1           | µg/L             | SW8260C | 0.0832 | 2.00            | 20.00         | 0                 | 95.4 | 74 - 126 | 19.7         | 3.35  | 25        |      |
| Chloroform                        |  | 20.8           | µg/L             | SW8260C | 0.0998 | 2.00            | 20.00         | 0                 | 104  | 85 - 124 | 22.1         | 6.06  | 25        |      |
| Ethylbenzene                      |  | 19.2           | µg/L             | SW8260C | 0.103  | 2.00            | 20.00         | 0                 | 95.8 | 67 - 118 | 19.9         | 3.79  | 25        |      |
| Isopropylbenzene                  |  | 19.0           | µg/L             | SW8260C | 0.131  | 2.00            | 20.00         | 0                 | 94.8 | 68 - 127 | 20.2         | 6.14  | 25        |      |
| Methyl tert-butyl ether           |  | 20.8           | µg/L             | SW8260C | 0.206  | 2.00            | 20.00         | 0                 | 104  | 58 - 131 | 21.2         | 2.00  | 25        |      |
| Methylene chloride                |  | 21.0           | µg/L             | SW8260C | 0.400  | 2.00            | 20.00         | 0                 | 105  | 65 - 154 | 21.8         | 3.60  | 25        |      |
| Naphthalene                       |  | 14.8           | µg/L             | SW8260C | 0.159  | 2.00            | 20.00         | 0                 | 74.1 | 63 - 129 | 14.4         | 2.67  | 25        |      |
| Toluene                           |  | 19.1           | µg/L             | SW8260C | 0.0858 | 2.00            | 20.00         | 0                 | 95.5 | 69 - 129 | 20.1         | 5.15  | 25        |      |
| Trichloroethene                   |  | 18.9           | µg/L             | SW8260C | 0.105  | 2.00            | 20.00         | 0                 | 94.6 | 75 - 136 | 20.5         | 8.21  | 25        |      |
| Xylenes, Total                    |  | 58.0           | µg/L             | SW8260C | 0.310  | 2.00            | 60.00         | 0                 | 96.7 | 66 - 124 | 61.1         | 5.22  | 25        |      |
| Surr: 1,2-Dichloroethane-d4       |  | 55.0           | µg/L             | SW8260C |        |                 | 50.00         |                   | 110  | 80 - 136 |              |       |           |      |
| Surr: 4-Bromofluorobenzene        |  | 48.6           | µg/L             | SW8260C |        |                 | 50.00         |                   | 97.2 | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane        |  | 51.1           | µg/L             | SW8260C |        |                 | 50.00         |                   | 102  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8                  |  | 49.3           | µg/L             | SW8260C |        |                 | 50.00         |                   | 98.6 | 81 - 123 |              |       |           |      |





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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                               |  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|---------------------------------------|--|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|--------|--------------|-------|-----------|------|
| Lab Sample ID: MB VOC-1 101618A       |  | Date Analyzed: | 10/16/2018 1202h |         |        |                 |               |                   |      |        |              |       |           |      |
| Test Code: 8260-W                     |  |                |                  |         |        |                 |               |                   |      |        |              |       |           |      |
| 1,1,1-Trichloroethane                 |  | < 2.00         | µg/L             | SW8260C | 0.142  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2,2-Tetrachloroethane             |  | < 2.00         | µg/L             | SW8260C | 0.0872 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane |  | < 2.00         | µg/L             | SW8260C | 0.322  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloroethane                 |  | < 2.00         | µg/L             | SW8260C | 0.0847 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethane                    |  | < 2.00         | µg/L             | SW8260C | 0.116  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethene                    |  | < 2.00         | µg/L             | SW8260C | 0.275  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2,4-Trichlorobenzene                |  | < 2.00         | µg/L             | SW8260C | 0.271  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromo-3-chloropropane           |  | < 5.00         | µg/L             | SW8260C | 0.312  | 5.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromoethane                     |  | < 2.00         | µg/L             | SW8260C | 0.0828 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.105  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloroethane                    |  | < 2.00         | µg/L             | SW8260C | 0.0988 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloropropane                   |  | < 2.00         | µg/L             | SW8260C | 0.0968 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,3-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.118  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,4-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.272  | 2.00            |               |                   |      |        |              |       |           |      |
| 2-Butanone                            |  | < 10.0         | µg/L             | SW8260C | 0.587  | 10.0            |               |                   |      |        |              |       |           |      |
| 2-Hexanone                            |  | < 5.00         | µg/L             | SW8260C | 0.215  | 5.00            |               |                   |      |        |              |       |           |      |
| 4-Methyl-2-pentanone                  |  | < 5.00         | µg/L             | SW8260C | 0.238  | 5.00            |               |                   |      |        |              |       |           |      |
| Acetone                               |  | < 10.0         | µg/L             | SW8260C | 1.13   | 10.0            |               |                   |      |        |              |       |           |      |
| Benzene                               |  | < 2.00         | µg/L             | SW8260C | 0.0956 | 2.00            |               |                   |      |        |              |       |           |      |
| Bromodichloromethane                  |  | < 2.00         | µg/L             | SW8260C | 0.0819 | 2.00            |               |                   |      |        |              |       |           |      |
| Bromoform                             |  | < 2.00         | µg/L             | SW8260C | 0.131  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromomethane                          |  | < 5.00         | µg/L             | SW8260C | 3.45   | 5.00            |               |                   |      |        |              |       |           |      |
| Carbon disulfide                      |  | < 2.00         | µg/L             | SW8260C | 0.293  | 2.00            |               |                   |      |        |              |       |           |      |
| Carbon tetrachloride                  |  | < 2.00         | µg/L             | SW8260C | 0.178  | 2.00            |               |                   |      |        |              |       |           |      |
| Chlorobenzene                         |  | < 2.00         | µg/L             | SW8260C | 0.0832 | 2.00            |               |                   |      |        |              |       |           |      |
| Chloroethane                          |  | < 2.00         | µg/L             | SW8260C | 1.01   | 2.00            |               |                   |      |        |              |       |           |      |
| Chloroform                            |  | < 2.00         | µg/L             | SW8260C | 0.0998 | 2.00            |               |                   |      |        |              |       |           |      |



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QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1810374

**Project:** Former Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

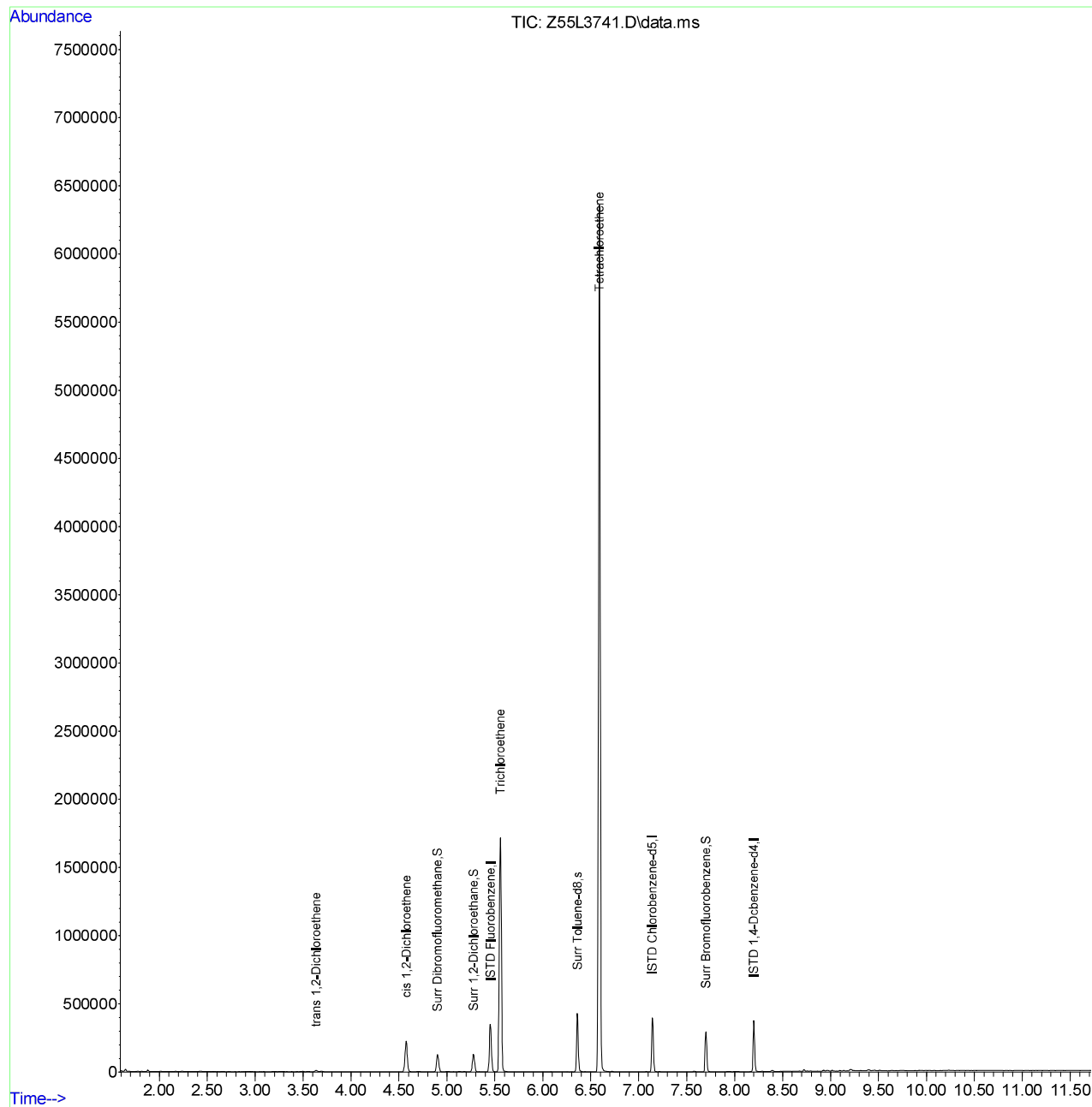
**QC Type:** MBLK

| Analyte                     |                  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|------------------|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | MB VOC-1 101618A | Date Analyzed: | 10/16/2018 1202h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-W           |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| Chloromethane               |                  | < 5.00         | µg/L             | SW8260C | 0.836  | 5.00            |               |                   |      |          |              |       |           |      |
| cis-1,2-Dichloroethene      |                  | < 2.00         | µg/L             | SW8260C | 0.129  | 2.00            |               |                   |      |          |              |       |           |      |
| cis-1,3-Dichloropropene     |                  | < 2.00         | µg/L             | SW8260C | 0.114  | 2.00            |               |                   |      |          |              |       |           |      |
| Cyclohexane                 |                  | < 2.00         | µg/L             | SW8260C | 0.488  | 2.00            |               |                   |      |          |              |       |           |      |
| Dibromochloromethane        |                  | < 2.00         | µg/L             | SW8260C | 0.0924 | 2.00            |               |                   |      |          |              |       |           |      |
| Dichlorodifluoromethane     |                  | < 2.00         | µg/L             | SW8260C | 0.163  | 2.00            |               |                   |      |          |              |       |           |      |
| Ethylbenzene                |                  | < 2.00         | µg/L             | SW8260C | 0.103  | 2.00            |               |                   |      |          |              |       |           |      |
| Isopropylbenzene            |                  | < 2.00         | µg/L             | SW8260C | 0.131  | 2.00            |               |                   |      |          |              |       |           |      |
| Methyl Acetate              |                  | < 5.00         | µg/L             | SW8260C | 1.21   | 5.00            |               |                   |      |          |              |       |           |      |
| Methyl tert-butyl ether     |                  | < 2.00         | µg/L             | SW8260C | 0.206  | 2.00            |               |                   |      |          |              |       |           |      |
| Methylcyclohexane           |                  | < 2.00         | µg/L             | SW8260C | 0.282  | 2.00            |               |                   |      |          |              |       |           |      |
| Methylene chloride          |                  | < 2.00         | µg/L             | SW8260C | 0.400  | 2.00            |               |                   |      |          |              |       |           |      |
| Naphthalene                 |                  | < 2.00         | µg/L             | SW8260C | 0.159  | 2.00            |               |                   |      |          |              |       |           |      |
| Styrene                     |                  | < 2.00         | µg/L             | SW8260C | 0.149  | 2.00            |               |                   |      |          |              |       |           |      |
| Tetrachloroethene           |                  | < 2.00         | µg/L             | SW8260C | 0.170  | 2.00            |               |                   |      |          |              |       |           |      |
| Toluene                     |                  | < 2.00         | µg/L             | SW8260C | 0.0858 | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,2-Dichloroethene    |                  | < 2.00         | µg/L             | SW8260C | 0.327  | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,3-Dichloropropene   |                  | < 2.00         | µg/L             | SW8260C | 0.127  | 2.00            |               |                   |      |          |              |       |           |      |
| Trichloroethene             |                  | < 2.00         | µg/L             | SW8260C | 0.105  | 2.00            |               |                   |      |          |              |       |           |      |
| Trichlorofluoromethane      |                  | < 2.00         | µg/L             | SW8260C | 0.180  | 2.00            |               |                   |      |          |              |       |           |      |
| Vinyl chloride              |                  | < 1.00         | µg/L             | SW8260C | 0.184  | 1.00            |               |                   |      |          |              |       |           |      |
| Xylenes, Total              |                  | < 2.00         | µg/L             | SW8260C | 0.310  | 2.00            |               |                   |      |          |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                  | 56.5           | µg/L             | SW8260C |        |                 | 50.00         |                   | 113  | 80 - 136 |              |       |           |      |
| Surr: 4-Bromofluorobenzene  |                  | 53.4           | µg/L             | SW8260C |        |                 | 50.00         |                   | 107  | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane  |                  | 52.4           | µg/L             | SW8260C |        |                 | 50.00         |                   | 105  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8            |                  | 50.4           | µg/L             | SW8260C |        |                 | 50.00         |                   | 101  | 81 - 123 |              |       |           |      |

# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z55L3741.D  
 Acq On : 16 Oct 2018 01:46 pm  
 Operator :  
 Sample : 1810374-001A  
 Misc : SAMP SOIL 33.71 - 27.86 = 5.85G DG  
 ALS Vial : 7 Sample Multiplier: 0.85

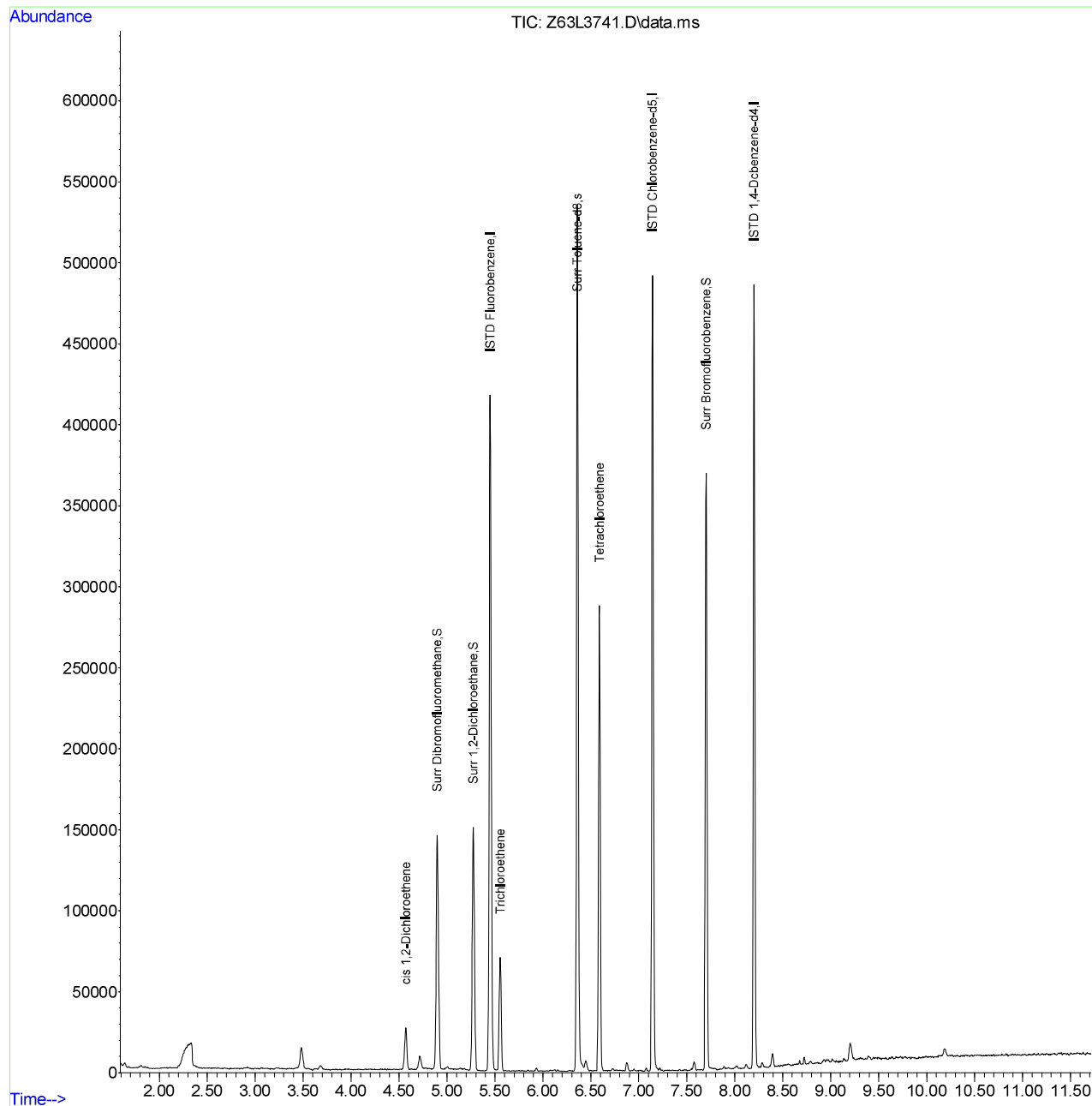
Quant Time: Oct 16 13:58:43 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z63L3741.D  
 Acq On : 16 Oct 2018 04:31 pm  
 Operator :  
 Sample : 1810374-001A  
 Misc : SAMP SOIL 42.28 - 31.63 = 10.65G 100µL/5ML DG  
 ALS Vial : 15 Sample Multiplier: 46.95

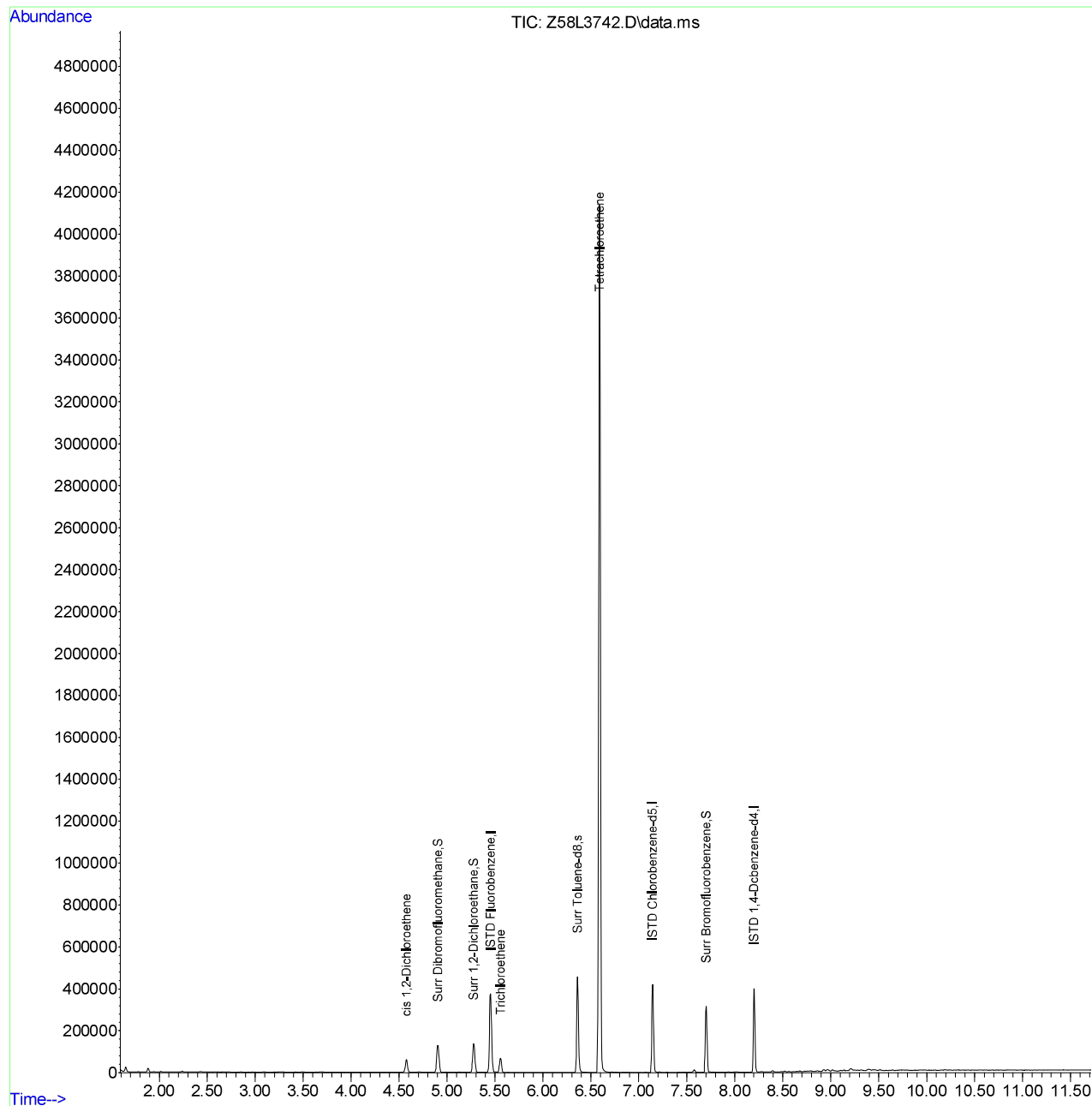
Quant Time: Oct 16 16:43:27 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z58L3742.D  
 Acq On : 16 Oct 2018 02:48 pm  
 Operator :  
 Sample : 1810374-002A  
 Misc : SAMP SOIL 33.70 - 27.73 = 5.97G DG  
 ALS Vial : 10 Sample Multiplier: 0.84

Quant Time: Oct 16 15:00:02 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration

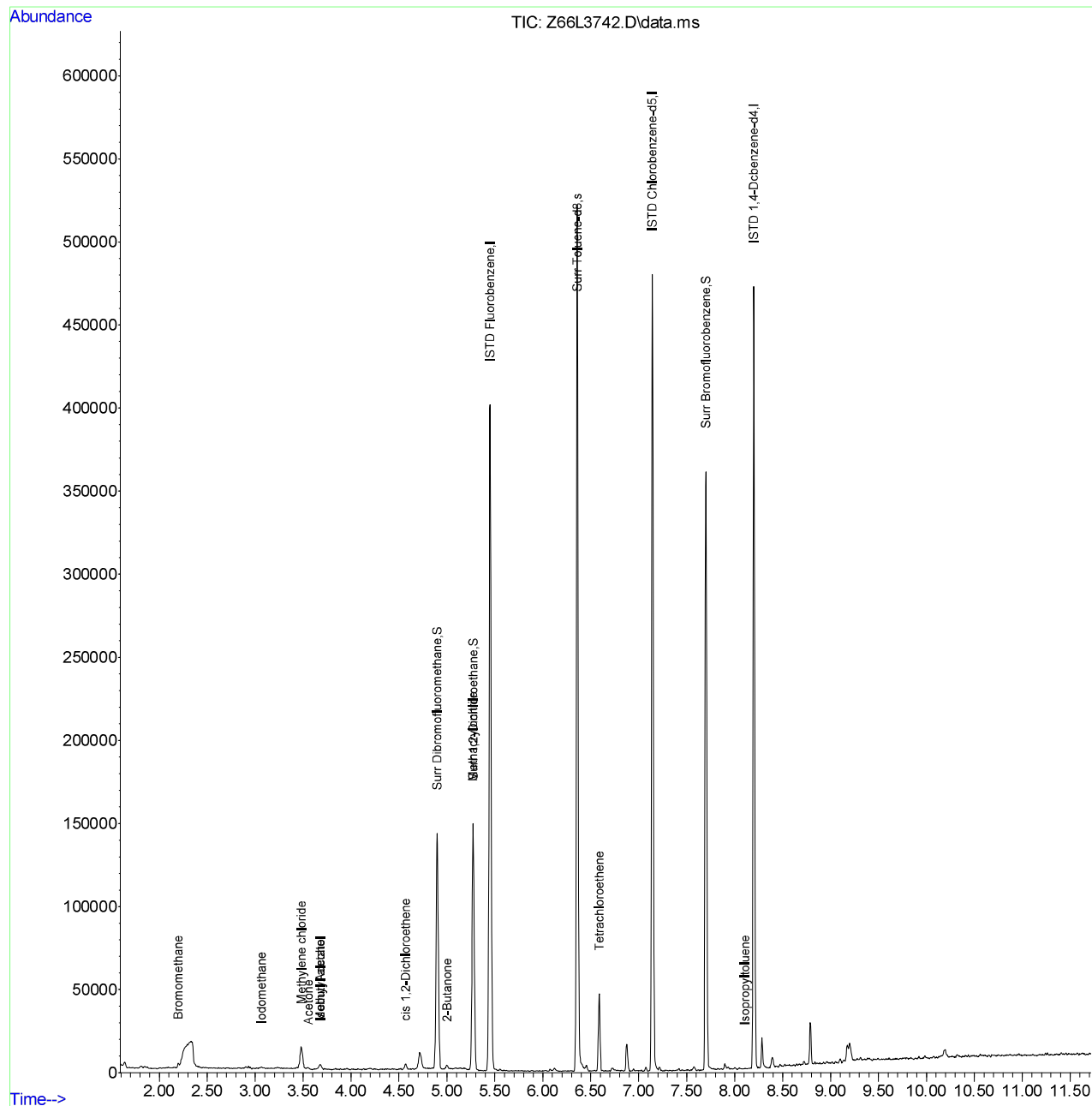




Quantitation Report (Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z66L3742.D  
 Acq On : 16 Oct 2018 05:32 pm  
 Operator :  
 Sample : 1810374-002A  
 Misc : SAMP SOIL 42.63 - 31.73 = 10.90G 100µL/5ML DG  
 ALS Vial : 18 Sample Multiplier: 45.87

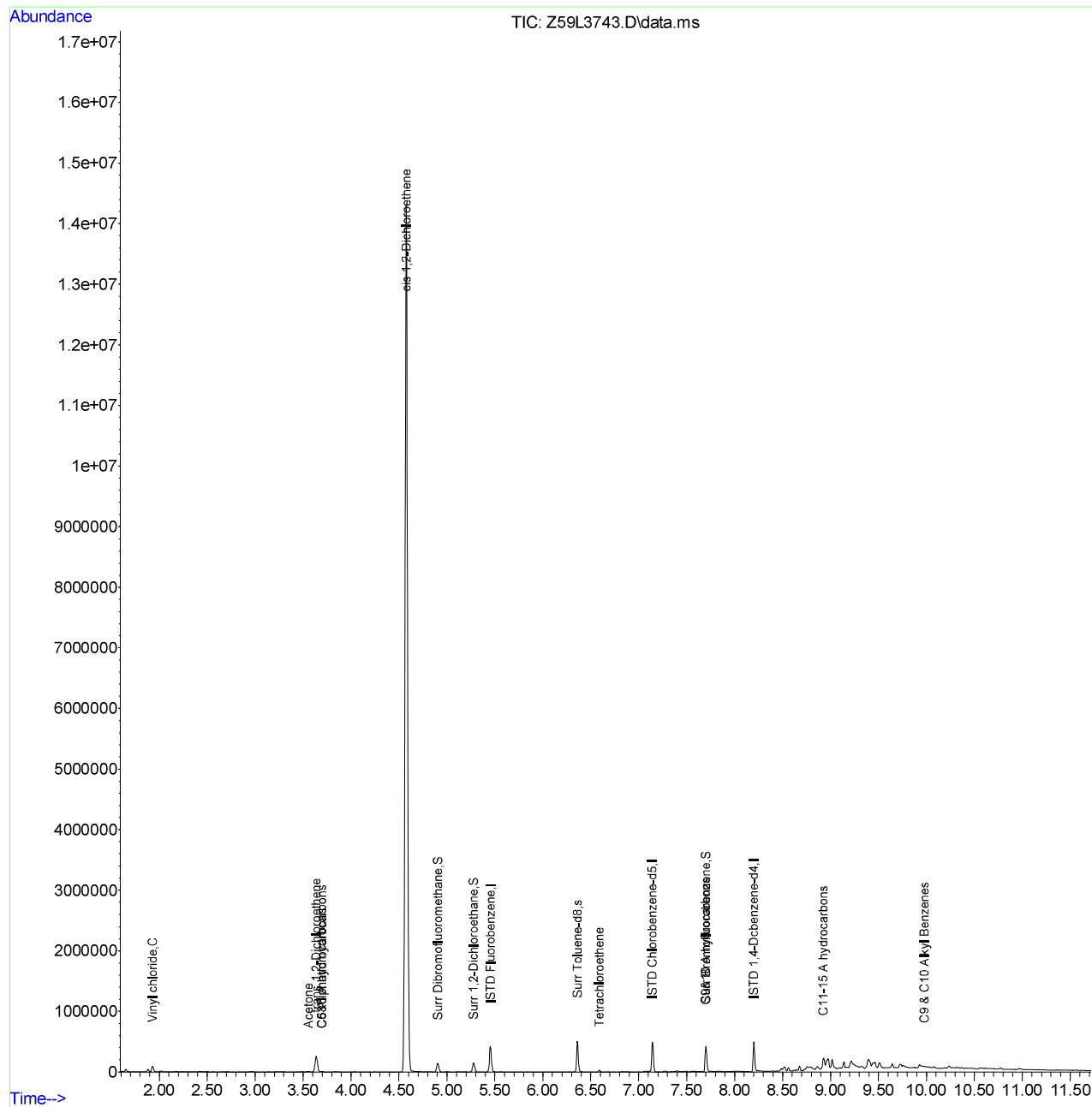
Quant Time: Oct 16 17:44:36 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z59L3743.D  
 Acq On : 16 Oct 2018 03:08 pm  
 Operator :  
 Sample : 1810374-003A  
 Misc : SAMP SOIL 34.18 - 27.74 = 6.44G DG  
 ALS Vial : 11 Sample Multiplier: 0.78

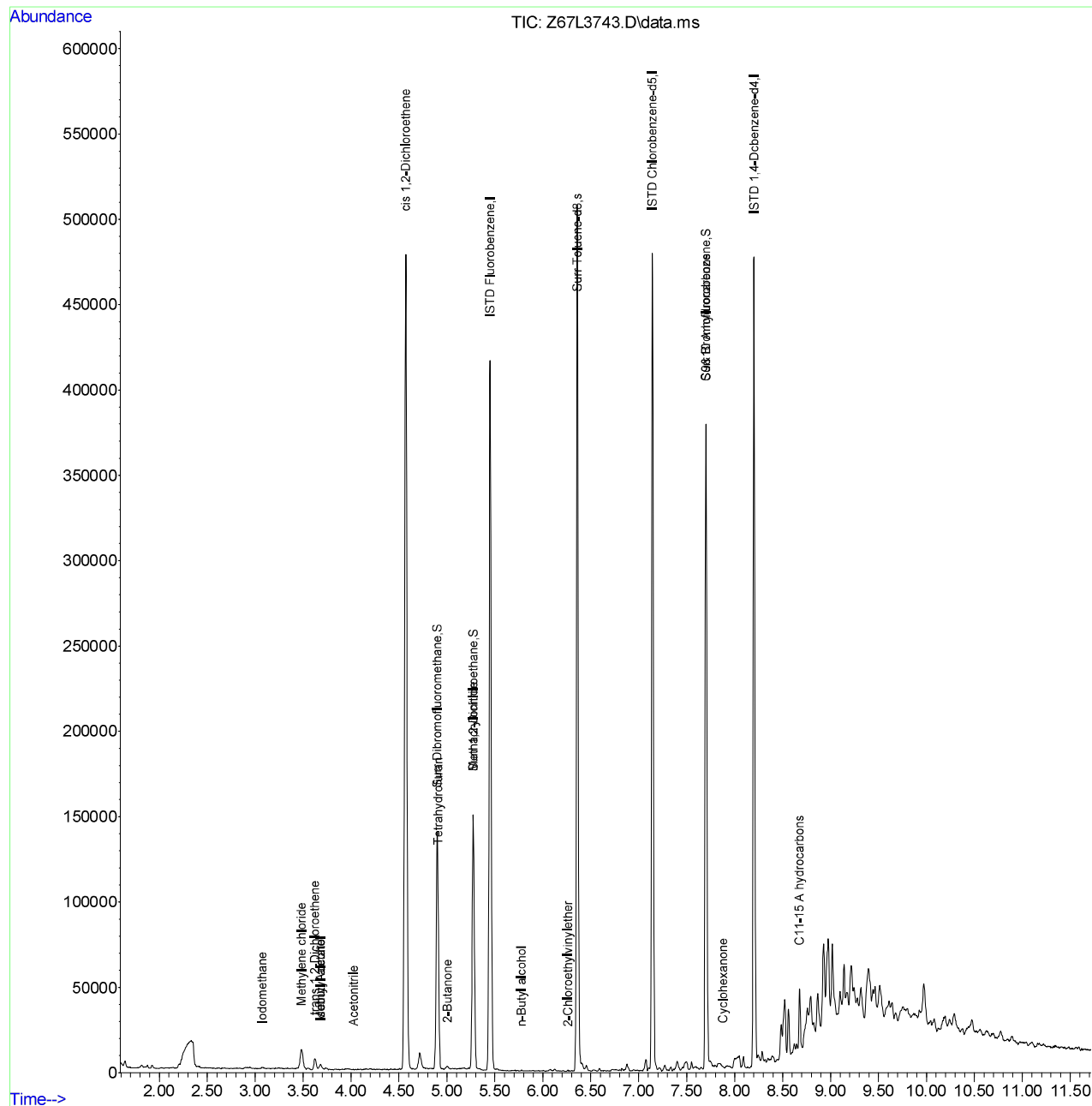
Quant Time: Oct 16 15:20:46 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z67L3743.D  
 Acq On : 16 Oct 2018 05:53 pm  
 Operator :  
 Sample : 1810374-003A  
 Misc : SAMP SOIL 43.34 - 31.70 = 11.64G 100µL/5ML DG  
 ALS Vial : 19 Sample Multiplier: 42.96

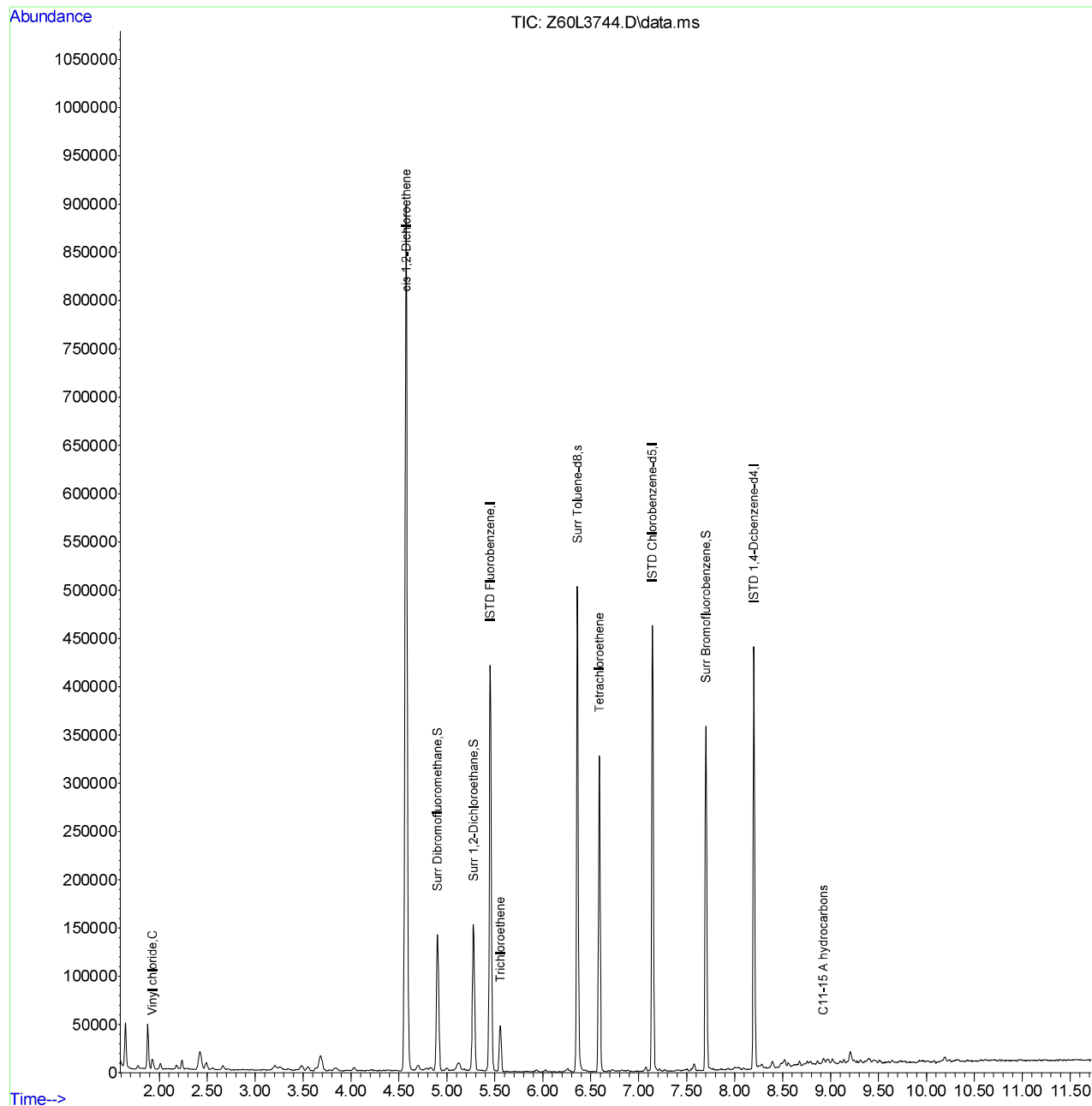
Quant Time: Oct 16 18:04:55 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z60L3744.D  
 Acq On : 16 Oct 2018 03:29 pm  
 Operator :  
 Sample : 1810374-004A  
 Misc : SAMP SOIL 33.04 - 27.58 = 5.46G DG  
 ALS Vial : 12 Sample Multiplier: 0.92

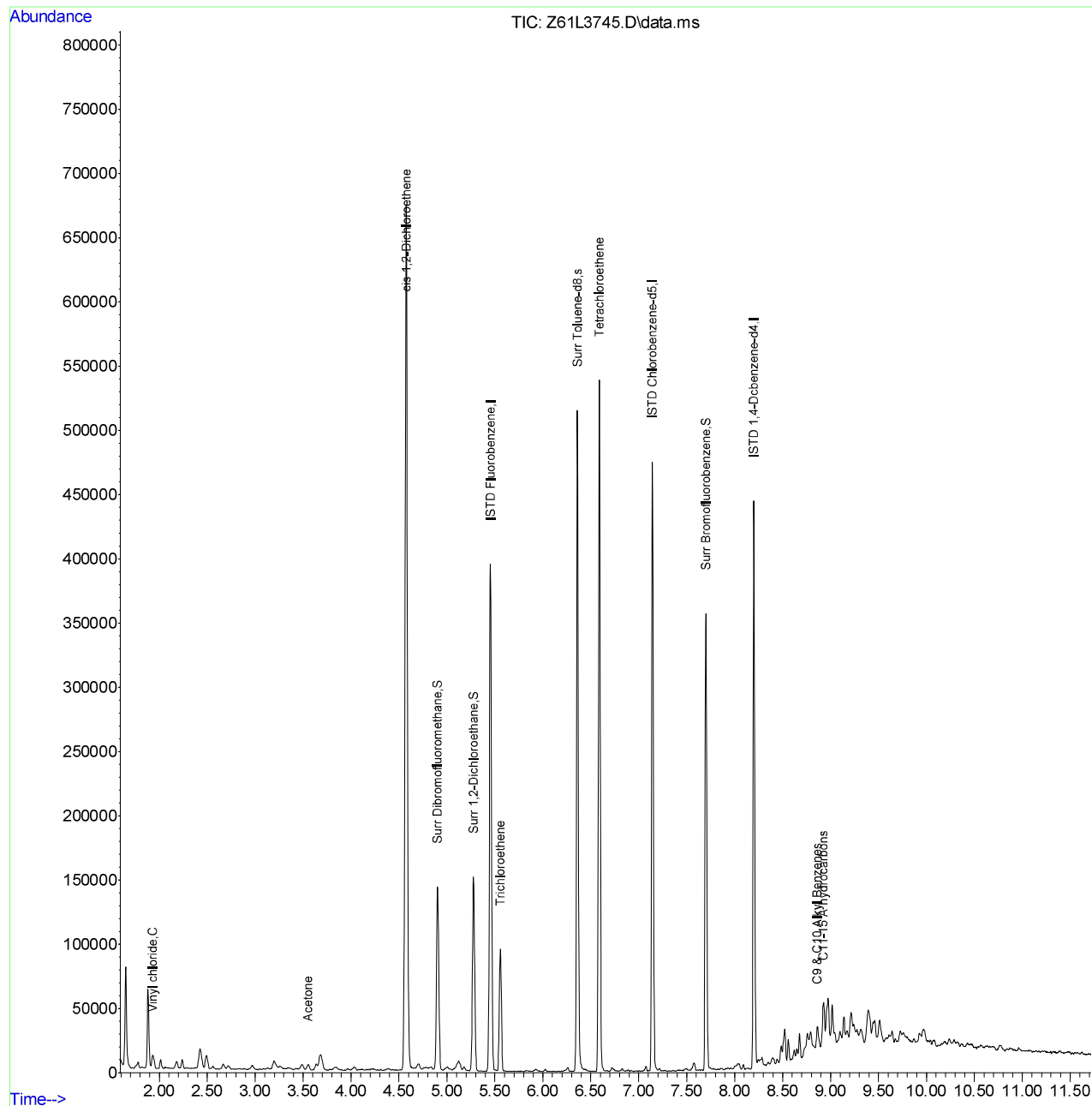
Quant Time: Oct 16 15:41:32 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z61L3745.D  
 Acq On : 16 Oct 2018 03:50 pm  
 Operator :  
 Sample : 1810374-005A  
 Misc : SAMP SOIL 34.08 - 27.65 = 6.43G DG  
 ALS Vial : 13 Sample Multiplier: 0.78

Quant Time: Oct 16 16:02:14 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration

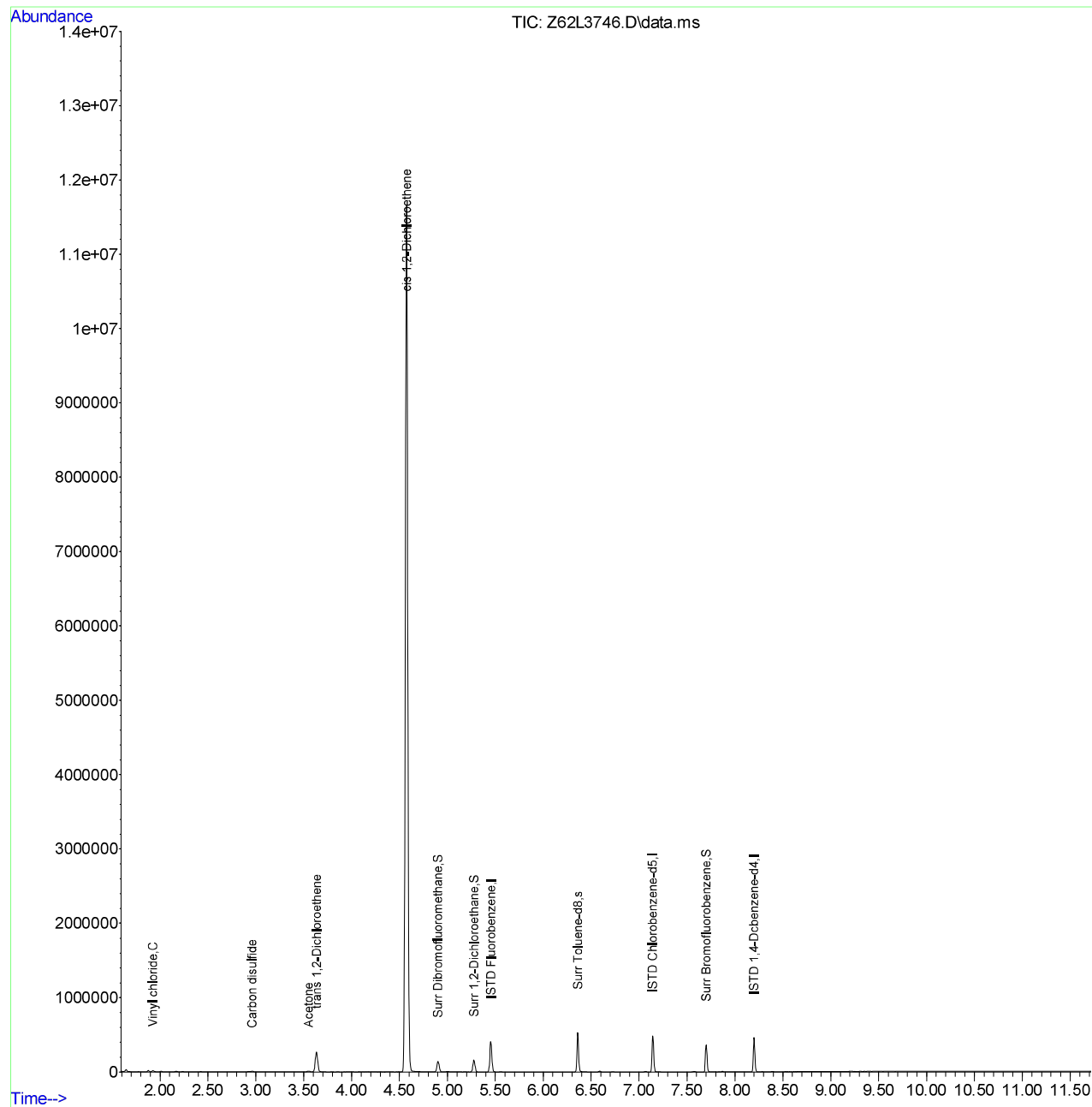




# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z62L3746.D  
 Acq On : 16 Oct 2018 04:11 pm  
 Operator :  
 Sample : 1810374-006A  
 Misc : SAMP SOIL 34.07 - 27.97 = 6.10G DG  
 ALS Vial : 14 Sample Multiplier: 0.82

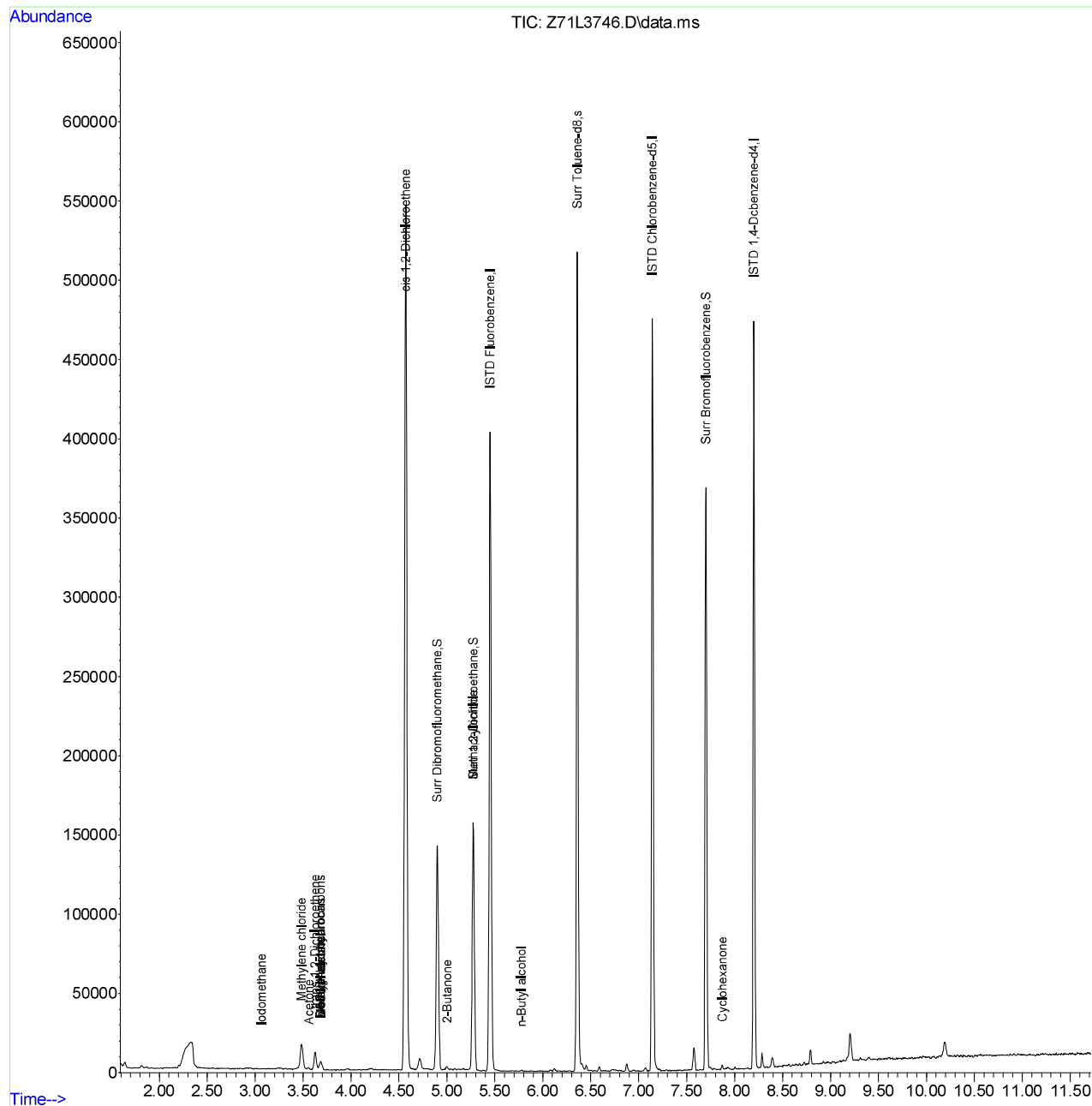
Quant Time: Oct 16 16:22:59 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z71L3746.D  
 Acq On : 16 Oct 2018 07:15 pm  
 Operator :  
 Sample : 1810374-006A  
 Misc : SAMP SOIL 41.85 - 31.61 = 10.24G 100µL/5ML DG  
 ALS Vial : 23 Sample Multiplier: 48.83

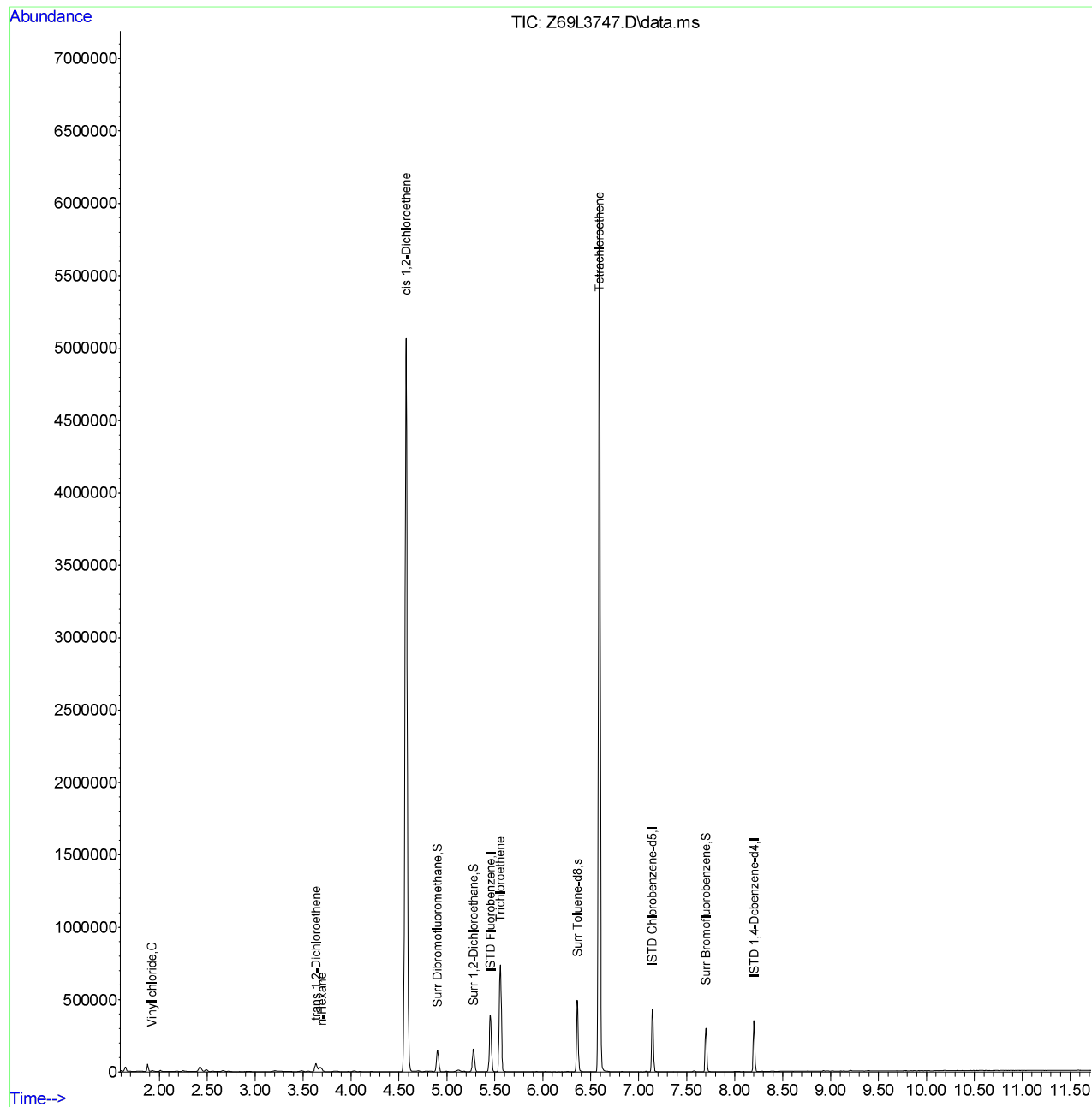
Quant Time: Oct 16 19:27:14 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z69L3747.D  
 Acq On : 16 Oct 2018 06:34 pm  
 Operator :  
 Sample : 1810374-007A  
 Misc : SAMP SOIL 33.47 - 28.02 = 5.45G DG  
 ALS Vial : 21 Sample Multiplier: 0.92

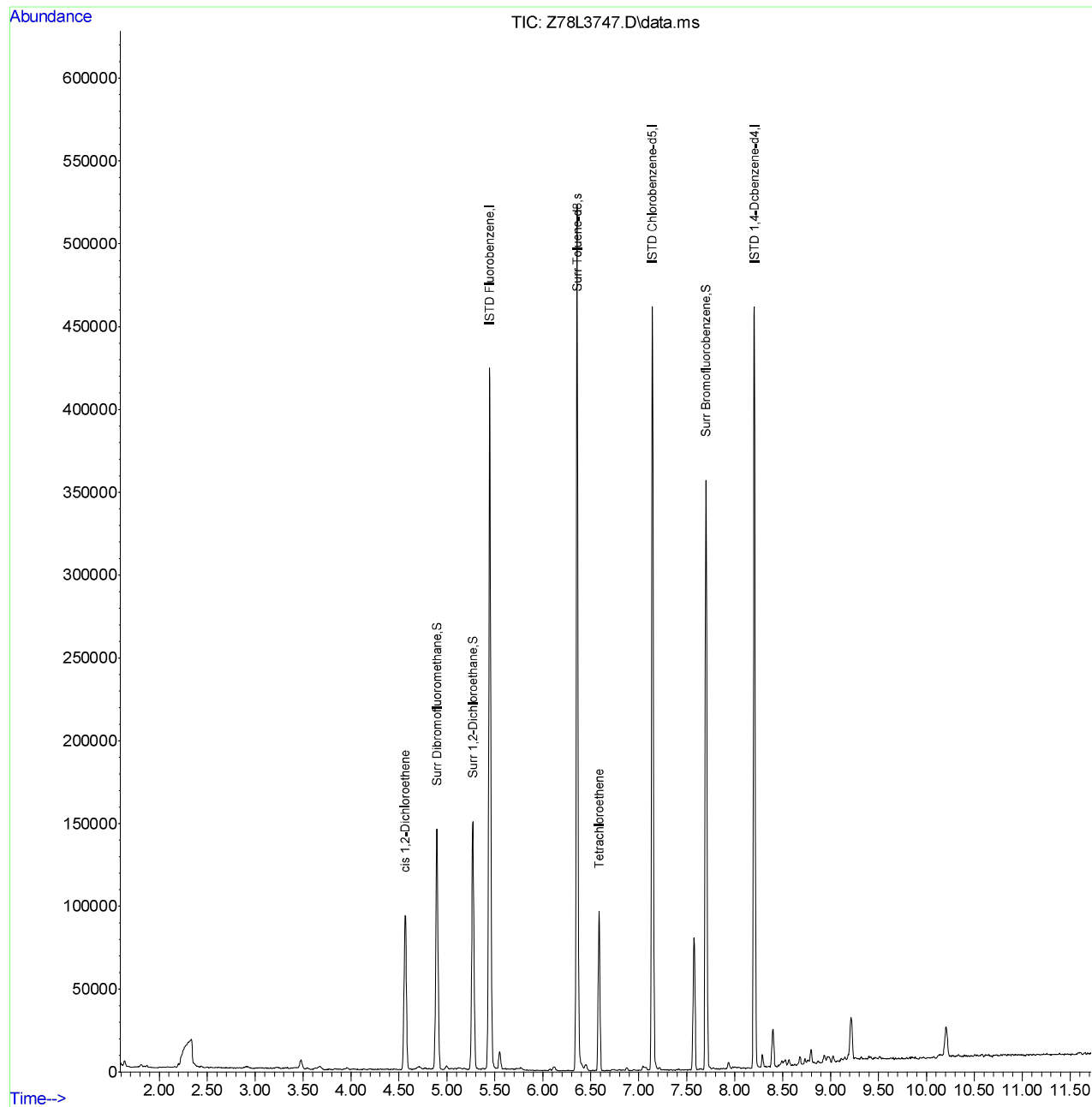
Quant Time: Oct 16 18:46:10 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\17OCT18A\  
 Data File : Z78L3747.D  
 Acq On : 17 Oct 2018 02:31 pm  
 Operator :  
 Sample : 1810374-007A  
 Misc : SAMP SOIL 42.28 - 31.69 = 10.59G 100µL/5ML DG  
 ALS Vial : 6 Sample Multiplier: 47.21

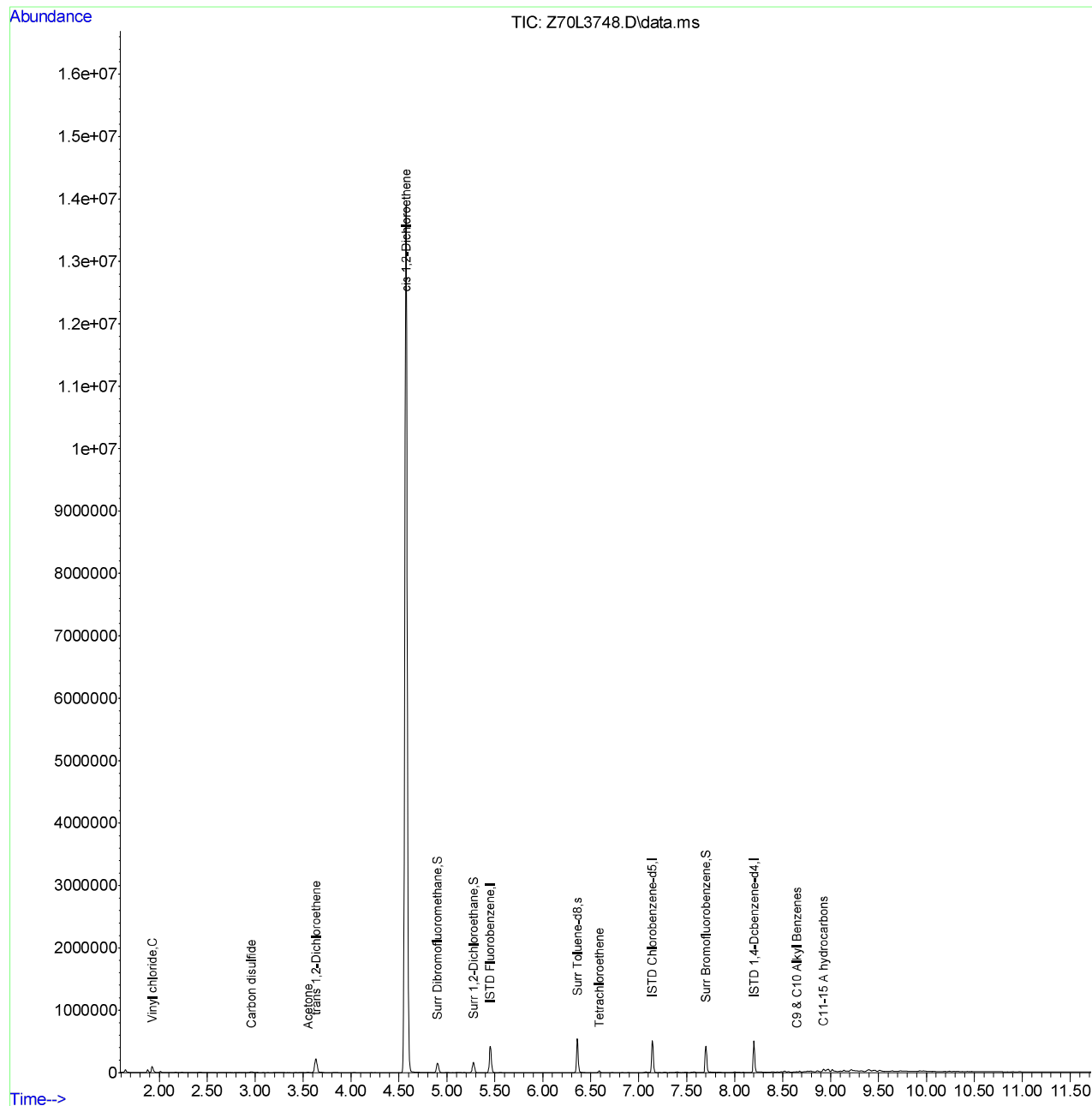
Quant Time: Oct 17 14:43:15 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z70L3748.D  
 Acq On : 16 Oct 2018 06:55 pm  
 Operator :  
 Sample : 1810374-008A  
 Misc : SAMP SOIL 33.96 - 27.57 = 6.39G DG  
 ALS Vial : 22 Sample Multiplier: 0.78

Quant Time: Oct 16 19:06:58 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration

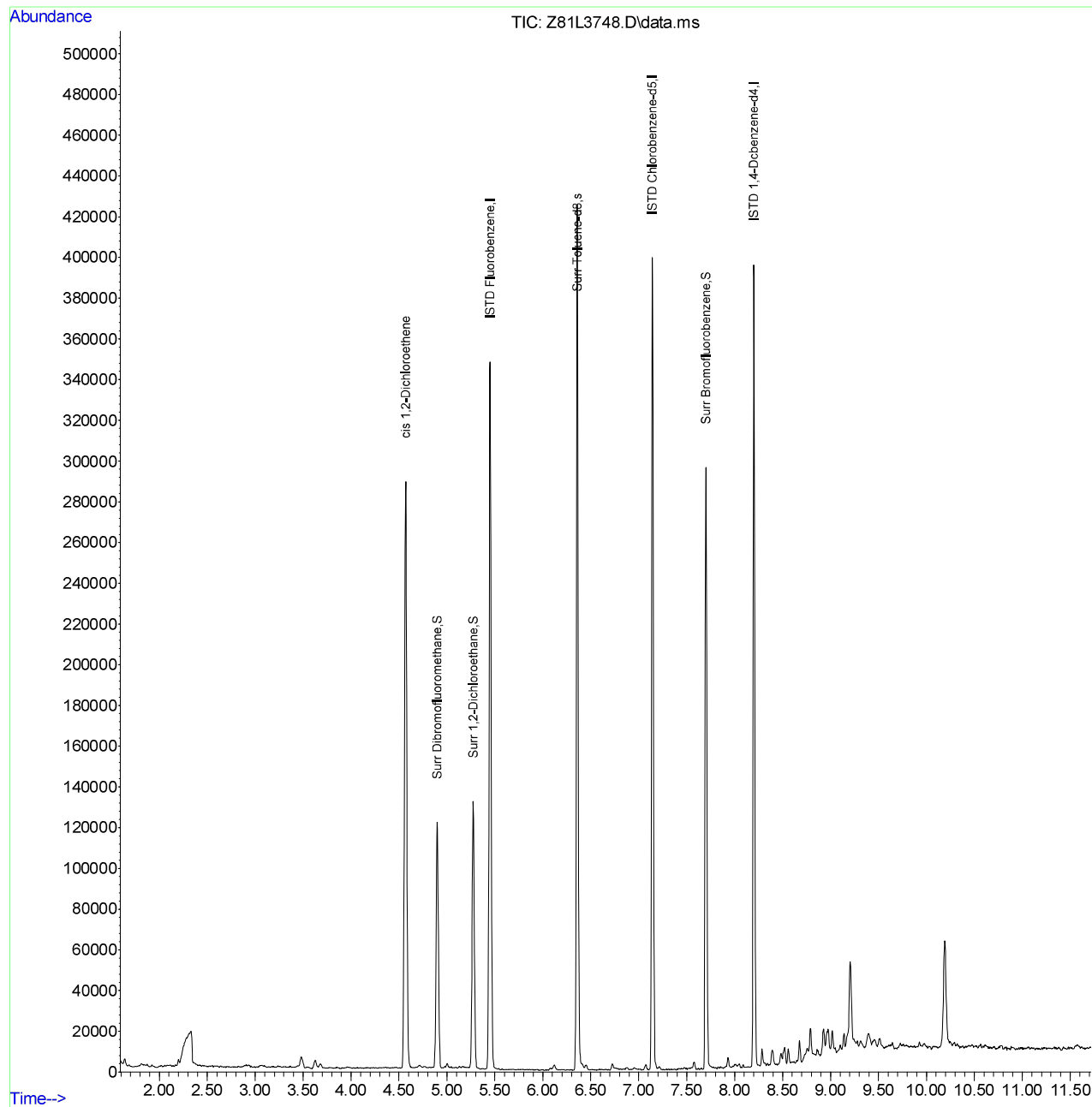




# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\17OCT18A\  
 Data File : Z81L3748.D  
 Acq On : 17 Oct 2018 03:32 pm  
 Operator :  
 Sample : 1810374-008A  
 Misc : SAMP SOIL 42.78 - 31.73 = 11.05G  
 ALS Vial : 9 Sample Multiplier: 45.25

Quant Time: Oct 17 15:44:19 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



(Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\

Data File : Z51LCS20.D

Acq On : 16 Oct 2018 12:25 pm

Operator :

Sample : LCS VOC-3 101618A

Misc : LCS SEE COVERSHEET FOR ID AND AMOUNTS DG

ALS Vial : 3      Sample Multiplier: 1

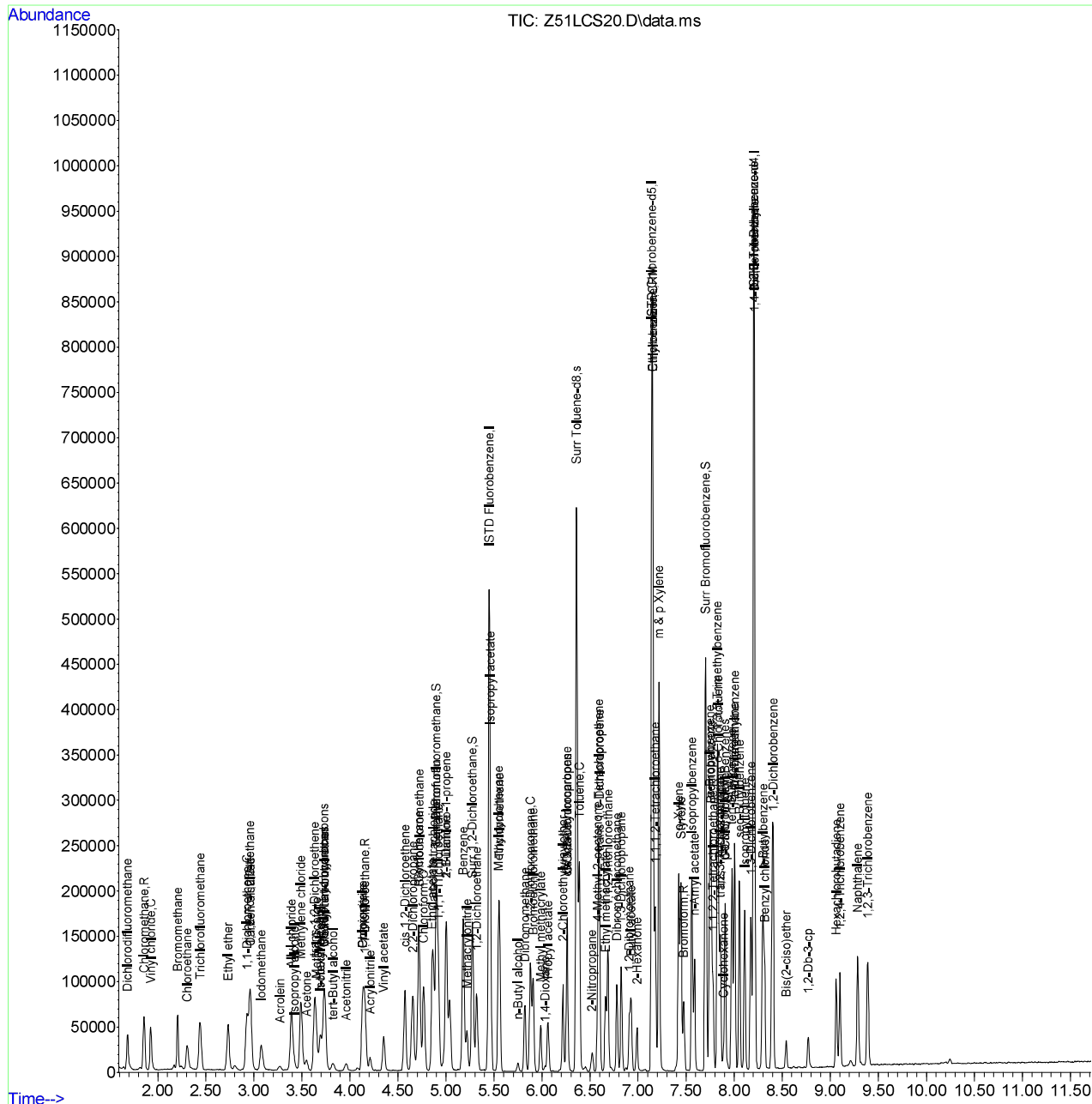
Quant Time: Oct 16 12:37:10 2018

Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S 141.M

Quant Title : VOA Calibration

QLast Update : Tue Sep 25 16:40:45 2018

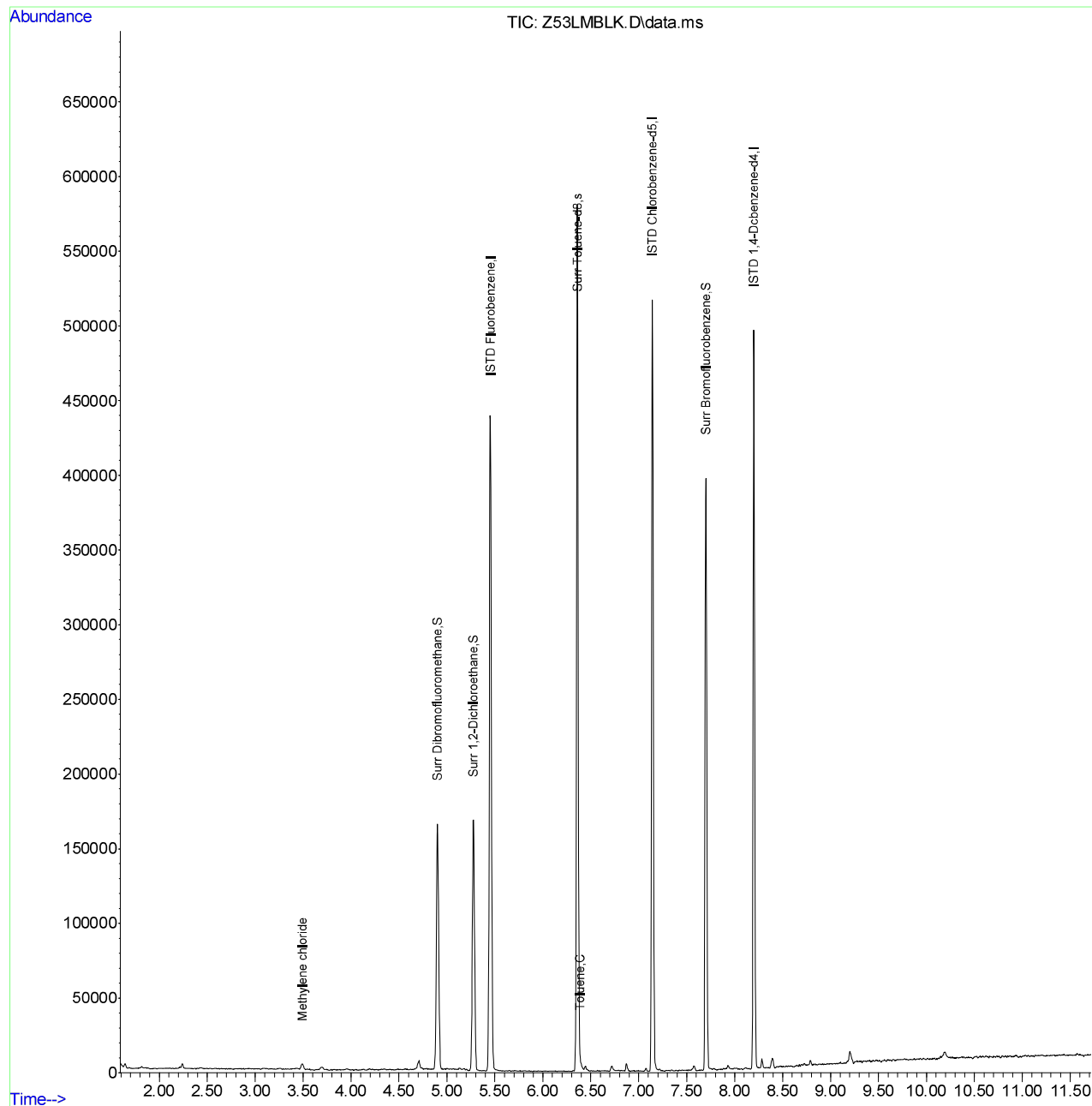
Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
 Data File : Z53LMBLK.D  
 Acq On : 16 Oct 2018 01:05 pm  
 Operator :  
 Sample : MB VOC-3 101618A  
 Misc : MBLK SOIL 5.0ML DG  
 ALS Vial : 5 Sample Multiplier: 1

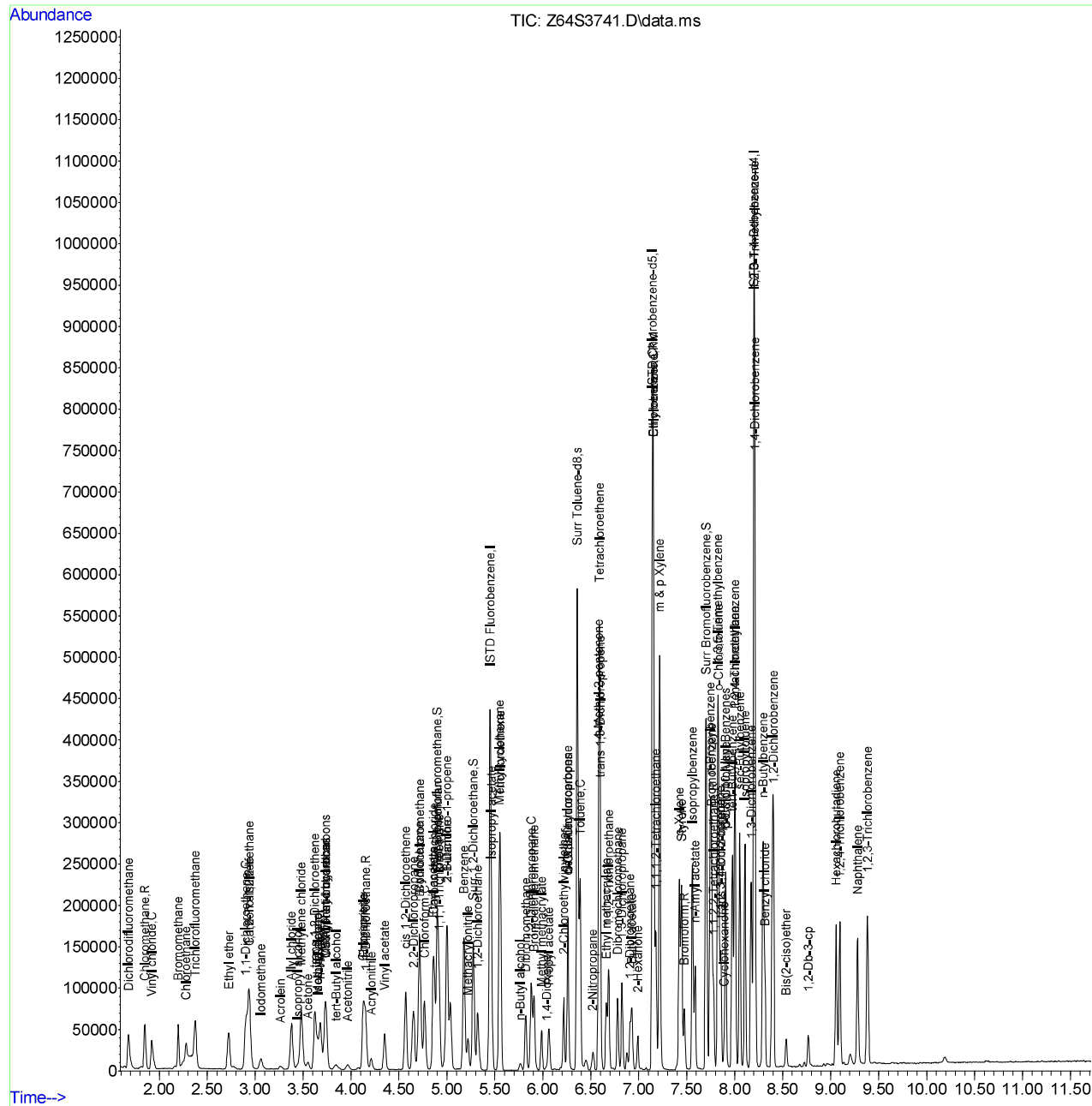
Quant Time: Oct 16 13:17:43 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



(Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\  
Data File : Z64S3741.D  
Acq On : 16 Oct 2018 04:52 pm  
Operator :  
Sample : 1810374-001AMS  
Misc : MS SOIL 42.28 - 31.63 = 10.65G 100µL/5ML DG  
ALS Vial : 16 Sample Multiplier: 46.95

Quant Time: Oct 16 17:03:53 2018  
Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
Quant Title : VOA Calibration  
QLast Update : Tue Sep 25 16:40:45 2018  
Response via : Initial Calibration



(Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\16OCT18A\

Data File : Z65D3741.D

Acq On : 16 Oct 2018 05:12 pm

Operator :

Sample : 1810374-001AMSD

Misc : MSD SOIL 42.28 - 31.63 = 10.65G 100µL/5ML DG

ALS Vial : 17      Sample Multiplier: 46.95

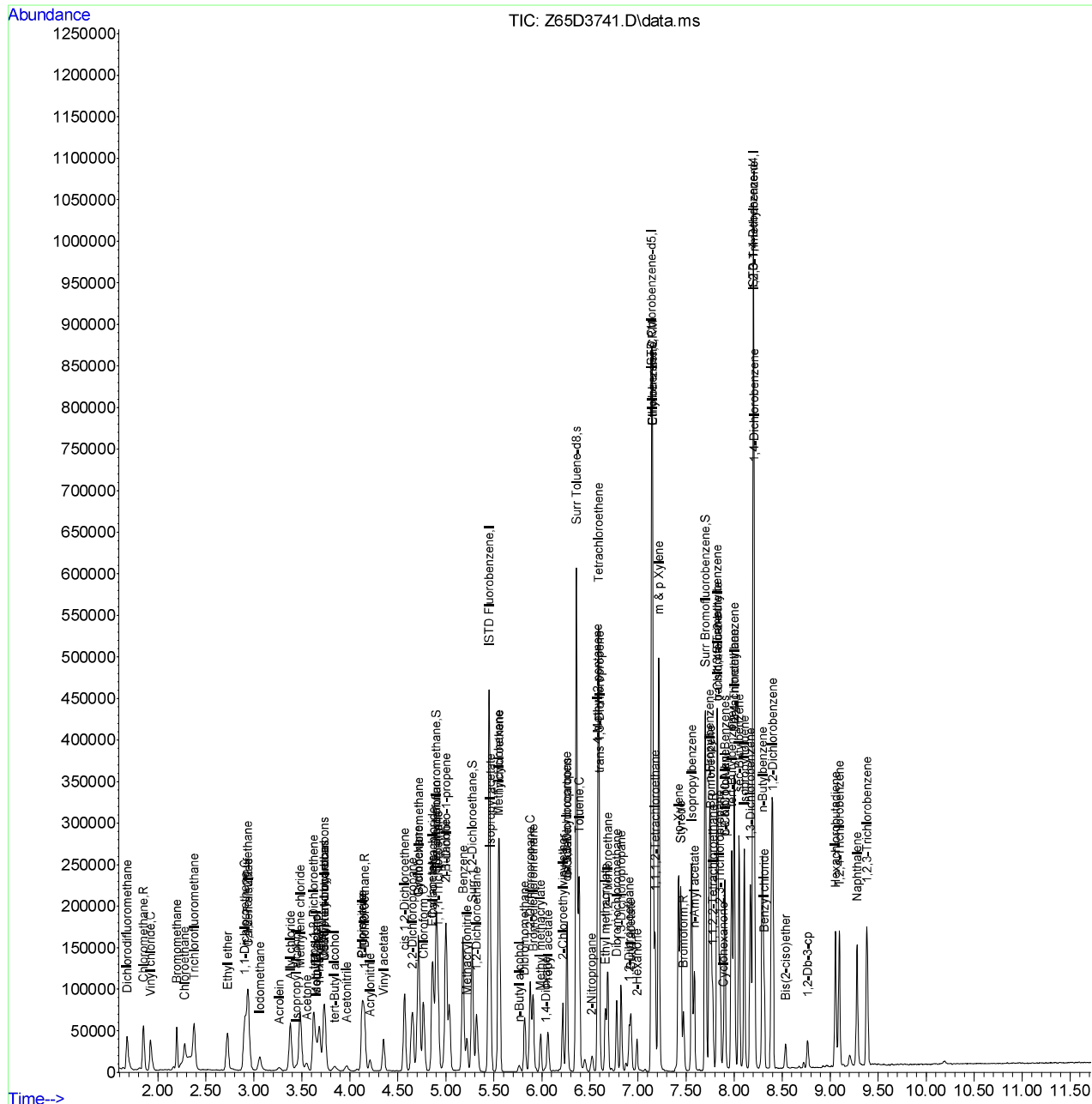
Quant Time: Oct 16 17:24:11 2018

Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S 141.M

Quant Title : VOA Calibration

0Last Update : Tue Sep 25 16:40:45 2018

Response via : Initial Calibration

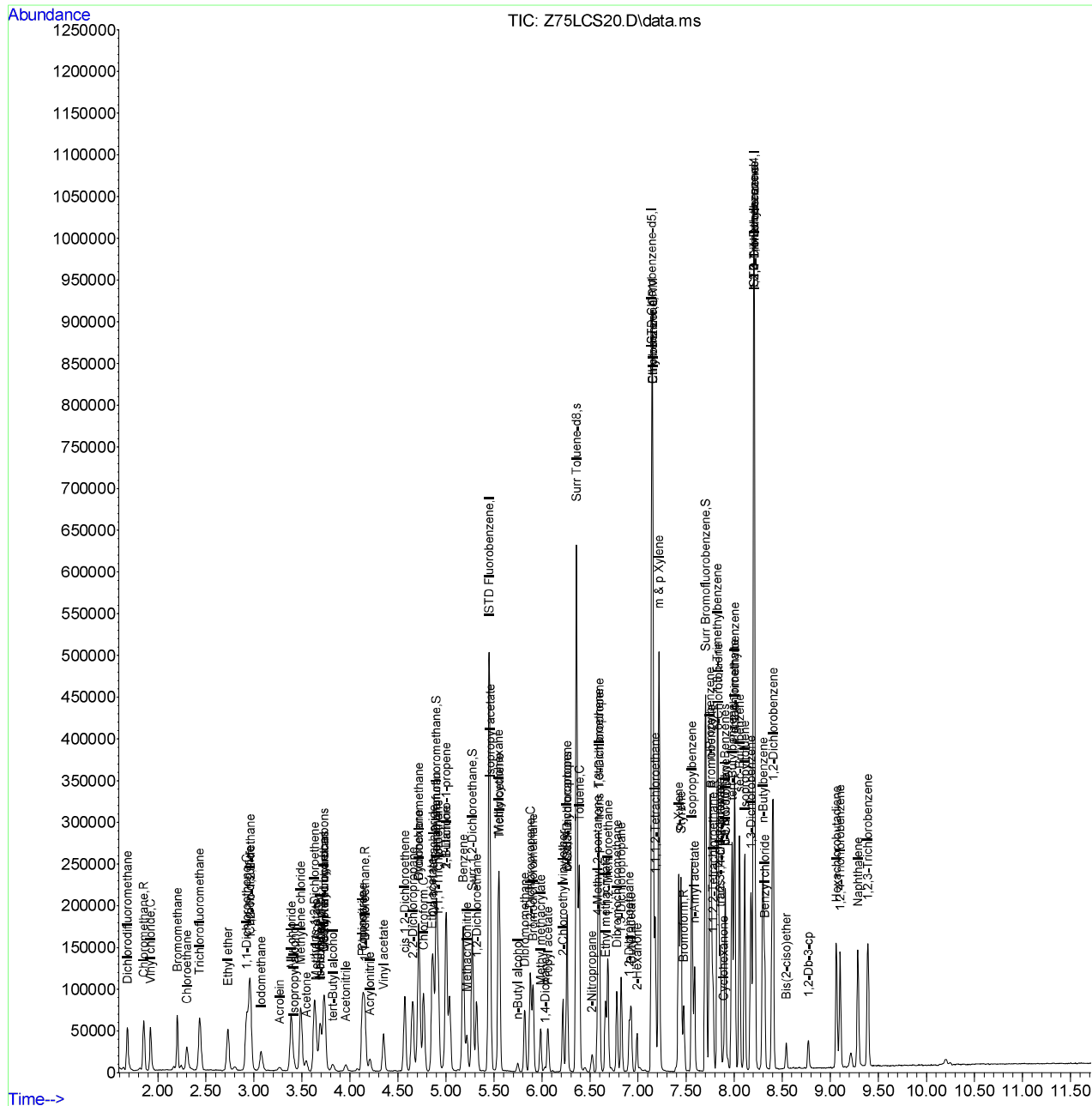




(Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\17OCT18A\  
Data File : Z75LCS20.D  
Acq On : 17 Oct 2018 12:19 pm  
Operator :  
Sample : LCS VOC-3 101718A  
Misc : LCS SEE COVERSHEET FOR ID AND AMOUNTS  
ALS Vial : 3 Sample Multiplier: 1

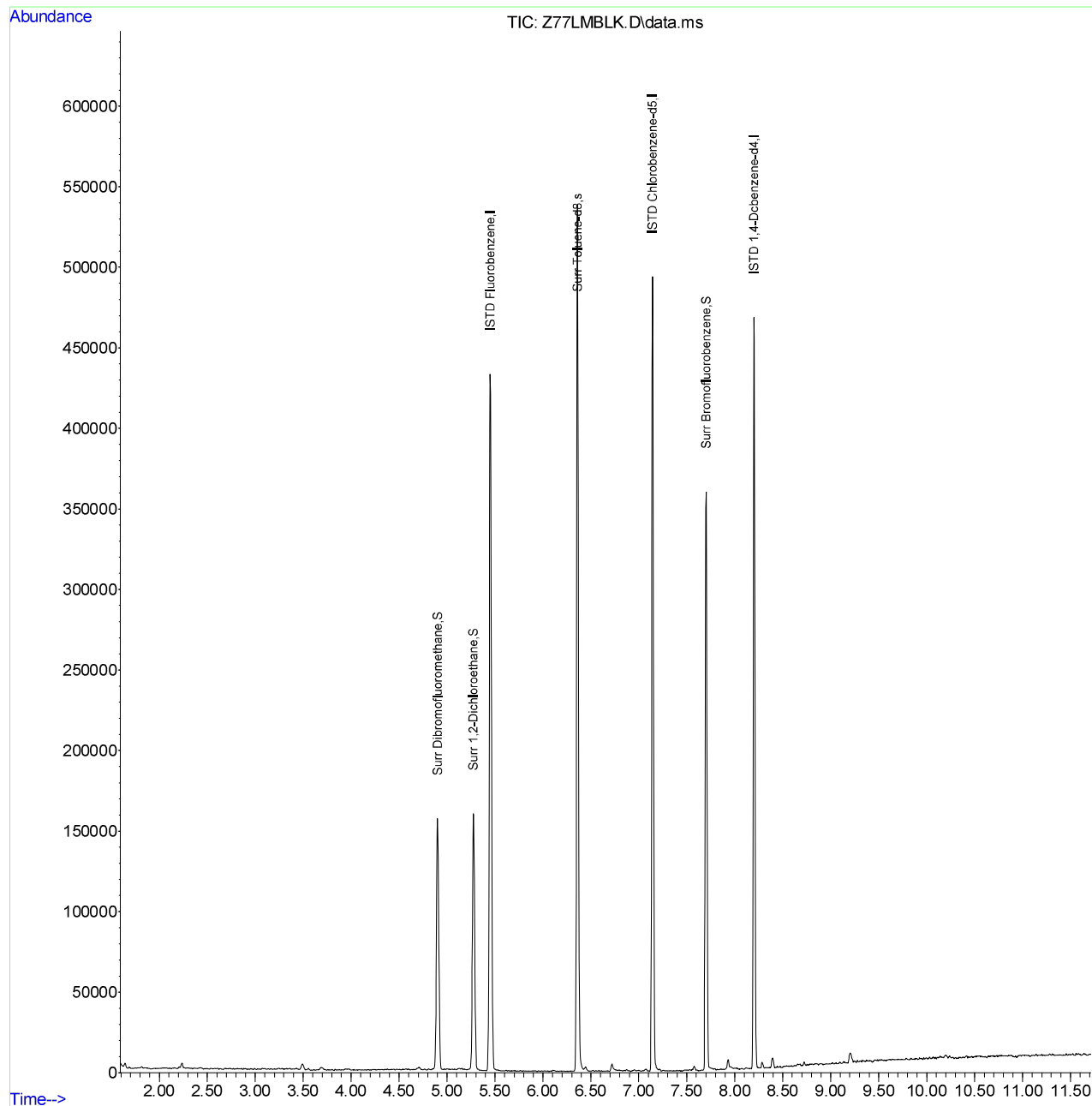
Quant Time: Oct 17 12:31:32 2018  
Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
Quant Title : VOA Calibration  
QLast Update : Tue Sep 25 16:40:45 2018  
Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\17OCT18A\  
 Data File : Z77LMBLK.D  
 Acq On : 17 Oct 2018 01:00 pm  
 Operator :  
 Sample : MB VOC-3 101718A  
 Misc : MBLK SOIL 5.0ML DG  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 17 13:12:11 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
 Quant Title : VOA Calibration  
 QLast Update : Tue Sep 25 16:40:45 2018  
 Response via : Initial Calibration



(Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\OCT18-3\17OCT18A\

Data File : Z79S3747.D

Acq On : 17 Oct 2018 02:51 pm

Operator :

Sample : 1810374-007AMS

Misc : MS SOIL 42.28 - 31.69 = 10.59G 100μL/5ML DG

ALS Vial : 7      Sample Multiplier: 47.21

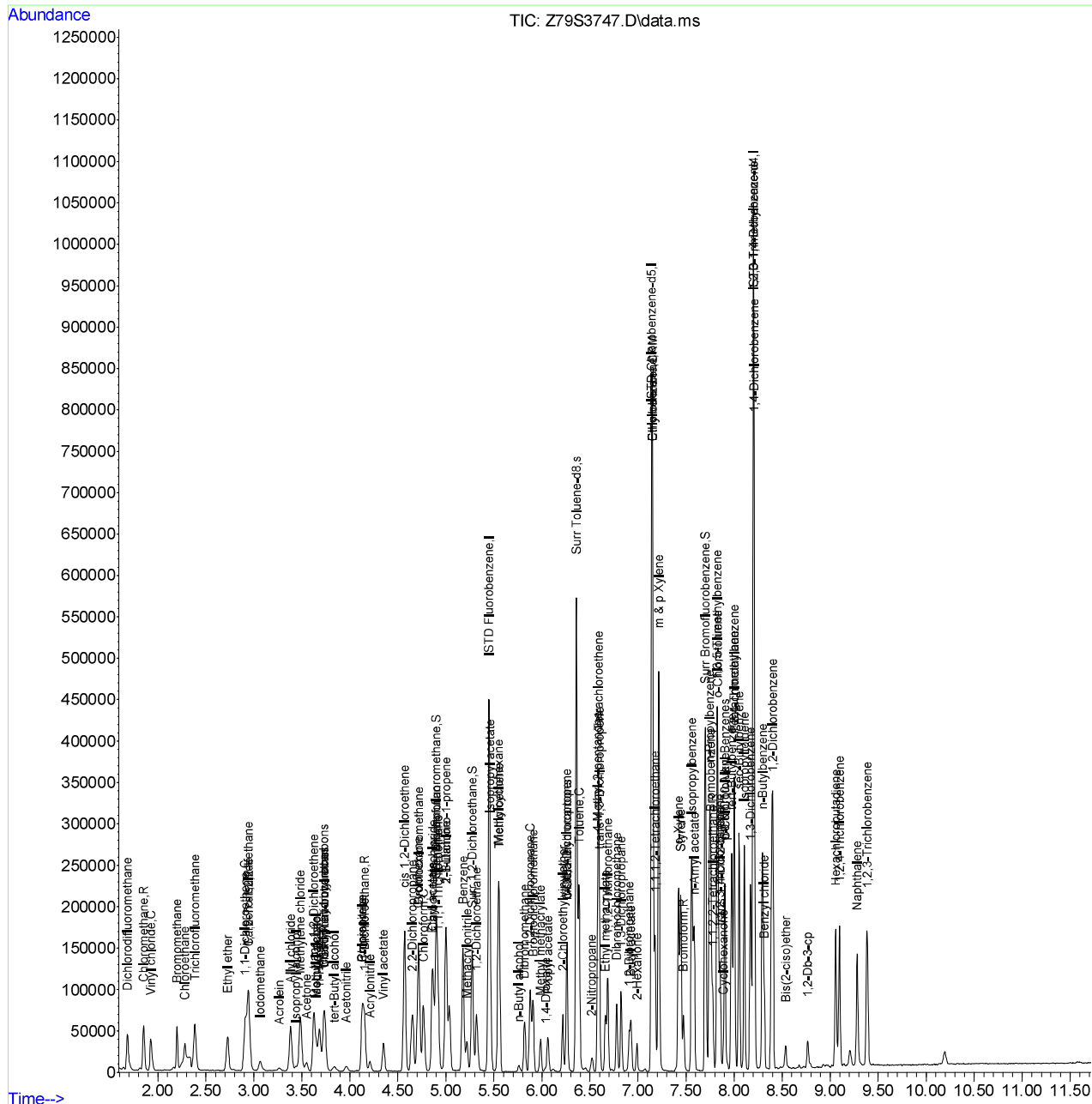
Quant Time: Oct 17 15:03:34 2018

Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S 141.M

Quant Title : VOA Calibration

0Last Update : Tue Sep 25 16:40:45 2018

Response via : Initial Calibration



(Not Reviewed)

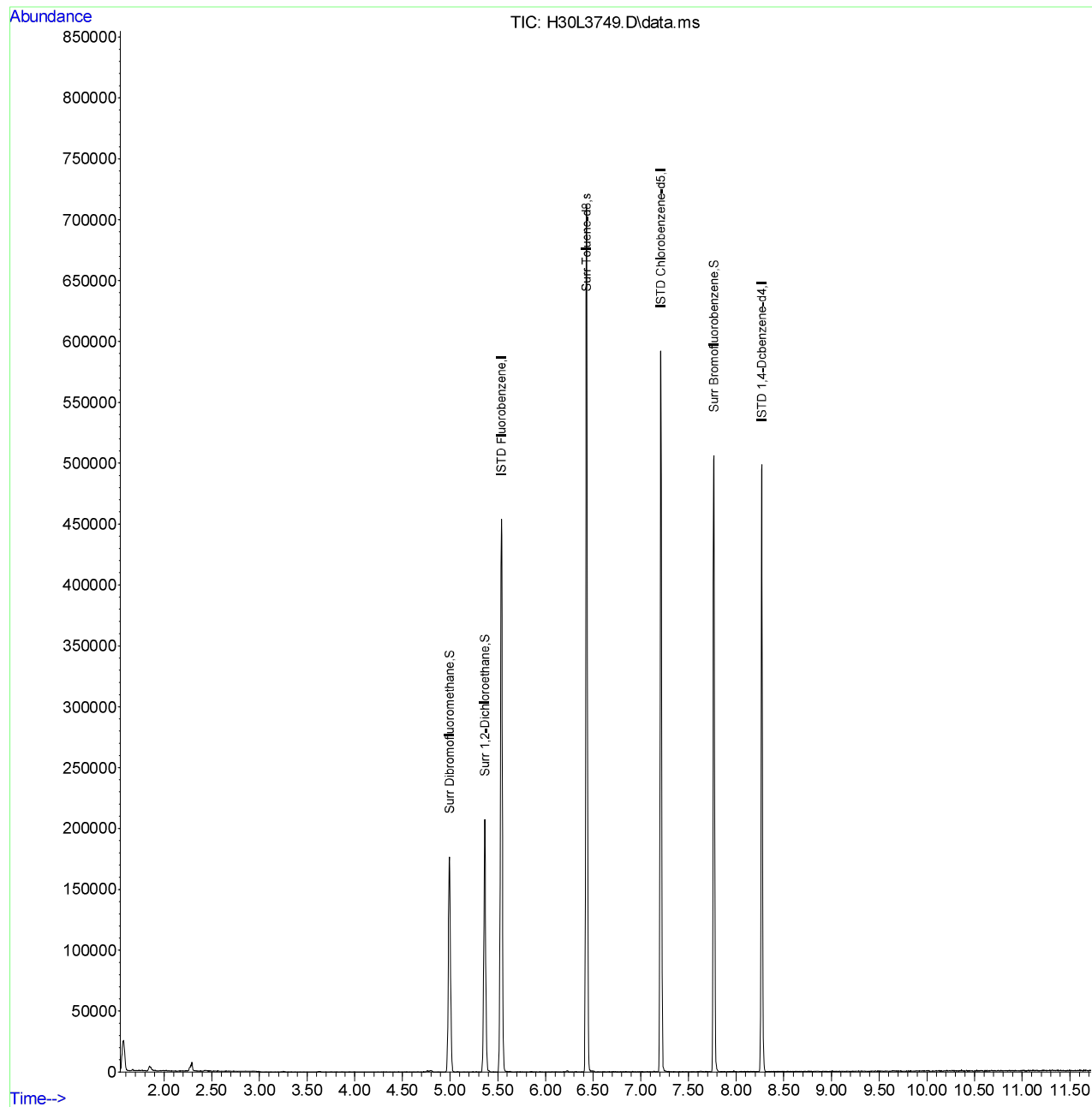
Quant Time: Oct 17 15:23:54 2018  
Quant Method : D:\MassHunter\GCMS\1\methods\VOA3S\_141.M  
Quant Title : VOA Calibration  
QLast Update : Tue Sep 25 16:40:45 2018  
Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\OCT18-1\16OCT18A\  
 Data File : H30L3749.D  
 Acq On : 16 Oct 2018 01:33 pm  
 Operator :  
 Sample : 1810374-009A  
 Misc : SAMP 5.0ML 10F3 DG  
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Oct 16 13:45:33 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration

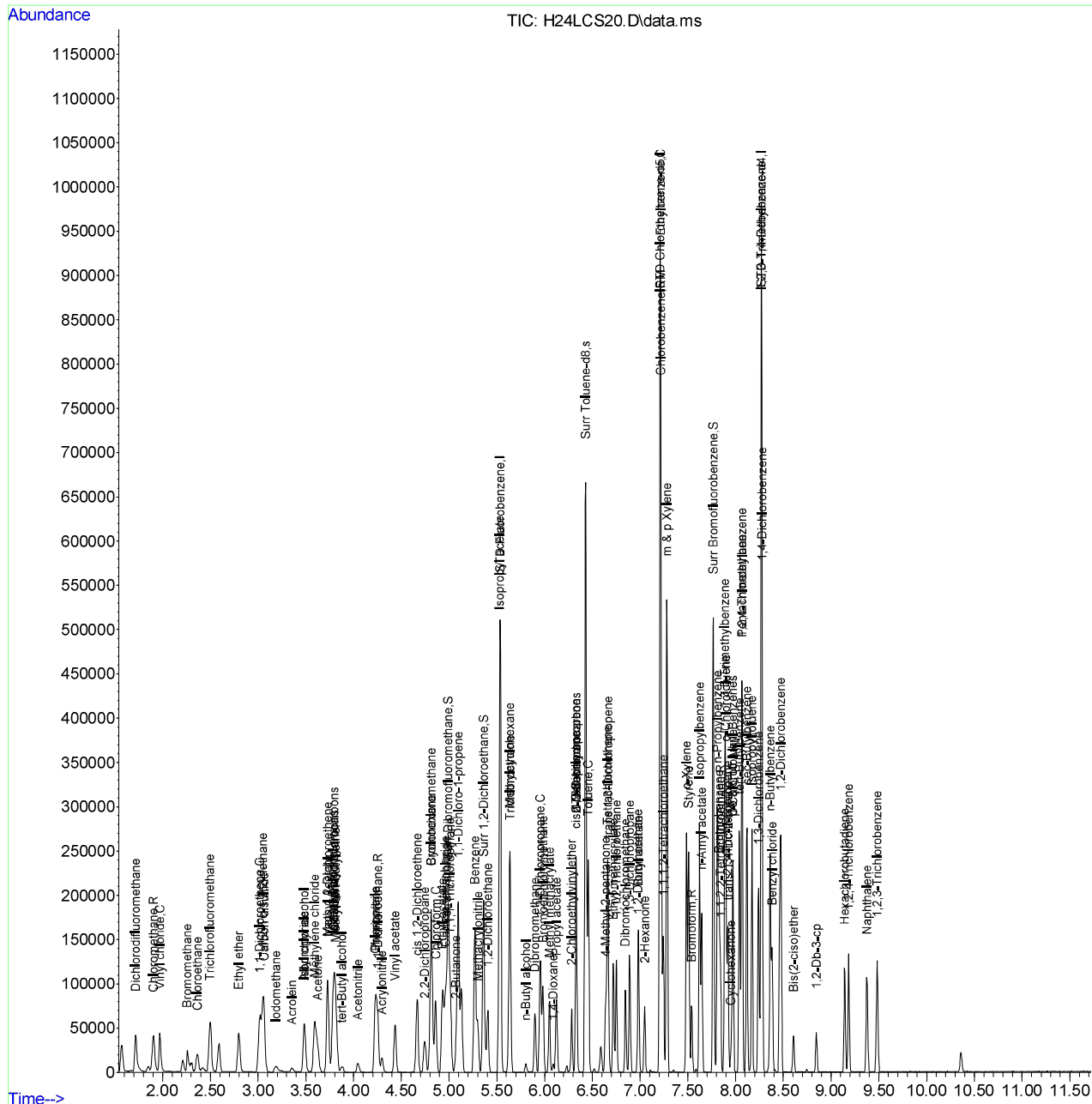




(Not Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\OCT18-1\16OCT18A\  
Data File : H24LCS20.D  
Acq On : 16 Oct 2018 11:23 am  
Operator :  
Sample : LCS VOC-1 101618A  
Misc : LCS SEE COVERSHEET FOR ID AND AMOUNTS DG  
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Oct 16 11:34:54 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration



(Not Reviewed)

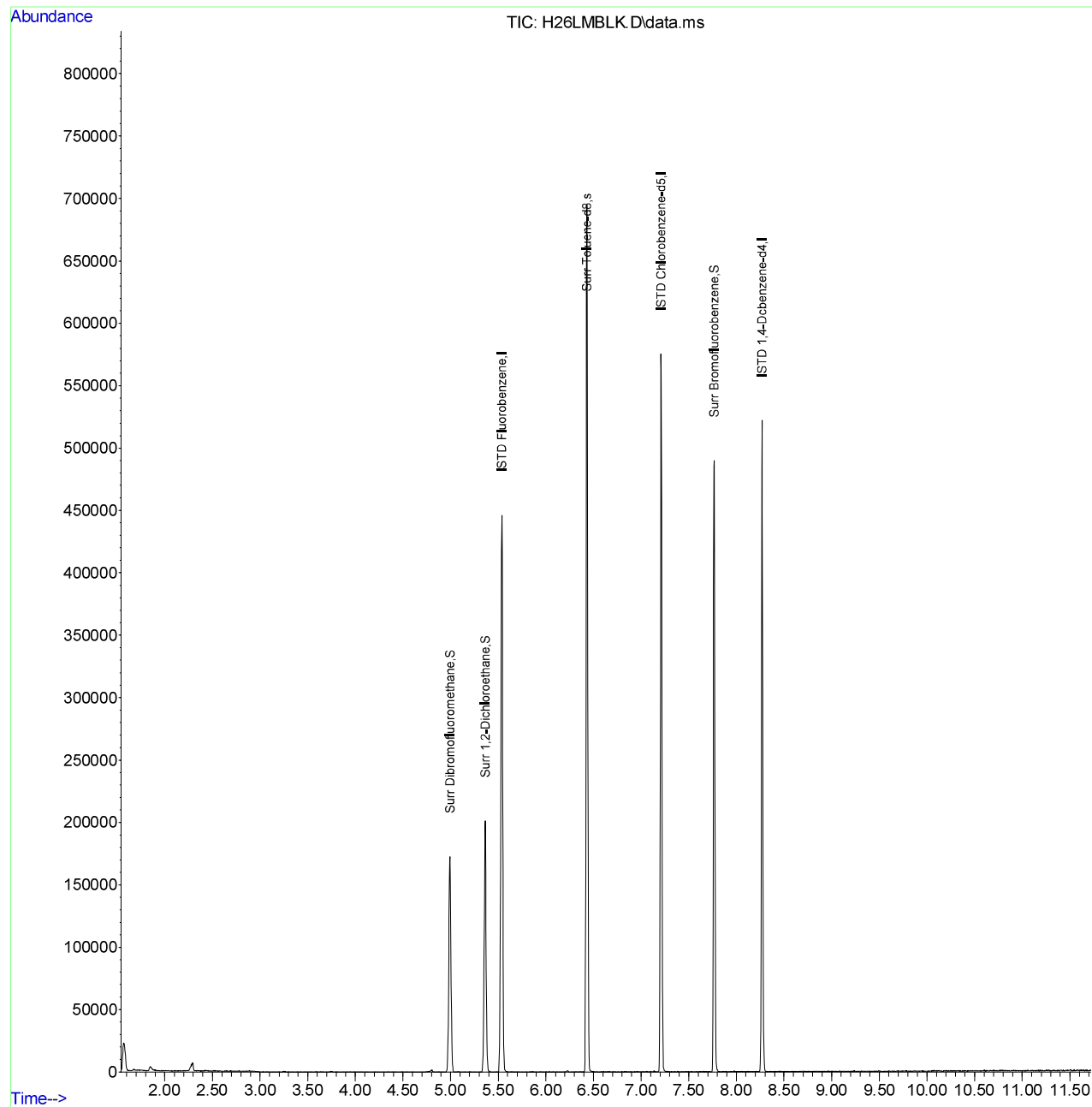
Quant Time: Oct 16 12:46:48 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\OCT18-1\16OCT18A\  
 Data File : H26LMBLK.D  
 Acq On : 16 Oct 2018 12:02 pm  
 Operator :  
 Sample : MB VOC-1 101618A  
 Misc : MBLK 5.0ML DG  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Oct 16 12:14:08 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration



**WORK ORDER Summary**Work Order: **1810374** Page 1 of 1

Client: Wasatch Environmental

Client ID: WAS580

Contact: Mike Cronin

Due Date: 10/24/2018

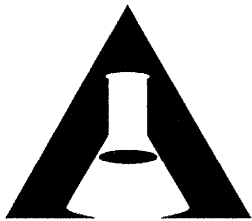
Project: Former Henries / 2249-001d

QC Level: III

WO Type: Standard

Comments: PA Rush / QC3 - samples were collected using 5035 method.;

| Sample ID    | Client Sample ID | Collected Date   | Received Date    | Test Code                                                 | Matrix  | Sel   | Storage |
|--------------|------------------|------------------|------------------|-----------------------------------------------------------|---------|-------|---------|
| 1810374-001A | CS-1-5'          | 10/15/2018 1000h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 8       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-002A | CS-2-3'          | 10/15/2018 1015h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 6       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-003A | CS-2-12'         | 10/15/2018 1035h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 6       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-004A | CS-3-8'          | 10/15/2018 1155h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 6       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-005A | CS-3-12'         | 10/15/2018 1205h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 6       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-006A | CS-4-8'          | 10/15/2018 1230h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 6       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-007A | CS-5-8'          | 10/15/2018 1245h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 6       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-008A | CS-20-12'        | 10/15/2018 0930h | 10/15/2018 1553h | 8260-S                                                    | Soil    | Purge | 6       |
|              |                  |                  |                  | Test Group: 8260-S-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |
|              |                  |                  |                  | PMOIST                                                    |         | Purge |         |
| 1810374-009A | Trip Blank       | 10/15/2018       | 10/15/2018 1553h | 8260-W                                                    | Aqueous | Purge | 3       |
|              |                  |                  |                  | Test Group: 8260-W-AWAL; # of Analytes: 49 / # of Surr: 4 |         |       |         |



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www.awal-labs.com

80-  
135-760-8269

CHAIN OF CUSTODY

All analysis will be conducted using NELAP accredited methods and all data will be reported using AWAL's standard analyte lists and reporting limits (PQL) unless specifically requested otherwise on this Chain of Custody and/or attached documentation.

1810374

AWAL Lab Sample Set #

Page 1 of 1

Client: Wasatch Environmental  
Address: 2410 W. California Ave.  
City, State, Zip: SLC, UT, 84104  
Contact: Michael Carnan  
Phone #: 801-972-8400 Cell #: \_\_\_\_\_  
E-mail: MC@wasatch-environmental.com  
Project Name: Former Henriess  
Project #: 2049- cold  
PO #: 2049- cold  
Sampler Name: Blake Downey

| QC Level:                                                                                             |   |    |   | Turn Around Time:                                                                                                                                                                        |   |   |   | Unless other arrangements have been made, signed reports will be emailed by 5:00 pm on the day they are due.                                                                                                                                                                                                                               |     |  |  | Due Date:           |  |       |  |
|-------------------------------------------------------------------------------------------------------|---|----|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--|--|---------------------|--|-------|--|
| 1                                                                                                     | 2 | 2+ | 3 | 1                                                                                                                                                                                        | 2 | 3 | 4 | 5                                                                                                                                                                                                                                                                                                                                          | Std |  |  |                     |  | 10/24 |  |
| <div># of Containers</div> <div>Sample Matrix 8260 -</div> <div>6270E - VOC's</div> <div>MS/MSD</div> |   |    |   | <input type="checkbox"/> Report down to the MDL<br><input type="checkbox"/> Include EDD:<br><input type="checkbox"/> Lab Filter for:<br><br><input type="checkbox"/> Field Filtered For: |   |   |   | <div>For Compliance With:</div> <div><input type="checkbox"/> NELAP<br/><input type="checkbox"/> RCRA<br/><input type="checkbox"/> CWA<br/><input type="checkbox"/> SDWA<br/><input type="checkbox"/> ELAP / A2LA<br/><input type="checkbox"/> NLLAP<br/><input type="checkbox"/> Non-Compliance<br/><input type="checkbox"/> Other:</div> |     |  |  | Laboratory Use Only |  |       |  |
|                                                                                                       |   |    |   | Known Hazards & Sample Comments                                                                                                                                                          |   |   |   | COC Tape Was:                                                                                                                                                                                                                                                                                                                              |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 1 Present on Outer Package<br>Y N (NA)                                                                                                                                                                                                                                                                                                     |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 2 Unbroken on Outer Package<br>Y (N)                                                                                                                                                                                                                                                                                                       |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 3 Present on Sample<br>Y (N)                                                                                                                                                                                                                                                                                                               |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 4 Unbroken on Sample<br>Y (N)                                                                                                                                                                                                                                                                                                              |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | Samples Were:                                                                                                                                                                                                                                                                                                                              |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 1 Shipped or hand delivered                                                                                                                                                                                                                                                                                                                |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 2 Ambient or Chilled on ice                                                                                                                                                                                                                                                                                                                |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 3 Temperature 5.6 °C                                                                                                                                                                                                                                                                                                                       |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 4 Received Intact<br>Y (N) el                                                                                                                                                                                                                                                                                                              |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 5 Properly Preserved<br>Y N Checked at bench                                                                                                                                                                                                                                                                                               |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | 6 Received Within Holding Times<br>Y N                                                                                                                                                                                                                                                                                                     |     |  |  |                     |  |       |  |
|                                                                                                       |   |    |   |                                                                                                                                                                                          |   |   |   | Sample Labels and COC Record Match?<br>Y N                                                                                                                                                                                                                                                                                                 |     |  |  |                     |  |       |  |

|    | Sample ID: | Date Sampled | Time Sampled |         |
|----|------------|--------------|--------------|---------|
| 1  | CS-1-5'    | 10-15-18     | 1000         | 8 S X X |
| 2  | CS-2-3'    | ↑            | 1015         | 6 S X   |
| 3  | CS-2-12'   | ↑            | 1035         | 6 S X   |
| 4  | CS-3-8'    | ↑            | 1155         | 6 S X   |
| 5  | CS-3-12'   | ↑            | 1205         | 6 S X   |
| 6  | CS-4-8'    | ↑            | 1230         | 6 S X   |
| 7  | CS-5-8'    | 10-15-18     | 1245         | 6 S X   |
| 8  | CS-20-12'  | 10-15-18     | 0930         | 6 S X   |
| 9  |            |              |              |         |
| 10 |            |              |              |         |
| 11 | Trip Blank | 10/15/18     | 7:30         |         |
| 12 |            |              |              |         |
| 13 |            |              |              |         |
| 14 |            |              |              |         |
| 15 |            |              |              |         |

|                                                      |                                            |                                               |                                            |
|------------------------------------------------------|--------------------------------------------|-----------------------------------------------|--------------------------------------------|
| Relinquished by:<br>Signature <u>Blake B. Downey</u> | Date: <u>10-15-18</u><br>Time: <u>1553</u> | Received by:<br>Signature <u>Elma Haywood</u> | Date: <u>10-15-18</u><br>Time: <u>1553</u> |
| Print Name: <u>Blake B. Downey</u>                   |                                            | Print Name: <u>Elma Haywood</u>               |                                            |
| Relinquished by:<br>Signature                        | Date:                                      | Received by:<br>Signature                     | Date:                                      |
| Print Name:                                          | Time:                                      | Print Name:                                   | Time:                                      |
| Relinquished by:<br>Signature                        | Date:                                      | Received by:<br>Signature                     | Date:                                      |
| Print Name:                                          | Time:                                      | Print Name:                                   | Time:                                      |

Special Instructions:

|  |
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|  |
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|  |
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## **Appendix L**

### **Emissions Laboratory Analytical Report**



## ANALYTICAL REPORT

Report Date: January 08, 2019

Blake Downey  
Wasatch Environmental  
2410 California Ave  
Salt Lake City, UT 84104

Phone: (435) 760-8269

E-mail: [bd@wasatch-environmental.com](mailto:bd@wasatch-environmental.com)

Workorder: **34-1900227**

Project ID: Millcreek Henries/2249-001d

Purchase Order: 2249-001d

Project Manager Jessica Helland

| Client Sample ID | Lab ID     | Collect Date | Receive Date | Sampling Site     |
|------------------|------------|--------------|--------------|-------------------|
| EM-1             | 1900227001 | 01/02/19     | 01/02/19     | Millcreek Henries |

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# ANALYTICAL REPORT

Workorder: **34-1900227**

Client: Wasatch Environmental, Inc.

Project Manager: Jessica Helland

## Analytical Results

|                        |                                  |                       |
|------------------------|----------------------------------|-----------------------|
| Sample ID: <b>EM-1</b> | Sampling Site: Millcreek Henries | Collected: 01/02/2019 |
| Lab ID: 1900227001     | Media: Summa 6 Liter Canister    | Received: 01/02/2019  |
| Matrix: Air            | Sampling Parameter: NA           |                       |

### Analysis Method - EPA TO-15

|                             |                                                                                          |                                                                 |
|-----------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Preparation: Not Applicable | Analysis: EPA TO-15, Air<br>Batch: IVOA/4209 (HBN: 230691)<br>Analyzed: 01/07/2019 17:02 | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |
|-----------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------|

| Analyte                  | Result (ppb) | Result (ug/m³) | MDL (ppb) | RL (ppb) | Dilution | Qual |
|--------------------------|--------------|----------------|-----------|----------|----------|------|
| Dichlorodifluoromethane  | ND           | <15            | 3.0       | 10       | 20       | U    |
| Chloromethane            | ND           | <6.2           | 3.0       | 10       | 20       | U    |
| Freon 114                | ND           | <21            | 3.0       | 10       | 20       | U    |
| Vinyl chloride           | ND           | <7.7           | 3.0       | 10       | 20       | U    |
| 1,3-Butadiene            | ND           | <6.6           | 3.0       | 10       | 20       | U    |
| Bromomethane             | ND           | <12            | 3.0       | 10       | 20       | U    |
| Chloroethane             | ND           | <7.9           | 3.0       | 10       | 20       | U    |
| Freon 11                 | ND           | <17            | 3.0       | 10       | 20       | U    |
| Freon 113                | ND           | <23            | 3.0       | 10       | 20       | U    |
| 1,1-Dichloroethene       | ND           | <12            | 3.0       | 10       | 20       | U    |
| Acetone                  | 64           | 150            | 6.0       | 20       | 20       |      |
| Carbon disulfide         | ND           | <9.3           | 3.0       | 10       | 20       | U    |
| Methylene chloride       | ND           | <10            | 3.0       | 10       | 20       | U    |
| trans-1,2-Dichloroethene | ND           | <12            | 3.0       | 10       | 20       | U    |
| Methyl t-butyl ether     | ND           | <11            | 3.0       | 10       | 20       | U    |
| Vinyl acetate            | ND           | <14            | 4.0       | 10       | 20       | U    |
| 2-Butanone               | 10           | 30             | 3.0       | 10       | 20       |      |
| cis-1,2-Dichloroethene   | 9.5          | 38             | 3.0       | 10       | 20       | J    |
| 1,1-Dichloroethane       | ND           | <12            | 3.0       | 10       | 20       | U    |
| Ethyl acetate            | ND           | <22            | 6.0       | 20       | 20       | U    |
| Hexane                   | ND           | <11            | 3.0       | 10       | 20       | U    |
| Chloroform               | ND           | <15            | 3.0       | 10       | 20       | U    |
| Tetrahydrofuran          | 180          | 530            | 3.0       | 10       | 20       |      |
| 1,2-Dichloroethane       | ND           | <12            | 3.0       | 10       | 20       | U    |
| 1,1,1-Trichloroethane    | ND           | <16            | 3.0       | 10       | 20       | U    |
| Carbon tetrachloride     | ND           | <19            | 3.0       | 10       | 20       | U    |
| Benzene                  | ND           | <9.6           | 3.0       | 10       | 20       | U    |
| Cyclohexane              | ND           | <10            | 3.0       | 10       | 20       | U    |
| Trichloroethene          | 28           | 150            | 3.0       | 10       | 20       |      |
| 1,2-Dichloropropane      | ND           | <15            | 3.0       | 10       | 20       | U    |
| Bromodichloromethane     | ND           | <20            | 3.0       | 10       | 20       | U    |
| Heptane                  | ND           | <12            | 3.0       | 10       | 20       | U    |
| cis-1,3-Dichloropropene  | ND           | <14            | 3.0       | 10       | 20       | U    |
| 4-Methyl-2-pentanone     | 4.1          | 17             | 3.0       | 10       | 20       | J    |

Results Continued on Next Page



# ANALYTICAL REPORT

Workorder: **34-1900227**

Client: Wasatch Environmental, Inc.

Project Manager: Jessica Helland

## Analytical Results

|                        |                                  |                       |
|------------------------|----------------------------------|-----------------------|
| Sample ID: <b>EM-1</b> | Sampling Site: Millcreek Henries | Collected: 01/02/2019 |
| Lab ID: 1900227001     | Media: Summa 6 Liter Canister    | Received: 01/02/2019  |
| Matrix: Air            | Sampling Parameter: NA           |                       |

### Analysis Method - EPA TO-15

|                             |                                                                                          |                                                                 |
|-----------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Preparation: Not Applicable | Analysis: EPA TO-15, Air<br>Batch: IVOA/4209 (HBN: 230691)<br>Analyzed: 01/07/2019 17:02 | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |
|-----------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------|

| Analyte                   | Result (ppb) | Result (ug/m³) | MDL (ppb) | RL (ppb) | Dilution | Qual |
|---------------------------|--------------|----------------|-----------|----------|----------|------|
| trans-1,3-Dichloropropene | ND           | <14            | 3.0       | 10       | 20       | U    |
| 1,1,2-Trichloroethane     | ND           | <16            | 3.0       | 10       | 20       | U    |
| Toluene                   | ND           | <11            | 3.0       | 10       | 20       | U    |
| 2-Hexanone                | ND           | <26            | 6.4       | 20       | 20       | U    |
| Tetrachloroethene         | <b>3200</b>  | <b>21000</b>   | 3.0       | 10       | 20       | E    |
| Dibromochloromethane      | ND           | <26            | 3.0       | 10       | 20       | U    |
| 1,2-Dibromoethane         | ND           | <23            | 3.0       | 10       | 20       | U    |
| Chlorobenzene             | ND           | <14            | 3.0       | 10       | 20       | U    |
| Ethyl benzene             | <b>690</b>   | <b>3000</b>    | 3.0       | 10       | 20       |      |
| m,p-Xylene                | <b>1100</b>  | <b>4700</b>    | 6.0       | 20       | 20       |      |
| o-Xylene                  | <b>2600</b>  | <b>11000</b>   | 3.0       | 10       | 20       | E    |
| Styrene                   | ND           | <26            | 6.0       | 20       | 20       | U    |
| Bromoform                 | ND           | <62            | 6.0       | 20       | 20       | U    |
| 1,1,2,2-Tetrachloroethane | ND           | <21            | 3.0       | 10       | 20       | U    |
| 4-Ethyl toluene           | ND           | <29            | 6.0       | 20       | 20       | U    |
| 1,3,5-Trimethylbenzene    | ND           | <29            | 6.0       | 20       | 20       | U    |
| 1,2,4-Trimethylbenzene    | ND           | <29            | 6.0       | 20       | 20       | U    |
| 1,3-Dichlorobenzene       | ND           | <36            | 6.0       | 20       | 20       | U    |
| 1,4-Dichlorobenzene       | ND           | <36            | 6.0       | 20       | 20       | U    |
| Benzyl chloride           | ND           | <38            | 7.4       | 20       | 20       | U    |
| 1,2-Dichlorobenzene       | ND           | <36            | 6.0       | 20       | 20       | U    |
| 1,2,4-Trichlorobenzene    | ND           | <62            | 8.4       | 20       | 20       | U    |
| Hexachlorobutadiene       | ND           | <64            | 6.0       | 20       | 20       | U    |

### Analysis Method - EPA TO-15

|                             |                                                                                          |                                                                 |
|-----------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Preparation: Not Applicable | Analysis: EPA TO-15, Air<br>Batch: IVOA/4209 (HBN: 230691)<br>Analyzed: 01/07/2019 17:02 | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |
|-----------------------------|------------------------------------------------------------------------------------------|-----------------------------------------------------------------|

| Tentatively Identified Compound | Result (ppb) | Retention Time | Dilution | Qual |
|---------------------------------|--------------|----------------|----------|------|
| Propene                         | 240          | 5.04           | 20       | J    |
| Isobutane                       | 280          | 5.39           | 20       | J    |
| 1-Propene, 2-methyl-            | 140          | 5.59           | 20       | J    |
| Butane                          | 99           | 5.68           | 20       | J    |



## ANALYTICAL REPORT

**Workorder:** 34-1900227

**Client:** Wasatch Environmental,  
Inc.

**Project Manager:** Jessica Helland

### Comments

**Workorder:** 1900227

TO-15 Comment; Compounds flagged with an "E" qualifier should be considered semiquantitative.

**Quality Control:** EPA TO-15 - (HBN: 230691)

The LCS/LSCD percent recovery did not meet performance limits for all compounds. This is not a method a requirement.

### Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

| Method    | Analyst                            | Peer Review                          |
|-----------|------------------------------------|--------------------------------------|
| EPA TO-15 | /S/ Benson Boy<br>01/08/2019 08:57 | /S/ Lisa M. Reid<br>01/08/2019 15:57 |

### Laboratory Contact Information

ALS Environmental  
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## ANALYTICAL REPORT

**Workorder:** 34-1900227

**Client:** Wasatch Environmental,  
Inc.

**Project Manager:** Jessica Helland

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

| Testing Sector | Accreditation Body | Certificate Number | Website |
|----------------|--------------------|--------------------|---------|
| Environmental  | PJLA (DoD ELAP)    |                    |         |
|                | Utah (TNI)         |                    |         |
|                | Nevada             |                    |         |
|                | Oklahoma           |                    |         |
|                | Iowa               |                    |         |

### Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.  
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.  
CRDL = Contract Required Detection Limit  
Reg. Limit = Regulatory Limit.  
ND = Not Detected, testing result not detected above the MDL or RL.  
< This testing result is less than the numerical value.  
\*\* No result could be reported, see sample comments for details.

### Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.  
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.  
B = Qualifier indicates that the analyte was detected in the blank.  
E = Qualifier indicates that the analyte result exceeds calibration range.  
P = Qualifier indicates that the RPD between the two columns is greater than 40%.



## ANALYTICAL REPORT

Report Date: December 05, 2018

Blake Downey  
Wasatch Environmental  
2410 California Ave  
Salt Lake City, UT 84104

Phone: (435) 760-8269

E-mail: [bd@wasatch-environmental.com](mailto:bd@wasatch-environmental.com)

Workorder: **34-1833349**

Project ID: 2249-001d

Purchase Order: 2249-001d

Project Manager Jessica Helland

| Client Sample ID | Lab ID     | Collect Date | Receive Date | Sampling Site |
|------------------|------------|--------------|--------------|---------------|
| EM-1             | 1833349001 | NA           | 11/29/18     | 2249-001d     |

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# ANALYTICAL REPORT

Workorder: **34-1833349**

Client: Wasatch Environmental, Inc.

Project Manager: Jessica Helland

## Analytical Results

|                                    |              |                               |                                                                                          |                      |                                                                 |      |
|------------------------------------|--------------|-------------------------------|------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------|------|
| Sample ID: <b>EM-1</b>             |              | Sampling Site: 2249-001d      |                                                                                          | Received: 11/29/2018 |                                                                 |      |
| Lab ID: 1833349001                 |              | Media: Summa 6 Liter Canister |                                                                                          |                      |                                                                 |      |
| Matrix: Air                        |              | Sampling Parameter: NA        |                                                                                          |                      |                                                                 |      |
| <b>Analysis Method - EPA TO-15</b> |              |                               |                                                                                          |                      |                                                                 |      |
| Preparation: Not Applicable        |              |                               | Analysis: EPA TO-15, Air<br>Batch: IVOA/4180 (HBN: 228587)<br>Analyzed: 12/04/2018 12:42 |                      | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |      |
| Analyte                            | Result (ppb) | Result (ug/m³)                | MDL (ppb)                                                                                | RL (ppb)             | Dilution                                                        | Qual |
| Dichlorodifluoromethane            | ND           | <74                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Chloromethane                      | ND           | <31                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Freon 114                          | ND           | <100                          | 15                                                                                       | 50                   | 100                                                             | U    |
| Vinyl chloride                     | ND           | <38                           | 15                                                                                       | 50                   | 100                                                             | U    |
| 1,3-Butadiene                      | ND           | <33                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Bromomethane                       | ND           | <58                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Chloroethane                       | ND           | <40                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Freon 11                           | ND           | <84                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Freon 113                          | ND           | <110                          | 15                                                                                       | 50                   | 100                                                             | U    |
| 1,1-Dichloroethene                 | ND           | <59                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Acetone                            | 140          | 340                           | 30                                                                                       | 100                  | 100                                                             |      |
| Carbon disulfide                   | 44           | 140                           | 15                                                                                       | 50                   | 100                                                             | J    |
| Methylene chloride                 | 76           | 260                           | 15                                                                                       | 50                   | 100                                                             |      |
| trans-1,2-Dichloroethene           | ND           | <59                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Methyl t-butyl ether               | ND           | <54                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Vinyl acetate                      | ND           | <70                           | 20                                                                                       | 50                   | 100                                                             | U    |
| 2-Butanone                         | 76           | 230                           | 15                                                                                       | 50                   | 100                                                             |      |
| cis-1,2-Dichloroethene             | 15           | 60                            | 15                                                                                       | 50                   | 100                                                             | J    |
| 1,1-Dichloroethane                 | ND           | <61                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Ethyl acetate                      | ND           | <110                          | 30                                                                                       | 100                  | 100                                                             | U    |
| Hexane                             | ND           | <53                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Chloroform                         | ND           | <73                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Tetrahydrofuran                    | 730          | 2200                          | 15                                                                                       | 50                   | 100                                                             |      |
| 1,2-Dichloroethane                 | ND           | <61                           | 15                                                                                       | 50                   | 100                                                             | U    |
| 1,1,1-Trichloroethane              | ND           | <82                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Carbon tetrachloride               | ND           | <94                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Benzene                            | ND           | <48                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Cyclohexane                        | ND           | <52                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Trichloroethene                    | 25           | 140                           | 15                                                                                       | 50                   | 100                                                             | J    |
| 1,2-Dichloropropane                | ND           | <73                           | 15                                                                                       | 50                   | 100                                                             | U    |
| Bromodichloromethane               | ND           | <100                          | 15                                                                                       | 50                   | 100                                                             | U    |
| Heptane                            | ND           | <61                           | 15                                                                                       | 50                   | 100                                                             | U    |
| cis-1,3-Dichloropropene            | ND           | <68                           | 15                                                                                       | 50                   | 100                                                             | U    |
| 4-Methyl-2-pentanone               | 42           | 170                           | 15                                                                                       | 50                   | 100                                                             | J    |

Results Continued on Next Page



# ANALYTICAL REPORT

Workorder: **34-1833349**

Client: Wasatch Environmental, Inc.

Project Manager: Jessica Helland

## Analytical Results

|                                 |              |                               |                                                                                          |                      |                                                                 |
|---------------------------------|--------------|-------------------------------|------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------|
| Sample ID: EM-1                 |              | Sampling Site: 2249-001d      |                                                                                          | Received: 11/29/2018 |                                                                 |
| Lab ID: 1833349001              |              | Media: Summa 6 Liter Canister |                                                                                          |                      |                                                                 |
| Matrix: Air                     |              | Sampling Parameter: NA        |                                                                                          |                      |                                                                 |
| Analysis Method - EPA TO-15     |              |                               |                                                                                          |                      |                                                                 |
| Preparation: Not Applicable     |              |                               | Analysis: EPA TO-15, Air<br>Batch: IVOA/4180 (HBN: 228587)<br>Analyzed: 12/04/2018 12:42 |                      | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |
| Analyte                         | Result (ppb) | Result (ug/m³)                | MDL (ppb)                                                                                | RL (ppb)             | Dilution Qual                                                   |
| trans-1,3-Dichloropropene       | ND           | <68                           | 15                                                                                       | 50                   | 100 U                                                           |
| 1,1,2-Trichloroethane           | ND           | <82                           | 15                                                                                       | 50                   | 100 U                                                           |
| Toluene                         | ND           | <57                           | 15                                                                                       | 50                   | 100 U                                                           |
| 2-Hexanone                      | ND           | <130                          | 32                                                                                       | 100                  | 100 U                                                           |
| Tetrachloroethene               | 830          | 5600                          | 15                                                                                       | 50                   | 100                                                             |
| Dibromochloromethane            | ND           | <130                          | 15                                                                                       | 50                   | 100 U                                                           |
| 1,2-Dibromoethane               | ND           | <120                          | 15                                                                                       | 50                   | 100 U                                                           |
| Chlorobenzene                   | ND           | <69                           | 15                                                                                       | 50                   | 100 U                                                           |
| Ethyl benzene                   | 2800         | 12000                         | 15                                                                                       | 50                   | 100                                                             |
| m,p-Xylene                      | 6900         | 30000                         | 30                                                                                       | 100                  | 100                                                             |
| o-Xylene                        | 4000         | 18000                         | 15                                                                                       | 50                   | 100                                                             |
| Styrene                         | ND           | <130                          | 30                                                                                       | 100                  | 100 U                                                           |
| Bromoform                       | ND           | <310                          | 30                                                                                       | 100                  | 100 U                                                           |
| 1,1,2,2-Tetrachloroethane       | ND           | <100                          | 15                                                                                       | 50                   | 100 U                                                           |
| 4-Ethyl toluene                 | ND           | <150                          | 30                                                                                       | 100                  | 100 U                                                           |
| 1,3,5-Trimethylbenzene          | ND           | <150                          | 30                                                                                       | 100                  | 100 U                                                           |
| 1,2,4-Trimethylbenzene          | ND           | <150                          | 30                                                                                       | 100                  | 100 U                                                           |
| 1,3-Dichlorobenzene             | ND           | <180                          | 30                                                                                       | 100                  | 100 U                                                           |
| 1,4-Dichlorobenzene             | ND           | <180                          | 30                                                                                       | 100                  | 100 U                                                           |
| Benzyl chloride                 | ND           | <190                          | 37                                                                                       | 100                  | 100 U                                                           |
| 1,2-Dichlorobenzene             | ND           | <180                          | 30                                                                                       | 100                  | 100 U                                                           |
| 1,2,4-Trichlorobenzene          | ND           | <310                          | 42                                                                                       | 100                  | 100 U                                                           |
| Hexachlorobutadiene             | ND           | <320                          | 30                                                                                       | 100                  | 100 U                                                           |
| Analysis Method - EPA TO-15     |              |                               |                                                                                          |                      |                                                                 |
| Preparation: Not Applicable     |              |                               | Analysis: EPA TO-15, Air<br>Batch: IVOA/4180 (HBN: 228587)<br>Analyzed: 12/04/2018 12:42 |                      | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |
| Tentatively Identified Compound | Result (ppb) | Retention Time                | Dilution                                                                                 | Qual                 |                                                                 |
| Propene                         | 570          | 5.04                          | 100                                                                                      | J                    |                                                                 |
| Isobutane                       | 930          | 5.40                          | 100                                                                                      | J                    |                                                                 |
| 1-Propene, 2-methyl-            | 340          | 5.59                          | 100                                                                                      | J                    |                                                                 |
| Butane                          | 230          | 5.69                          | 100                                                                                      | J                    |                                                                 |



## ANALYTICAL REPORT

**Workorder:** 34-1833349

**Client:** Wasatch Environmental,  
Inc.

**Project Manager:** Jessica Helland

**Report Authorization** (/S/ is an electronic signature that complies with 21 CFR Part 11)

| Method    | Analyst                            | Peer Review                          |
|-----------|------------------------------------|--------------------------------------|
| EPA TO-15 | /S/ Benson Boy<br>12/04/2018 18:40 | /S/ Lisa M. Reid<br>12/05/2018 12:52 |

### Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

| Testing Sector | Accreditation Body                                              | Certificate Number | Website |
|----------------|-----------------------------------------------------------------|--------------------|---------|
| Environmental  | PJLA (DoD ELAP)<br><br>Utah (TNI)<br>Nevada<br>Oklahoma<br>Iowa |                    |         |



## ANALYTICAL REPORT

**Workorder:** 34-1833349

**Client:** Wasatch Environmental,  
Inc.

**Project Manager:** Jessica Helland

### Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.

RL = Reporting Limit, a verified value of method/media/instrument sensitivity.

CRDL = Contract Required Detection Limit

Reg. Limit = Regulatory Limit.

ND = Not Detected, testing result not detected above the MDL or RL.

< This testing result is less than the numerical value.

\*\* No result could be reported, see sample comments for details.

### Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.

J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.

B = Qualifier indicates that the analyte was detected in the blank.

E = Qualifier indicates that the analyte result exceeds calibration range.

P = Qualifier indicates that the RPD between the two columns is greater than 40%.



## **Appendix M**

### **Groundwater Laboratory Analytical Report**



Blake Downey  
Wasatch Environmental  
2410 West California Avenue  
Salt Lake City, UT 84104  
TEL: (801) 972-8400

RE: Millcreek Henries / 2249-001D

Dear Blake Downey:

Lab Set ID: 1812377

3440 South 700 West  
Salt Lake City, UT 84119

American West Analytical Laboratories received sample(s) on 12/18/2018 for the analyses presented in the following report.

Phone: (801) 263-8686  
Toll Free: (888) 263-8686  
Fax: (801) 263-8687  
e-mail: [awal@awal-labs.com](mailto:awal@awal-labs.com)  
web: [www.awal-labs.com](http://www.awal-labs.com)

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Accreditation Program (NELAP) in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, Wyoming, and Missouri.

All analyses were performed in accordance to the NELAP protocols unless noted otherwise. Accreditation scope documents are available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

Thank You,

Approved by:

Jose G.  
Rocha

Digitally signed by Jose G. Rocha  
DN: cn=Jose G. Rocha,  
o=American West Analytical  
Laboratories, ou,  
email=jose@awal-labs.com,  
c=US  
Date: 2018.12.19 13:49:08  
-07'00'

Laboratory Director or designee



## Volatile Case Narrative

**Client:** Wasatch Environmental  
**Contact:** Mike Cronin  
**Project:** Millcreek Henries / 2249-001d  
**Lab Set ID:** 1812377

---

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web: www.awal-labs.com

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

### **Sample Receipt Information:**

|                               |                            |
|-------------------------------|----------------------------|
| <b>Date of Receipt:</b>       | 12/18/2018                 |
| <b>Date(s) of Collection:</b> | 12/18/2018                 |
| <b>Sample Condition:</b>      | Intact                     |
| <b>C-O-C Discrepancies:</b>   | None                       |
| <b>Method:</b>                | SW-846 8260C/5030C         |
| <b>Analysis:</b>              | Volatile Organic Compounds |

**General Set Comments:** Multiple target analytes were observed above reporting limits.

**Holding Time and Preservation Requirements:** All samples were received in appropriate containers and properly preserved. The analysis and preparation of all samples were performed within the method holding times following the methods stated on the analytical reports.

**Analytical QC Requirements:** All instrument calibration and calibration check requirements were met. All internal standard recoveries met method criterion.

**Batch QC Requirements:** MB, LCS, MS, MSD, RPD, and Surrogates:

**Method Blanks (MBs):** No target analytes were detected above reporting limits, indicating that the procedure was free from contamination.

**Laboratory Control Sample (LCSs):** All LCS recoveries were within control limits, indicating that the preparation and analysis were in control.

**Matrix Spike / Matrix Spike Duplicate (MS/MSD):** All percent recoveries and RPDs (Relative Percent Differences) were inside established limits, indicating no apparent matrix interferences.

**Surrogates:** All surrogate recoveries were within established limits.

**Corrective Action:** None required.



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Millcreek Henries / 2249-001D  
**Lab Sample ID:** 1812377-001A  
**Client Sample ID:** MW-10  
**Collection Date:** 12/18/2018 956h  
**Received Date:** 12/18/2018 1100h

**Contact:** Blake Downey

Test Code: 8260-W

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C/5030C

**Analyzed:** 12/18/2018 1519h

**Units:** µg/L **Dilution Factor:** 100 **Method:** SW8260C

| Compound               | CAS Number | Reporting Limit | Analytical Result | Qual |
|------------------------|------------|-----------------|-------------------|------|
| cis-1,2-Dichloroethene | 156-59-2   | 200             | 1,720             | ~    |

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 5,140  | 5,000         | 103   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 5,490  | 5,000         | 110   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 5,120  | 5,000         | 102   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 5,260  | 5,000         | 105   | 80-124 |      |

~ - The reporting limits were raised due to high analyte concentrations.

**Analyzed:** 12/18/2018 1352h

**Units:** µg/L **Dilution Factor:** 1 **Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.00            | < 2.00            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.00            | < 2.00            |      |
| 1,2,3-Trichlorobenzene                | 87-61-6    | 2.00            | < 2.00            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.00            | < 2.00            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.00            | < 5.00            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.00            | < 2.00            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.00            | < 2.00            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.00            | < 2.00            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.00            | < 2.00            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.00            | < 2.00            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.00            | < 2.00            |      |
| 1,4-Dioxane                           | 123-91-1   | 50.0            | < 50.0            |      |
| 2-Butanone                            | 78-93-3    | 10.0            | 16.9              |      |
| 2-Hexanone                            | 591-78-6   | 5.00            | < 5.00            |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1812377-001A

**Client Sample ID:** MW-10

**Analyzed:** 12/18/2018 1352h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number  | Reporting Limit | Analytical Result | Qual |
|---------------------------|-------------|-----------------|-------------------|------|
| 4-Methyl-2-pentanone      | 108-10-1    | 5.00            | < 5.00            |      |
| Acetone                   | 67-64-1     | 10.0            | < 10.0            |      |
| Benzene                   | 71-43-2     | 2.00            | < 2.00            |      |
| Bromochloromethane        | 74-97-5     | 2.00            | < 2.00            |      |
| Bromodichloromethane      | 75-27-4     | 2.00            | < 2.00            |      |
| Bromoform                 | 75-25-2     | 2.00            | < 2.00            |      |
| Bromomethane              | 74-83-9     | 5.00            | < 5.00            |      |
| Carbon disulfide          | 75-15-0     | 2.00            | < 2.00            |      |
| Carbon tetrachloride      | 56-23-5     | 2.00            | < 2.00            |      |
| Chlorobenzene             | 108-90-7    | 2.00            | < 2.00            |      |
| Chloroethane              | 75-00-3     | 2.00            | < 2.00            |      |
| Chloroform                | 67-66-3     | 2.00            | < 2.00            |      |
| Chloromethane             | 74-87-3     | 3.00            | < 3.00            |      |
| cis-1,3-Dichloropropene   | 10061-01-5  | 2.00            | < 2.00            |      |
| Cyclohexane               | 110-82-7    | 2.00            | < 2.00            |      |
| Dibromochloromethane      | 124-48-1    | 2.00            | < 2.00            |      |
| Dichlorodifluoromethane   | 75-71-8     | 2.00            | < 2.00            |      |
| Ethylbenzene              | 100-41-4    | 2.00            | < 2.00            |      |
| Isopropylbenzene          | 98-82-8     | 2.00            | < 2.00            |      |
| m,p-Xylene                | 179601-23-1 | 2.00            | < 2.00            |      |
| Methyl Acetate            | 79-20-9     | 5.00            | < 5.00            |      |
| Methyl tert-butyl ether   | 1634-04-4   | 2.00            | < 2.00            |      |
| Methylcyclohexane         | 108-87-2    | 2.00            | < 2.00            |      |
| Methylene chloride        | 75-09-2     | 2.00            | < 2.00            |      |
| Naphthalene               | 91-20-3     | 2.00            | < 2.00            |      |
| o-Xylene                  | 95-47-6     | 2.00            | < 2.00            |      |
| Styrene                   | 100-42-5    | 2.00            | < 2.00            |      |
| Tetrachloroethene         | 127-18-4    | 2.00            | <b>8.93</b>       |      |
| Toluene                   | 108-88-3    | 2.00            | < 2.00            |      |
| trans-1,2-Dichloroethene  | 156-60-5    | 2.00            | <b>44.6</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6  | 2.00            | < 2.00            |      |
| Trichloroethene           | 79-01-6     | 2.00            | < 2.00            |      |
| Trichlorofluoromethane    | 75-69-4     | 2.00            | < 2.00            |      |
| Vinyl chloride            | 75-01-4     | 1.00            | <b>30.7</b>       |      |



**Lab Sample ID:** 1812377-001A

**Client Sample ID:** MW-10

**Analyzed:** 12/18/2018 1352h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 49.9   | 50.00         | 99.9  | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 52.8   | 50.00         | 106   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 51.0   | 50.00         | 102   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 51.2   | 50.00         | 102   | 80-124 |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer





# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental  
**Project:** Millcreek Henries / 2249-001D  
**Lab Sample ID:** 1812377-002A  
**Client Sample ID:** MW-11  
**Collection Date:** 12/18/2018 1033h  
**Received Date:** 12/18/2018 1100h

**Contact:** Blake Downey

Test Code: 8260-W

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C/5030C

**Analyzed:** 12/18/2018 1619h

**Units:** µg/L **Dilution Factor:** 100 **Method:** SW8260C

| Compound               | CAS Number | Reporting Limit | Analytical Result | Qual |
|------------------------|------------|-----------------|-------------------|------|
| cis-1,2-Dichloroethene | 156-59-2   | 200             | 1,590             | ~    |

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 5,030  | 5,000         | 101   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 5,380  | 5,000         | 108   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 5,100  | 5,000         | 102   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 5,180  | 5,000         | 104   | 80-124 |      |

~ - The reporting limits were raised due to high analyte concentrations.

**Analyzed:** 12/18/2018 1412h

**Units:** µg/L **Dilution Factor:** 1 **Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.00            | < 2.00            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.00            | < 2.00            |      |
| 1,2,3-Trichlorobenzene                | 87-61-6    | 2.00            | < 2.00            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.00            | < 2.00            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.00            | < 5.00            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.00            | < 2.00            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.00            | < 2.00            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.00            | < 2.00            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.00            | < 2.00            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.00            | < 2.00            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.00            | < 2.00            |      |
| 1,4-Dioxane                           | 123-91-1   | 50.0            | < 50.0            |      |
| 2-Butanone                            | 78-93-3    | 10.0            | < 10.0            |      |
| 2-Hexanone                            | 591-78-6   | 5.00            | < 5.00            |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



Lab Sample ID: 1812377-002A

Client Sample ID: MW-11

Analyzed: 12/18/2018 1412h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number  | Reporting Limit | Analytical Result | Qual |
|---------------------------|-------------|-----------------|-------------------|------|
| 4-Methyl-2-pentanone      | 108-10-1    | 5.00            | < 5.00            |      |
| Acetone                   | 67-64-1     | 10.0            | < 10.0            |      |
| Benzene                   | 71-43-2     | 2.00            | < 2.00            |      |
| Bromochloromethane        | 74-97-5     | 2.00            | < 2.00            |      |
| Bromodichloromethane      | 75-27-4     | 2.00            | < 2.00            |      |
| Bromoform                 | 75-25-2     | 2.00            | < 2.00            |      |
| Bromomethane              | 74-83-9     | 5.00            | < 5.00            |      |
| Carbon disulfide          | 75-15-0     | 2.00            | < 2.00            |      |
| Carbon tetrachloride      | 56-23-5     | 2.00            | < 2.00            |      |
| Chlorobenzene             | 108-90-7    | 2.00            | < 2.00            |      |
| Chloroethane              | 75-00-3     | 2.00            | < 2.00            |      |
| Chloroform                | 67-66-3     | 2.00            | < 2.00            |      |
| Chloromethane             | 74-87-3     | 3.00            | < 3.00            |      |
| cis-1,3-Dichloropropene   | 10061-01-5  | 2.00            | < 2.00            |      |
| Cyclohexane               | 110-82-7    | 2.00            | < 2.00            |      |
| Dibromochloromethane      | 124-48-1    | 2.00            | < 2.00            |      |
| Dichlorodifluoromethane   | 75-71-8     | 2.00            | < 2.00            |      |
| Ethylbenzene              | 100-41-4    | 2.00            | < 2.00            |      |
| Isopropylbenzene          | 98-82-8     | 2.00            | < 2.00            |      |
| m,p-Xylene                | 179601-23-1 | 2.00            | < 2.00            |      |
| Methyl Acetate            | 79-20-9     | 5.00            | < 5.00            |      |
| Methyl tert-butyl ether   | 1634-04-4   | 2.00            | < 2.00            |      |
| Methylcyclohexane         | 108-87-2    | 2.00            | < 2.00            |      |
| Methylene chloride        | 75-09-2     | 2.00            | < 2.00            |      |
| Naphthalene               | 91-20-3     | 2.00            | < 2.00            |      |
| o-Xylene                  | 95-47-6     | 2.00            | < 2.00            |      |
| Styrene                   | 100-42-5    | 2.00            | < 2.00            |      |
| Tetrachloroethene         | 127-18-4    | 2.00            | < 2.00            |      |
| Toluene                   | 108-88-3    | 2.00            | < 2.00            |      |
| trans-1,2-Dichloroethene  | 156-60-5    | 2.00            | <b>36.6</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6  | 2.00            | < 2.00            |      |
| Trichloroethene           | 79-01-6     | 2.00            | < 2.00            |      |
| Trichlorofluoromethane    | 75-69-4     | 2.00            | < 2.00            |      |
| Vinyl chloride            | 75-01-4     | 1.00            | <b>16.3</b>       |      |



**Lab Sample ID:** 1812377-002A

**Client Sample ID:** MW-11

**Analyzed:** 12/18/2018 1412h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 50.8   | 50.00         | 102   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 55.0   | 50.00         | 110   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 51.0   | 50.00         | 102   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 52.5   | 50.00         | 105   | 80-124 |      |

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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812377

**Project:** Millcreek Henries / 2249-001D

**Contact:** Blake Downey

**Dept:** MSVOA

**QC Type:** LCS

| Analyte                     |                   | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|-------------------|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | LCS VOC-2 121818A | Date Analyzed: | 12/18/2018 1020h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-W            |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane       |                   | 19.1           | µg/L             | SW8260C | 0.142  | 2.00            | 20.00         | 0                 | 95.5 | 73 - 139 |              |       |           |      |
| 1,1-Dichloroethene          |                   | 22.7           | µg/L             | SW8260C | 0.275  | 2.00            | 20.00         | 0                 | 114  | 37 - 144 |              |       |           |      |
| 1,2-Dichlorobenzene         |                   | 19.5           | µg/L             | SW8260C | 0.105  | 2.00            | 20.00         | 0                 | 97.6 | 70 - 130 |              |       |           |      |
| 1,2-Dichloroethane          |                   | 18.5           | µg/L             | SW8260C | 0.0988 | 2.00            | 20.00         | 0                 | 92.4 | 76 - 132 |              |       |           |      |
| 1,2-Dichloropropane         |                   | 22.5           | µg/L             | SW8260C | 0.0968 | 2.00            | 20.00         | 0                 | 112  | 81 - 121 |              |       |           |      |
| Benzene                     |                   | 20.9           | µg/L             | SW8260C | 0.0956 | 2.00            | 20.00         | 0                 | 104  | 82 - 132 |              |       |           |      |
| Chlorobenzene               |                   | 19.6           | µg/L             | SW8260C | 0.0832 | 2.00            | 20.00         | 0                 | 98.0 | 74 - 126 |              |       |           |      |
| Chloroform                  |                   | 20.1           | µg/L             | SW8260C | 0.0998 | 2.00            | 20.00         | 0                 | 101  | 85 - 124 |              |       |           |      |
| Ethylbenzene                |                   | 19.6           | µg/L             | SW8260C | 0.103  | 2.00            | 20.00         | 0                 | 97.8 | 67 - 118 |              |       |           |      |
| Isopropylbenzene            |                   | 19.5           | µg/L             | SW8260C | 0.131  | 2.00            | 20.00         | 0                 | 97.4 | 68 - 127 |              |       |           |      |
| Methyl tert-butyl ether     |                   | 19.5           | µg/L             | SW8260C | 0.206  | 2.00            | 20.00         | 0                 | 97.6 | 58 - 131 |              |       |           |      |
| Methylene chloride          |                   | 21.2           | µg/L             | SW8260C | 0.400  | 2.00            | 20.00         | 0                 | 106  | 65 - 154 |              |       |           |      |
| Naphthalene                 |                   | 16.3           | µg/L             | SW8260C | 0.159  | 2.00            | 20.00         | 0                 | 81.4 | 63 - 129 |              |       |           |      |
| Toluene                     |                   | 20.3           | µg/L             | SW8260C | 0.0858 | 2.00            | 20.00         | 0                 | 102  | 69 - 129 |              |       |           |      |
| Trichloroethene             |                   | 19.8           | µg/L             | SW8260C | 0.105  | 2.00            | 20.00         | 0                 | 98.8 | 75 - 136 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                   | 50.2           | µg/L             | SW8260C |        |                 | 50.00         |                   | 100  | 80 - 136 |              |       |           |      |
| Surr: 4-Bromofluorobenzene  |                   | 50.0           | µg/L             | SW8260C |        |                 | 50.00         |                   | 100  | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane  |                   | 51.1           | µg/L             | SW8260C |        |                 | 50.00         |                   | 102  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8            |                   | 51.6           | µg/L             | SW8260C |        |                 | 50.00         |                   | 103  | 81 - 123 |              |       |           |      |



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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812377

**Project:** Millcreek Henries / 2249-001D

**Contact:** Blake Downey

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                               |  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|---------------------------------------|--|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|--------|--------------|-------|-----------|------|
| Lab Sample ID: MB VOC-2 121818A       |  | Date Analyzed: | 12/18/2018 1100h |         |        |                 |               |                   |      |        |              |       |           |      |
| Test Code: 8260-W                     |  |                |                  |         |        |                 |               |                   |      |        |              |       |           |      |
| 1,1,1-Trichloroethane                 |  | < 2.00         | µg/L             | SW8260C | 0.142  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2,2-Tetrachloroethane             |  | < 2.00         | µg/L             | SW8260C | 0.0872 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane |  | < 2.00         | µg/L             | SW8260C | 0.322  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloroethane                 |  | < 2.00         | µg/L             | SW8260C | 0.0847 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethane                    |  | < 2.00         | µg/L             | SW8260C | 0.116  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethene                    |  | < 2.00         | µg/L             | SW8260C | 0.275  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2,3-Trichlorobenzene                |  | < 2.00         | µg/L             | SW8260C | 0.220  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2,4-Trichlorobenzene                |  | < 2.00         | µg/L             | SW8260C | 0.271  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromo-3-chloropropane           |  | < 5.00         | µg/L             | SW8260C | 0.312  | 5.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromoethane                     |  | < 2.00         | µg/L             | SW8260C | 0.0828 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.105  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloroethane                    |  | < 2.00         | µg/L             | SW8260C | 0.0988 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloropropane                   |  | < 2.00         | µg/L             | SW8260C | 0.0968 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,3-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.118  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,4-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.272  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,4-Dioxane                           |  | < 50.0         | µg/L             | SW8260C | 11.9   | 50.0            |               |                   |      |        |              |       |           |      |
| 2-Butanone                            |  | < 10.0         | µg/L             | SW8260C | 0.587  | 10.0            |               |                   |      |        |              |       |           |      |
| 2-Hexanone                            |  | < 5.00         | µg/L             | SW8260C | 0.215  | 5.00            |               |                   |      |        |              |       |           |      |
| 4-Methyl-2-pentanone                  |  | < 5.00         | µg/L             | SW8260C | 0.238  | 5.00            |               |                   |      |        |              |       |           |      |
| Acetone                               |  | < 10.0         | µg/L             | SW8260C | 1.13   | 10.0            |               |                   |      |        |              |       |           |      |
| Benzene                               |  | < 2.00         | µg/L             | SW8260C | 0.0956 | 2.00            |               |                   |      |        |              |       |           |      |
| Bromochloromethane                    |  | < 2.00         | µg/L             | SW8260C | 0.146  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromodichloromethane                  |  | < 2.00         | µg/L             | SW8260C | 0.0819 | 2.00            |               |                   |      |        |              |       |           |      |
| Bromoform                             |  | < 2.00         | µg/L             | SW8260C | 0.131  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromomethane                          |  | < 5.00         | µg/L             | SW8260C | 3.45   | 5.00            |               |                   |      |        |              |       |           |      |
| Carbon disulfide                      |  | < 2.00         | µg/L             | SW8260C | 0.293  | 2.00            |               |                   |      |        |              |       |           |      |
| Carbon tetrachloride                  |  | < 2.00         | µg/L             | SW8260C | 0.178  | 2.00            |               |                   |      |        |              |       |           |      |



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812377

**Project:** Millcreek Henries / 2249-001D

**Contact:** Blake Downey

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                     |                  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|------------------|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | MB VOC-2 121818A | Date Analyzed: | 12/18/2018 1100h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-W           |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| Chlorobenzene               |                  | < 2.00         | µg/L             | SW8260C | 0.0832 | 2.00            |               |                   |      |          |              |       |           |      |
| Chloroethane                |                  | < 2.00         | µg/L             | SW8260C | 1.01   | 2.00            |               |                   |      |          |              |       |           |      |
| Chloroform                  |                  | < 2.00         | µg/L             | SW8260C | 0.0998 | 2.00            |               |                   |      |          |              |       |           |      |
| Chloromethane               |                  | < 3.00         | µg/L             | SW8260C | 0.836  | 3.00            |               |                   |      |          |              |       |           |      |
| cis-1,2-Dichloroethene      |                  | < 2.00         | µg/L             | SW8260C | 0.129  | 2.00            |               |                   |      |          |              |       |           |      |
| cis-1,3-Dichloropropene     |                  | < 2.00         | µg/L             | SW8260C | 0.114  | 2.00            |               |                   |      |          |              |       |           |      |
| Cyclohexane                 |                  | < 2.00         | µg/L             | SW8260C | 0.488  | 2.00            |               |                   |      |          |              |       |           |      |
| Dibromochloromethane        |                  | < 2.00         | µg/L             | SW8260C | 0.0924 | 2.00            |               |                   |      |          |              |       |           |      |
| Dichlorodifluoromethane     |                  | < 2.00         | µg/L             | SW8260C | 0.163  | 2.00            |               |                   |      |          |              |       |           |      |
| Ethylbenzene                |                  | < 2.00         | µg/L             | SW8260C | 0.103  | 2.00            |               |                   |      |          |              |       |           |      |
| Isopropylbenzene            |                  | < 2.00         | µg/L             | SW8260C | 0.131  | 2.00            |               |                   |      |          |              |       |           |      |
| m,p-Xylene                  |                  | < 2.00         | µg/L             | SW8260C | 0.205  | 2.00            |               |                   |      |          |              |       |           |      |
| Methyl Acetate              |                  | < 5.00         | µg/L             | SW8260C | 1.21   | 5.00            |               |                   |      |          |              |       |           |      |
| Methyl tert-butyl ether     |                  | < 2.00         | µg/L             | SW8260C | 0.206  | 2.00            |               |                   |      |          |              |       |           |      |
| Methylcyclohexane           |                  | < 2.00         | µg/L             | SW8260C | 0.282  | 2.00            |               |                   |      |          |              |       |           |      |
| Methylene chloride          |                  | < 2.00         | µg/L             | SW8260C | 0.400  | 2.00            |               |                   |      |          |              |       |           |      |
| Naphthalene                 |                  | < 2.00         | µg/L             | SW8260C | 0.159  | 2.00            |               |                   |      |          |              |       |           |      |
| o-Xylene                    |                  | < 2.00         | µg/L             | SW8260C | 0.119  | 2.00            |               |                   |      |          |              |       |           |      |
| Styrene                     |                  | < 2.00         | µg/L             | SW8260C | 0.149  | 2.00            |               |                   |      |          |              |       |           |      |
| Tetrachloroethene           |                  | < 2.00         | µg/L             | SW8260C | 0.170  | 2.00            |               |                   |      |          |              |       |           |      |
| Toluene                     |                  | < 2.00         | µg/L             | SW8260C | 0.0858 | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,2-Dichloroethene    |                  | < 2.00         | µg/L             | SW8260C | 0.327  | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,3-Dichloropropene   |                  | < 2.00         | µg/L             | SW8260C | 0.127  | 2.00            |               |                   |      |          |              |       |           |      |
| Trichloroethene             |                  | < 2.00         | µg/L             | SW8260C | 0.105  | 2.00            |               |                   |      |          |              |       |           |      |
| Trichlorofluoromethane      |                  | < 2.00         | µg/L             | SW8260C | 0.180  | 2.00            |               |                   |      |          |              |       |           |      |
| Vinyl chloride              |                  | < 1.00         | µg/L             | SW8260C | 0.184  | 1.00            |               |                   |      |          |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                  | 51.3           | µg/L             | SW8260C |        |                 | 50.00         |                   | 103  | 80 - 136 |              |       |           |      |

Report Date: 12/19/2018 Page 11 of 22

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.





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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812377

**Project:** Millcreek Henries / 2249-001D

**Contact:** Blake Downey

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                                | Result         | Units      | Method  | MDL | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|----------------------------------------|----------------|------------|---------|-----|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| <b>Lab Sample ID:</b> MB VOC-2 121818A | Date Analyzed: | 12/18/2018 | 1100h   |     |                 |               |                   |      |          |              |       |           |      |
| Test Code:                             | 8260-W         |            |         |     |                 |               |                   |      |          |              |       |           |      |
| Surr: 4-Bromofluorobenzene             | 53.6           | µg/L       | SW8260C |     |                 | 50.00         |                   | 107  | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane             | 51.8           | µg/L       | SW8260C |     |                 | 50.00         |                   | 104  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8                       | 52.1           | µg/L       | SW8260C |     |                 | 50.00         |                   | 104  | 81 - 123 |              |       |           |      |



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812377

**Project:** Millcreek Henries / 2249-001D

**Contact:** Blake Downey

**Dept:** MSVOA

**QC Type:** MS

| Analyte                       |  | Result         | Units            | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-------------------------------|--|----------------|------------------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID: 1812377-001AMS |  | Date Analyzed: | 12/18/2018 1539h |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W             |  |                |                  |         |      |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane         |  | 1,860          | µg/L             | SW8260C | 14.2 | 200             | 2,000         | 0                 | 93.2 | 67 - 147 |              |       |           |      |
| 1,1-Dichloroethene            |  | 1,910          | µg/L             | SW8260C | 27.5 | 200             | 2,000         | 0.34              | 95.7 | 51 - 152 |              |       |           |      |
| 1,2-Dichlorobenzene           |  | 1,910          | µg/L             | SW8260C | 10.5 | 200             | 2,000         | 0                 | 95.6 | 70 - 130 |              |       |           |      |
| 1,2-Dichloroethane            |  | 1,850          | µg/L             | SW8260C | 9.88 | 200             | 2,000         | 0                 | 92.6 | 39 - 162 |              |       |           |      |
| 1,2-Dichloropropane           |  | 2,160          | µg/L             | SW8260C | 9.68 | 200             | 2,000         | 0                 | 108  | 59 - 135 |              |       |           |      |
| Benzene                       |  | 2,100          | µg/L             | SW8260C | 9.56 | 200             | 2,000         | 0.55              | 105  | 66 - 145 |              |       |           |      |
| Chlorobenzene                 |  | 1,960          | µg/L             | SW8260C | 8.32 | 200             | 2,000         | 0                 | 98.2 | 63 - 140 |              |       |           |      |
| Chloroform                    |  | 2,010          | µg/L             | SW8260C | 9.98 | 200             | 2,000         | 0                 | 101  | 50 - 146 |              |       |           |      |
| Ethylbenzene                  |  | 1,950          | µg/L             | SW8260C | 10.3 | 200             | 2,000         | 0.7               | 97.6 | 69 - 133 |              |       |           |      |
| Isopropylbenzene              |  | 1,940          | µg/L             | SW8260C | 13.1 | 200             | 2,000         | 0                 | 96.8 | 60 - 147 |              |       |           |      |
| Methyl tert-butyl ether       |  | 1,540          | µg/L             | SW8260C | 20.6 | 200             | 2,000         | 0                 | 76.8 | 37 - 189 |              |       |           |      |
| Methylene chloride            |  | 2,120          | µg/L             | SW8260C | 40.0 | 200             | 2,000         | 0                 | 106  | 30 - 192 |              |       |           |      |
| Naphthalene                   |  | 1,540          | µg/L             | SW8260C | 15.9 | 200             | 2,000         | 0.96              | 77.1 | 41 - 131 |              |       |           |      |
| Toluene                       |  | 2,060          | µg/L             | SW8260C | 8.58 | 200             | 2,000         | 1.76              | 103  | 18 - 192 |              |       |           |      |
| Trichloroethene               |  | 1,880          | µg/L             | SW8260C | 10.5 | 200             | 2,000         | 0.63              | 94.1 | 61 - 153 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4   |  | 4,980          | µg/L             | SW8260C |      |                 | 5,000         |                   | 99.6 | 72 - 151 |              |       |           |      |
| Surr: 4-Bromofluorobenzene    |  | 5,230          | µg/L             | SW8260C |      |                 | 5,000         |                   | 105  | 80 - 152 |              |       |           |      |
| Surr: Dibromofluoromethane    |  | 5,070          | µg/L             | SW8260C |      |                 | 5,000         |                   | 101  | 72 - 135 |              |       |           |      |
| Surr: Toluene-d8              |  | 5,220          | µg/L             | SW8260C |      |                 | 5,000         |                   | 104  | 80 - 124 |              |       |           |      |



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e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812377

**Project:** Millcreek Henries / 2249-001D

**Contact:** Blake Downey

**Dept:** MSVOA

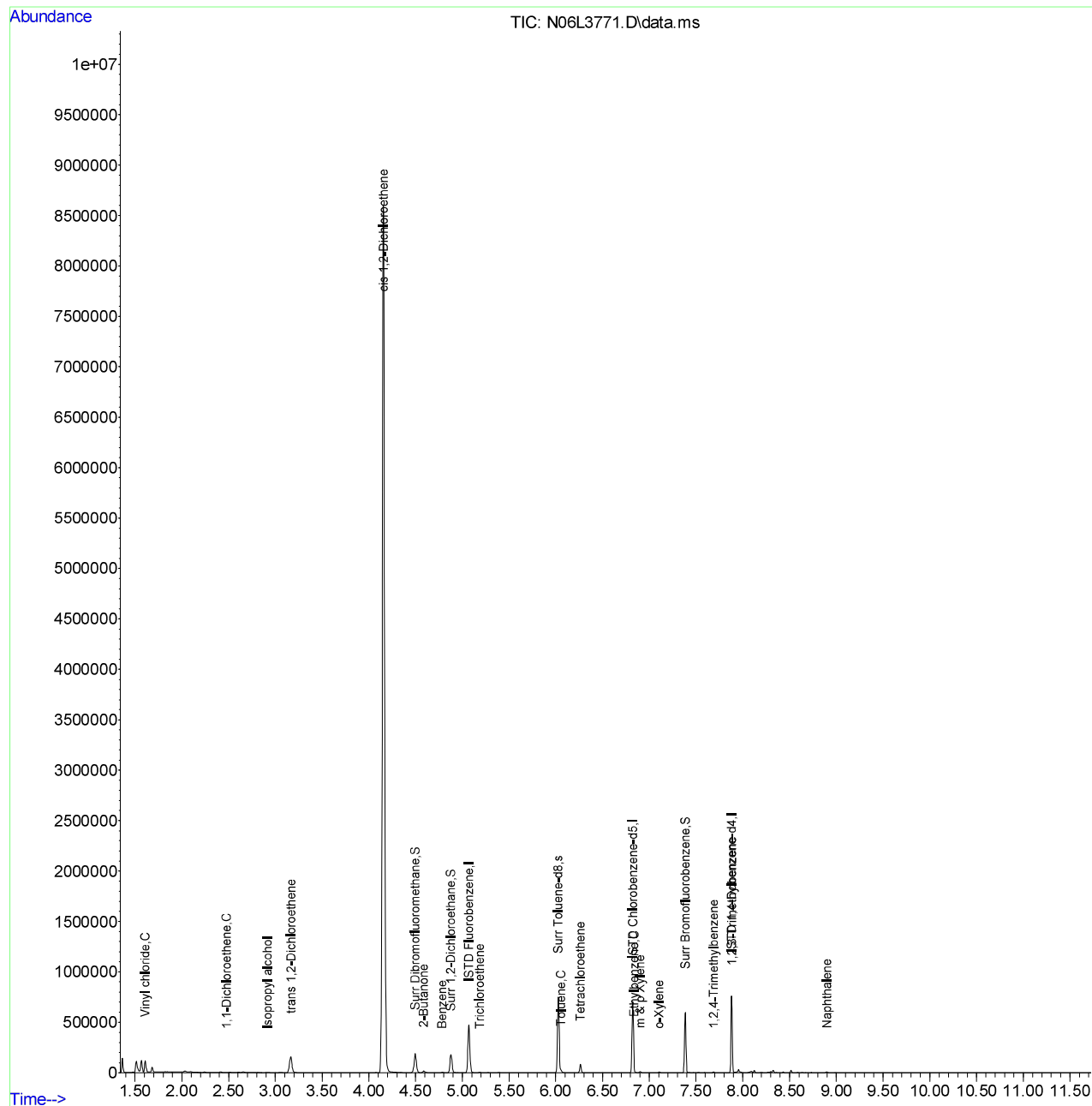
**QC Type:** MSD

| Analyte                        |  | Result         | Units            | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|--------------------------------|--|----------------|------------------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID: 1812377-001AMSD |  | Date Analyzed: | 12/18/2018 1559h |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W              |  |                |                  |         |      |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane          |  | 1,930          | µg/L             | SW8260C | 14.2 | 200             | 2,000         | 0                 | 96.4 | 67 - 147 | 1860         | 3.43  | 25        |      |
| 1,1-Dichloroethene             |  | 1,990          | µg/L             | SW8260C | 27.5 | 200             | 2,000         | 0.34              | 99.5 | 51 - 152 | 1910         | 3.94  | 25        |      |
| 1,2-Dichlorobenzene            |  | 1,970          | µg/L             | SW8260C | 10.5 | 200             | 2,000         | 0                 | 98.6 | 70 - 130 | 1910         | 3.09  | 25        |      |
| 1,2-Dichloroethane             |  | 1,880          | µg/L             | SW8260C | 9.88 | 200             | 2,000         | 0                 | 93.8 | 39 - 162 | 1850         | 1.34  | 25        |      |
| 1,2-Dichloropropane            |  | 2,200          | µg/L             | SW8260C | 9.68 | 200             | 2,000         | 0                 | 110  | 59 - 135 | 2160         | 2.11  | 25        |      |
| Benzene                        |  | 2,120          | µg/L             | SW8260C | 9.56 | 200             | 2,000         | 0.55              | 106  | 66 - 145 | 2100         | 0.995 | 25        |      |
| Chlorobenzene                  |  | 1,990          | µg/L             | SW8260C | 8.32 | 200             | 2,000         | 0                 | 99.6 | 63 - 140 | 1960         | 1.47  | 25        |      |
| Chloroform                     |  | 2,050          | µg/L             | SW8260C | 9.98 | 200             | 2,000         | 0                 | 103  | 50 - 146 | 2010         | 1.97  | 25        |      |
| Ethylbenzene                   |  | 1,980          | µg/L             | SW8260C | 10.3 | 200             | 2,000         | 0.7               | 98.8 | 69 - 133 | 1950         | 1.17  | 25        |      |
| Isopropylbenzene               |  | 1,970          | µg/L             | SW8260C | 13.1 | 200             | 2,000         | 0                 | 98.3 | 60 - 147 | 1940         | 1.54  | 25        |      |
| Methyl tert-butyl ether        |  | 1,510          | µg/L             | SW8260C | 20.6 | 200             | 2,000         | 0                 | 75.6 | 37 - 189 | 1540         | 1.58  | 25        |      |
| Methylene chloride             |  | 2,110          | µg/L             | SW8260C | 40.0 | 200             | 2,000         | 0                 | 105  | 30 - 192 | 2120         | 0.473 | 25        |      |
| Naphthalene                    |  | 1,560          | µg/L             | SW8260C | 15.9 | 200             | 2,000         | 0.96              | 77.8 | 41 - 131 | 1540         | 0.904 | 25        |      |
| Toluene                        |  | 2,080          | µg/L             | SW8260C | 8.58 | 200             | 2,000         | 1.76              | 104  | 18 - 192 | 2060         | 0.919 | 25        |      |
| Trichloroethene                |  | 1,930          | µg/L             | SW8260C | 10.5 | 200             | 2,000         | 0.63              | 96.5 | 61 - 153 | 1880         | 2.57  | 25        |      |
| Surr: 1,2-Dichloroethane-d4    |  | 4,960          | µg/L             | SW8260C |      |                 | 5,000         |                   | 99.2 | 72 - 151 |              |       |           |      |
| Surr: 4-Bromofluorobenzene     |  | 5,160          | µg/L             | SW8260C |      |                 | 5,000         |                   | 103  | 80 - 152 |              |       |           |      |
| Surr: Dibromofluoromethane     |  | 5,130          | µg/L             | SW8260C |      |                 | 5,000         |                   | 103  | 72 - 135 |              |       |           |      |
| Surr: Toluene-d8               |  | 5,210          | µg/L             | SW8260C |      |                 | 5,000         |                   | 104  | 80 - 124 |              |       |           |      |

# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\DEC18-2\18DEC18\  
 Data File : N06L3771.D  
 Acq On : 18 Dec 2018 01:52 pm  
 Operator :  
 Sample : 1812377-001A  
 Misc : SAMP 5.0ML 10F3 DG  
 ALS Vial : 9 Sample Multiplier: 1

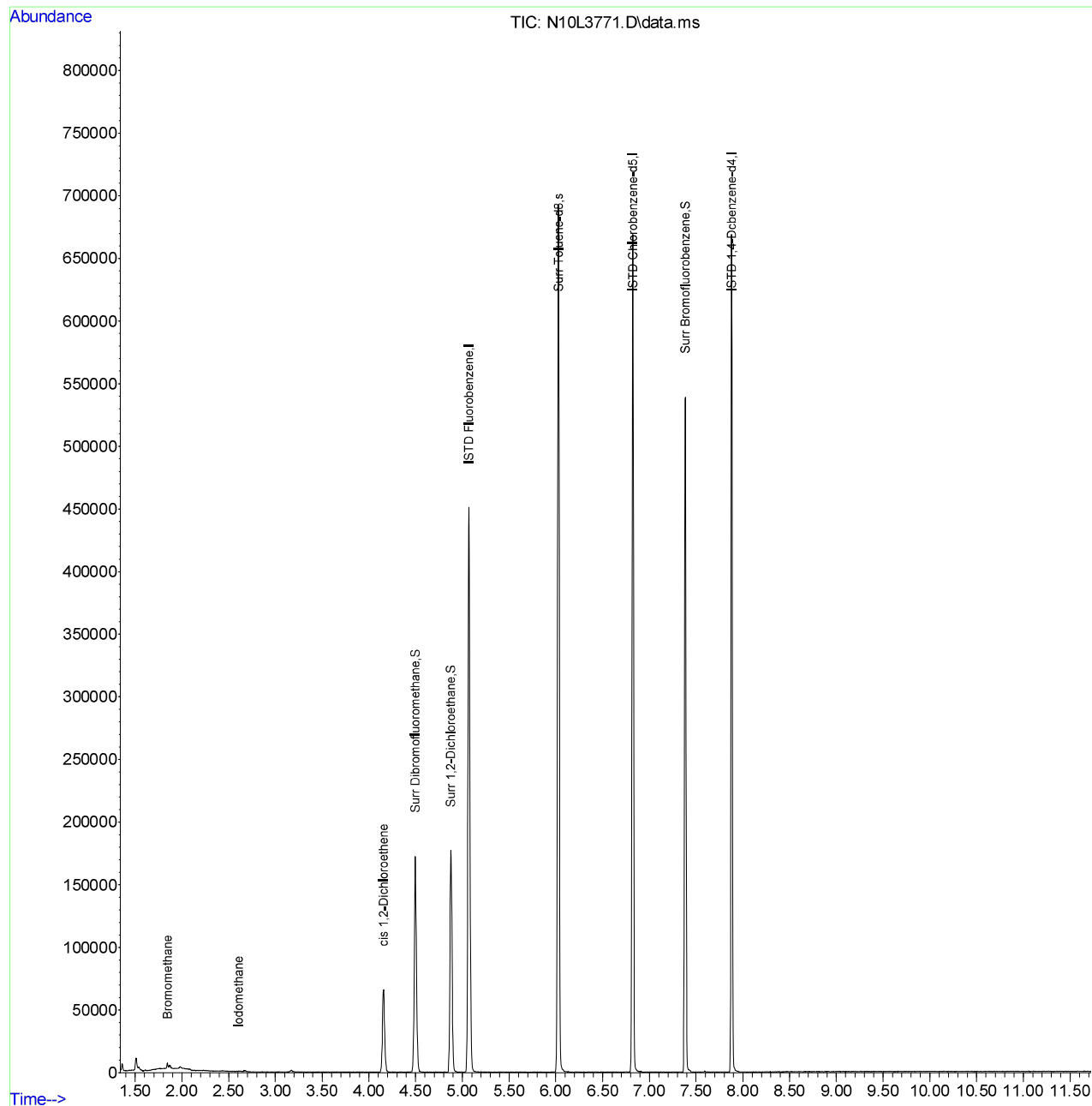
Quant Time: Dec 18 14:04:22 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA2W\_78.M  
 Quant Title : VOA Calibration  
 QLast Update : Thu Sep 20 09:34:09 2018  
 Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\DEC18-2\18DEC18\  
 Data File : N10L3771.D  
 Acq On : 18 Dec 2018 03:19 pm  
 Operator :  
 Sample : 1812377-001A  
 Misc : SAMP 500µL/50ML 20F3 DG  
 ALS Vial : 13 Sample Multiplier: 100

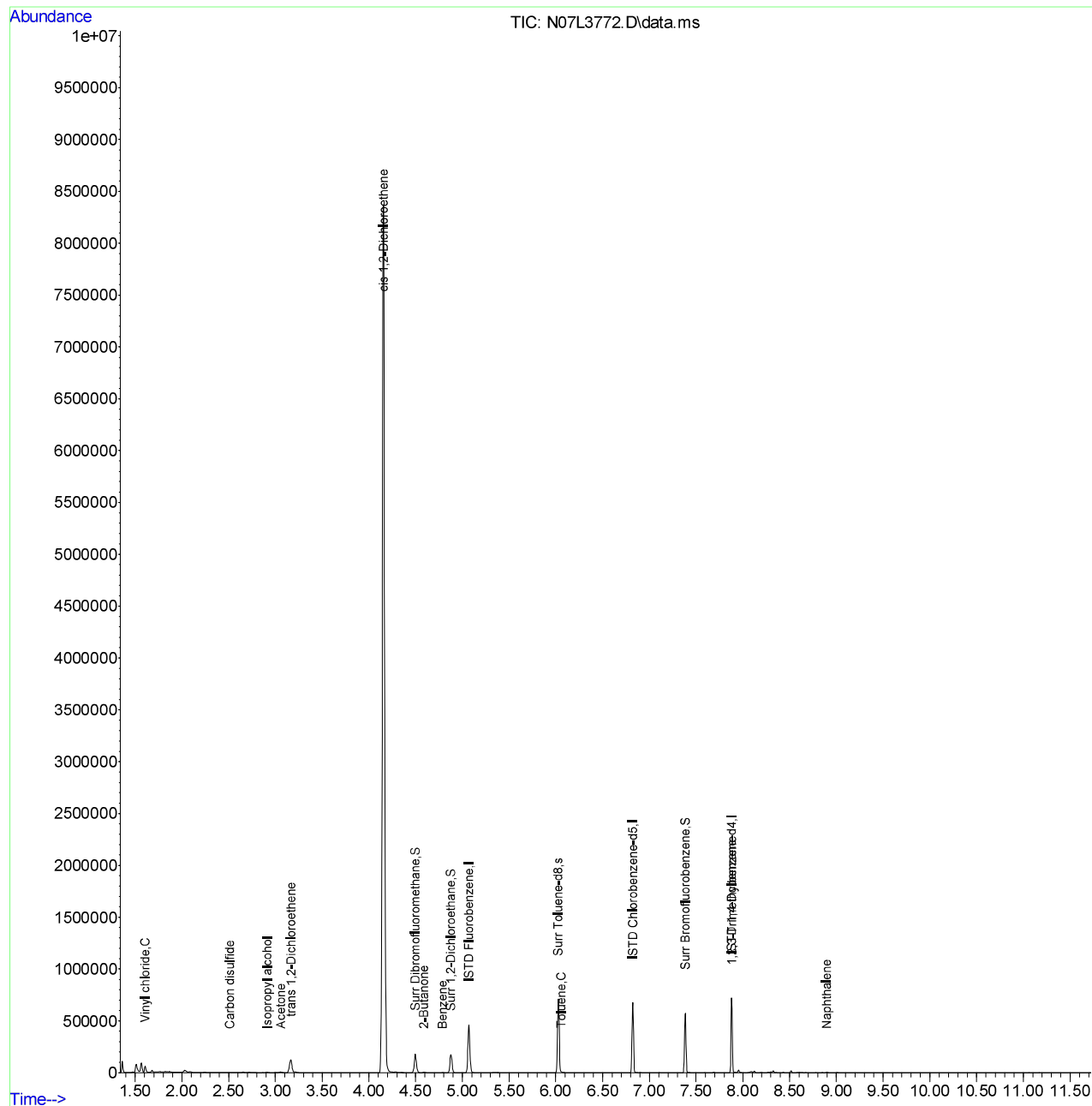
Quant Time: Dec 18 15:31:27 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA2W\_78.M  
 Quant Title : VOA Calibration  
 QLast Update : Thu Sep 20 09:34:09 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : D:\MassHunter\GCMS\1\data\DEC18-2\18DEC18\  
 Data File : N07L3772.D  
 Acq On : 18 Dec 2018 02:12 pm  
 Operator :  
 Sample : 1812377-002A  
 Misc : SAMP 5.0ML 10F3 DG  
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 18 14:24:07 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA2W\_78.M  
 Quant Title : VOA Calibration  
 QLast Update : Thu Sep 20 09:34:09 2018  
 Response via : Initial Calibration

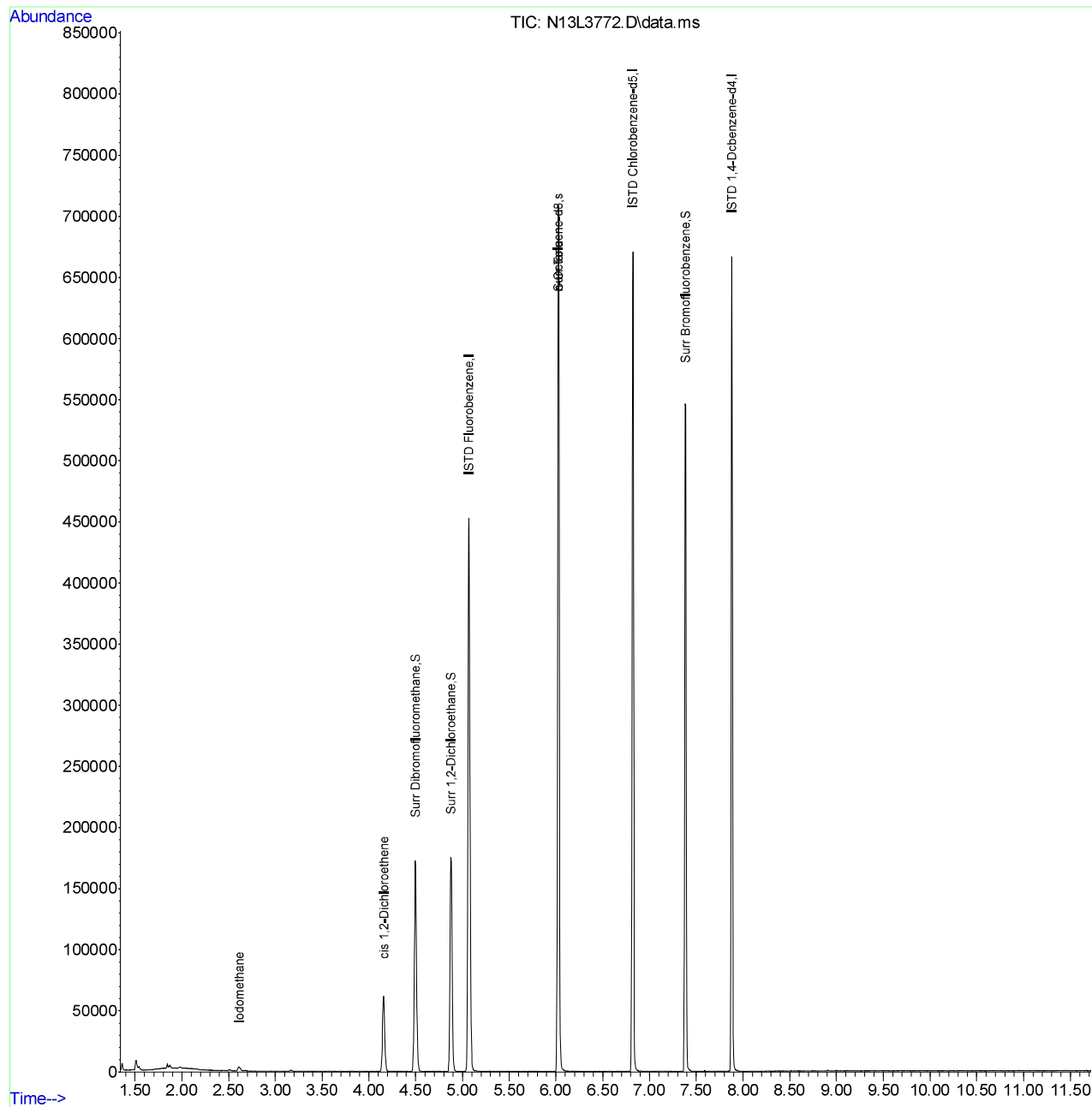




Quantitation Report (Not Reviewed)

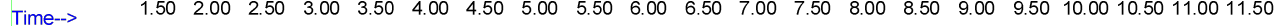
Data Path : D:\MassHunter\GCMS\1\data\DEC18-2\18DEC18A\  
 Data File : N13L3772.D  
 Acq On : 18 Dec 2018 04:19 pm  
 Operator :  
 Sample : 1812377-002A  
 Misc : SAMP 500µL/50ML 20F3 DG  
 ALS Vial : 16 Sample Multiplier: 100

Quant Time: Dec 18 16:31:00 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA2W\_78.M  
 Quant Title : VOA Calibration  
 QLast Update : Thu Sep 20 09:34:09 2018  
 Response via : Initial Calibration



(Not Reviewed)

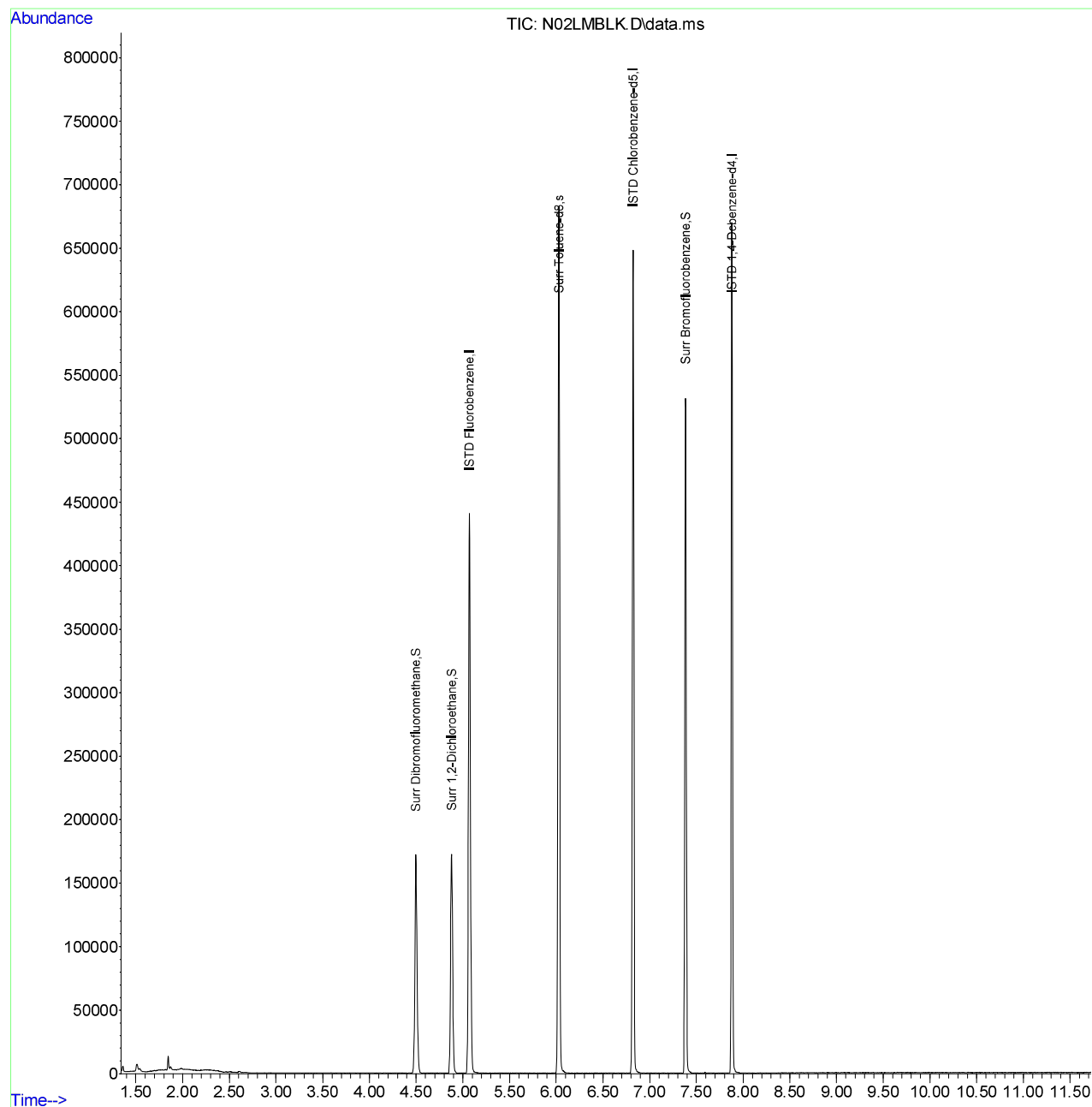
Quant Time: Dec 18 10:32:41 2018  
Quant Method : D:\MassHunter\GCMS\1\methods\VOA2W\_78.M  
Quant Title : VOA Calibration  
QLast Update : Thu Sep 20 09:34:09 2018  
Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

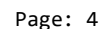
Data Path : D:\MassHunter\GCMS\1\data\DEC18-2\18DEC18A\  
 Data File : N02LMBLK.D  
 Acq On : 18 Dec 2018 11:00 am  
 Operator :  
 Sample : MB VOC-2 121818A  
 Misc : MBLK 5.0ML DG  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 18 11:12:15 2018  
 Quant Method : D:\MassHunter\GCMS\1\methods\VOA2W\_78.M  
 Quant Title : VOA Calibration  
 QLast Update : Thu Sep 20 09:34:09 2018  
 Response via : Initial Calibration



(Not Reviewed)

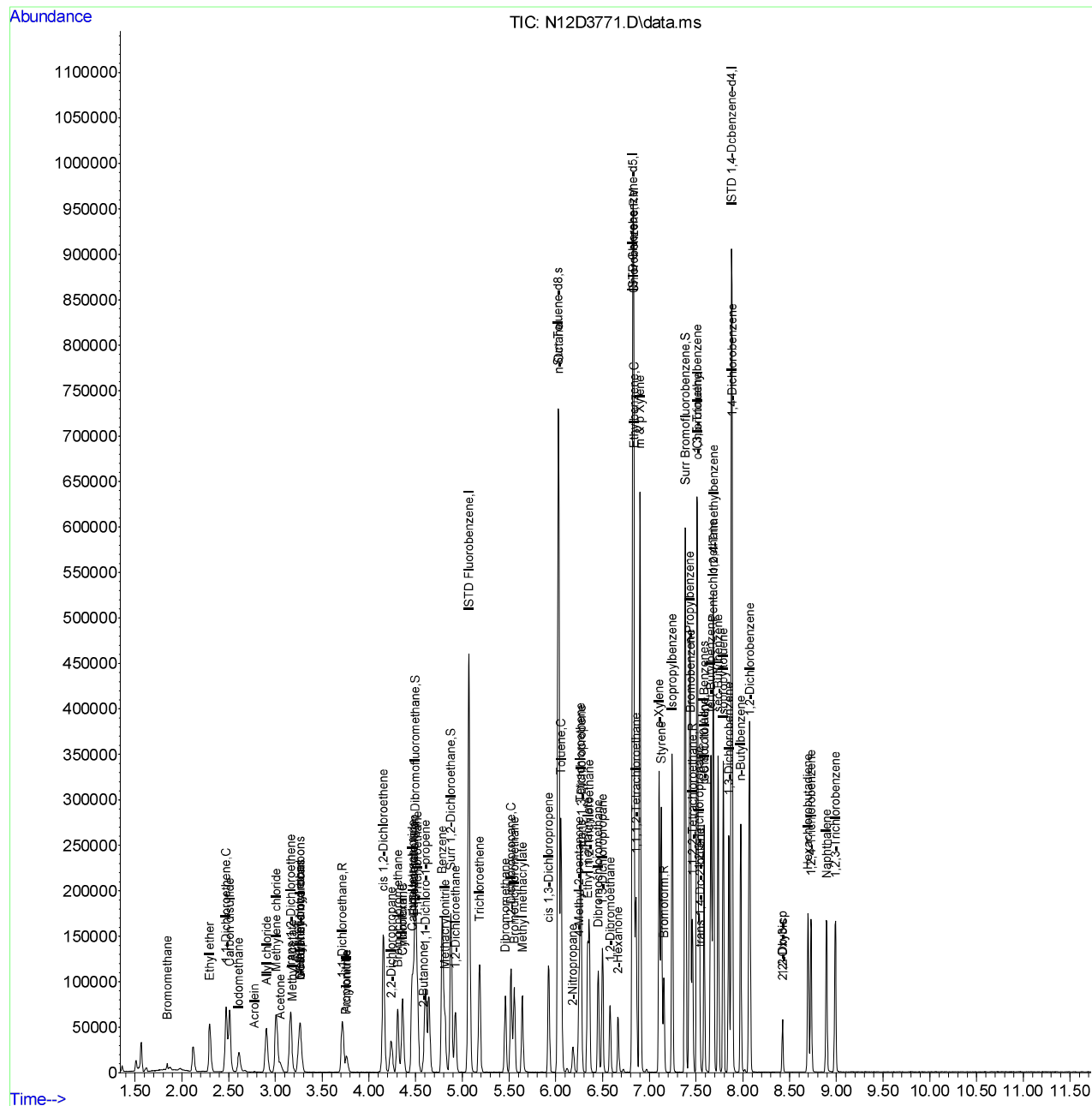
Quant Time: Dec 18 15:51:15 2018  
Quant Method : D:\MassHunter\GCMS\1\methods\VOA2W\_78.M  
Quant Title : VOA Calibration  
QLast Update : Thu Sep 20 09:34:09 2018  
Response via : Initial Calibration



(Not Reviewed)

Sample : 1812377-001AMSD  
Misc : MSD 500µL/50ML 20F3 DG  
ALS Vial : 15 Sample Multiplier: 100

Quant Title : VOA Calibration  
QLast Update : Thu Sep 20 09:34:09 2018  
Response via : Initial Calibration



**WORK ORDER Summary**Work Order: **1812377** Page 1 of 1

Client: Wasatch Environmental

Due Date: 1/2/2019

Client ID: WAS580

Contact: Blake Downey

Project: Millcreek Henries / 229-001D

QC Level: II+ MDL

WO Type: Standard

Comments: PA Rush; QC 3;

DB

| Sample ID                                                 | Client Sample ID | Collected Date   | Received Date    | Test Code | Matrix  | Sel Storage |   |
|-----------------------------------------------------------|------------------|------------------|------------------|-----------|---------|-------------|---|
| 1812377-001A                                              | MW-10            | 12/18/2018 0956h | 12/18/2018 1100h | 8260-W    | Aqueous | VOCFridge   | 3 |
| Test Group: 8260-W-AWAL; # of Analytes: 53 / # of Surr: 4 |                  |                  |                  |           |         |             |   |
| 1812377-002A                                              | MW-11            | 12/18/2018 1033h | 12/18/2018 1100h | 8260-W    | Aqueous | VOCFridge   | 3 |
| Test Group: 8260-W-AWAL; # of Analytes: 53 / # of Surr: 4 |                  |                  |                  |           |         |             |   |



American West  
Analytical Laboratories

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www.awal-labs.com

## CHAIN OF CUSTODY

All analysis will be conducted using NELAP accredited methods and all data will be reported using AWAL's standard analyte lists and reporting limits (PQL) unless specifically requested otherwise on this Chain of Custody and/or attached documentation.

1812377

AWAL Lab Sample Set #

Page 1 of

Due Date: 1/7/19

Laboratory Use Only

COC Tape Was:

|   |                          |   |   |    |
|---|--------------------------|---|---|----|
| 1 | Present on Outer Package | Y | N | NA |
|---|--------------------------|---|---|----|

2 Unbroken on Outer Package  
Y

3 Present on Sample  
Y

4 Unbroken on Sample  
Y NA

Samples Were:

1 Shipped or hand delivered

2 Ambient or Chilled

3 Temperature 4.6 °C

4 Received Intact

5 Properly Preserved

Y N Checked at bench

6 Received Within

### Holding Times

### Sample Labels and COC Record Match?

Y N

Client: WASATCH ENVIRONMENTAL  
Address: 2410 W CALIFORNIA AVE  
City, State, Zip: SLC, UT, 84104  
Contact: BLAKE DOWNEY  
Phone #: 801 972 8400 Cell #: -  
E-mail: BDD@WASATCH-ENVIRONMENTAL.COM  
Project Name: MILLINER HENRIES  
Project #: 2249-0010  
PO #: -  
Sampler Name: BLAKE DOWNEY

| Sample ID: |                        | Date Sampled | Time Sampled | # of Containers | Sample No. | Known Hazards & Sample Comments |
|------------|------------------------|--------------|--------------|-----------------|------------|---------------------------------|
| 1          | MW-10                  | 12-18-18     | 0956         | 3               | W          | X                               |
| 2          | MW-11                  | 12-18-18     | 1033         | 3               | W          | R                               |
| 3          | <div>BD 12-18-18</div> |              |              |                 |            |                                 |
| 4          |                        |              |              |                 |            |                                 |
| 5          |                        |              |              |                 |            |                                 |
| 6          |                        |              |              |                 |            |                                 |
| 7          |                        |              |              |                 |            |                                 |
| 8          |                        |              |              |                 |            |                                 |
| 9          |                        |              |              |                 |            |                                 |
| 10         |                        |              |              |                 |            |                                 |
| 11         |                        |              |              |                 |            |                                 |
| 12         |                        |              |              |                 |            |                                 |
| 13         |                        |              |              |                 |            |                                 |
| 14         |                        |              |              |                 |            |                                 |
| 15         |                        |              |              |                 |            |                                 |

2 Ambient or Chilled  
☒ Y

3 Temperature 4.6 °C

4 Received Intact  
☒ Y N

5 Properly Preserved  
☒ Y N Checked at bench

6 Received Within Holding Times  
☒ Y N

Sample Labels and COC Record Match?  
☒ Y N

|                               |                   |                           |                   |                       |
|-------------------------------|-------------------|---------------------------|-------------------|-----------------------|
| Relinquished by:<br>Signature | Date:<br>12-18-18 | Received by:<br>Signature | Date:<br>12-18-18 | Special Instructions: |
| Print Name:                   | Time:<br>1:00     | Print Name:               | Time:<br>1:00     |                       |
| Relinquished by:<br>Signature | Date:             | Received by:<br>Signature | Date:             |                       |
| Print Name:                   | Time:             | Print Name:               | Time:             |                       |
| Relinquished by:<br>Signature | Date:             | Received by:<br>Signature | Date:             |                       |
| Print Name:                   | Time:             | Print Name:               | Time:             |                       |



Mike Cronin  
Wasatch Environmental  
2410 West California Avenue  
Salt Lake City, UT 84104  
TEL: (801) 972-8400

RE: Millcreek Henries / 2249-001d

Dear Mike Cronin:

Lab Set ID: 1812358

3440 South 700 West  
Salt Lake City, UT 84119

American West Analytical Laboratories received sample(s) on 12/17/2018 for the analyses presented in the following report.

Phone: (801) 263-8686  
Toll Free: (888) 263-8686  
Fax: (801) 263-8687  
e-mail: [awal@awal-labs.com](mailto:awal@awal-labs.com)  
web: [www.awal-labs.com](http://www.awal-labs.com)

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Accreditation Program (NELAP) in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, Wyoming, and Missouri.

All analyses were performed in accordance to the NELAP protocols unless noted otherwise. Accreditation scope documents are available upon request. If you have any questions or concerns regarding this report please feel free to call.

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

Thank You,

Approved by:

Jose G.  
Rocha

Digitally signed by Jose G. Rocha  
DN: cn=Jose G. Rocha,  
o=American West Analytical  
Laboratories, ou,  
email=jose@awal-labs.com,  
c=US  
Date: 2018.12.19 13:47:10  
-07'00'

Laboratory Director or designee



## Volatile Case Narrative

**Client:** Wasatch Environmental  
**Contact:** Mike Cronin  
**Project:** Millcreek Henries / 2249-001d  
**Lab Set ID:** 1812358

---

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Salt Lake City, UT 84119

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web: www.awal-labs.com

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

### **Sample Receipt Information:**

|                               |                            |
|-------------------------------|----------------------------|
| <b>Date of Receipt:</b>       | 12/17/2018                 |
| <b>Date(s) of Collection:</b> | 12/17/2018                 |
| <b>Sample Condition:</b>      | Intact                     |
| <b>C-O-C Discrepancies:</b>   | None                       |
| <b>Method:</b>                | SW-846 8260C/5030C         |
| <b>Analysis:</b>              | Volatile Organic Compounds |

**General Set Comments:** Multiple target analytes were observed above reporting limits.

**Holding Time and Preservation Requirements:** All samples were received in appropriate containers and properly preserved. The analysis and preparation of all samples were performed within the method holding times following the methods stated on the analytical reports.

**Analytical QC Requirements:** All instrument calibration and calibration check requirements were met. All internal standard recoveries met method criterion.

**Batch QC Requirements:** MB, LCS, MS, MSD, RPD, and Surrogates:

**Method Blanks (MBs):** No target analytes were detected above reporting limits, indicating that the procedure was free from contamination.

**Laboratory Control Sample (LCSs):** All LCS recoveries were within control limits, indicating that the preparation and analysis were in control.

**Matrix Spike / Matrix Spike Duplicate (MS/MSD):** All percent recoveries and RPDs (Relative Percent Differences) were inside established limits, indicating no apparent matrix interferences.

**Surrogates:** All surrogate recoveries were within established limits.

**Corrective Action:** None required.



## ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental **Contact:** Mike Cronin  
**Project:** Millcreek Henries / 2249-001d  
**Lab Sample ID:** 1812358-001A  
**Client Sample ID:** MW-3  
**Collection Date:** 12/17/2018 1023h  
**Received Date:** 12/17/2018 1335h

Test Code: 8260-W

### Analytical Results

VOAs AWAL List by GC/MS Method 8260C/5030C

**Analyzed:** 12/17/2018 1500h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.00            | < 2.00            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.00            | < 2.00            |      |
| 1,2,3-Trichlorobenzene                | 87-61-6    | 2.00            | < 2.00            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.00            | < 2.00            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.00            | < 5.00            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.00            | < 2.00            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.00            | < 2.00            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.00            | < 2.00            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.00            | < 2.00            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.00            | < 2.00            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.00            | < 2.00            |      |
| 1,4-Dioxane                           | 123-91-1   | 50.0            | < 50.0            |      |
| 2-Butanone                            | 78-93-3    | 10.0            | < 10.0            |      |
| 2-Hexanone                            | 591-78-6   | 5.00            | < 5.00            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.00            | < 5.00            |      |
| Acetone                               | 67-64-1    | 10.0            | < 10.0            |      |
| Benzene                               | 71-43-2    | 2.00            | < 2.00            |      |
| Bromochloromethane                    | 74-97-5    | 2.00            | < 2.00            |      |
| Bromodichloromethane                  | 75-27-4    | 2.00            | < 2.00            |      |
| Bromoform                             | 75-25-2    | 2.00            | < 2.00            |      |
| Bromomethane                          | 74-83-9    | 5.00            | < 5.00            |      |
| Carbon disulfide                      | 75-15-0    | 2.00            | < 2.00            |      |
| Carbon tetrachloride                  | 56-23-5    | 2.00            | < 2.00            |      |
| Chlorobenzene                         | 108-90-7   | 2.00            | < 2.00            |      |
| Chloroethane                          | 75-00-3    | 2.00            | < 2.00            |      |

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web: www.awal-labs.com

Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1812358-001A

**Client Sample ID:** MW-3

**Analyzed:** 12/17/2018 1500h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

3440 South 700 West  
Salt Lake City, UT 84119

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number  | Reporting Limit | Analytical Result | Qual |
|---------------------------|-------------|-----------------|-------------------|------|
| Chloroform                | 67-66-3     | 2.00            | < 2.00            |      |
| Chloromethane             | 74-87-3     | 3.00            | < 3.00            |      |
| cis-1,2-Dichloroethene    | 156-59-2    | 2.00            | <b>3.06</b>       |      |
| cis-1,3-Dichloropropene   | 10061-01-5  | 2.00            | < 2.00            |      |
| Cyclohexane               | 110-82-7    | 2.00            | < 2.00            |      |
| Dibromochloromethane      | 124-48-1    | 2.00            | < 2.00            |      |
| Dichlorodifluoromethane   | 75-71-8     | 2.00            | < 2.00            |      |
| Ethylbenzene              | 100-41-4    | 2.00            | < 2.00            |      |
| Isopropylbenzene          | 98-82-8     | 2.00            | < 2.00            |      |
| m,p-Xylene                | 179601-23-1 | 2.00            | < 2.00            |      |
| Methyl Acetate            | 79-20-9     | 5.00            | < 5.00            |      |
| Methyl tert-butyl ether   | 1634-04-4   | 2.00            | < 2.00            |      |
| Methylcyclohexane         | 108-87-2    | 2.00            | < 2.00            |      |
| Methylene chloride        | 75-09-2     | 2.00            | < 2.00            |      |
| Naphthalene               | 91-20-3     | 2.00            | < 2.00            |      |
| o-Xylene                  | 95-47-6     | 2.00            | < 2.00            |      |
| Styrene                   | 100-42-5    | 2.00            | < 2.00            |      |
| Tetrachloroethene         | 127-18-4    | 2.00            | < 2.00            |      |
| Toluene                   | 108-88-3    | 2.00            | < 2.00            |      |
| trans-1,2-Dichloroethene  | 156-60-5    | 2.00            | <b>2.05</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6  | 2.00            | < 2.00            |      |
| Trichloroethene           | 79-01-6     | 2.00            | < 2.00            |      |
| Trichlorofluoromethane    | 75-69-4     | 2.00            | < 2.00            |      |
| Vinyl chloride            | 75-01-4     | 1.00            | < 1.00            |      |

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 56.1   | 50.00         | 112   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 55.2   | 50.00         | 110   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 49.5   | 50.00         | 99.0  | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 49.0   | 50.00         | 98.0  | 80-124 |      |



## ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental **Contact:** Mike Cronin  
**Project:** Millcreek Henries / 2249-001d  
**Lab Sample ID:** 1812358-002A  
**Client Sample ID:** MW-2  
**Collection Date:** 12/17/2018 1109h  
**Received Date:** 12/17/2018 1335h

Test Code: 8260-W

### Analytical Results

VOAs AWAL List by GC/MS Method 8260C/5030C

**Analyzed:** 12/17/2018 1519h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

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Laboratory Director

Jose Rocha  
QA Officer

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.00            | < 2.00            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.00            | < 2.00            |      |
| 1,2,3-Trichlorobenzene                | 87-61-6    | 2.00            | < 2.00            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.00            | < 2.00            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.00            | < 5.00            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.00            | < 2.00            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.00            | < 2.00            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.00            | < 2.00            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.00            | < 2.00            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.00            | < 2.00            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.00            | < 2.00            |      |
| 1,4-Dioxane                           | 123-91-1   | 50.0            | < 50.0            |      |
| 2-Butanone                            | 78-93-3    | 10.0            | < 10.0            |      |
| 2-Hexanone                            | 591-78-6   | 5.00            | < 5.00            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.00            | < 5.00            |      |
| Acetone                               | 67-64-1    | 10.0            | < 10.0            |      |
| Benzene                               | 71-43-2    | 2.00            | < 2.00            |      |
| Bromochloromethane                    | 74-97-5    | 2.00            | < 2.00            |      |
| Bromodichloromethane                  | 75-27-4    | 2.00            | < 2.00            |      |
| Bromoform                             | 75-25-2    | 2.00            | < 2.00            |      |
| Bromomethane                          | 74-83-9    | 5.00            | < 5.00            |      |
| Carbon disulfide                      | 75-15-0    | 2.00            | < 2.00            |      |
| Carbon tetrachloride                  | 56-23-5    | 2.00            | < 2.00            |      |
| Chlorobenzene                         | 108-90-7   | 2.00            | < 2.00            |      |
| Chloroethane                          | 75-00-3    | 2.00            | < 2.00            |      |





**Lab Sample ID:** 1812358-002A

**Client Sample ID:** MW-2

**Analyzed:** 12/17/2018 1519h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

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Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number  | Reporting Limit | Analytical Result | Qual |
|---------------------------|-------------|-----------------|-------------------|------|
| Chloroform                | 67-66-3     | 2.00            | < 2.00            |      |
| Chloromethane             | 74-87-3     | 3.00            | < 3.00            |      |
| cis-1,2-Dichloroethene    | 156-59-2    | 2.00            | <b>4.50</b>       |      |
| cis-1,3-Dichloropropene   | 10061-01-5  | 2.00            | < 2.00            |      |
| Cyclohexane               | 110-82-7    | 2.00            | < 2.00            |      |
| Dibromochloromethane      | 124-48-1    | 2.00            | < 2.00            |      |
| Dichlorodifluoromethane   | 75-71-8     | 2.00            | < 2.00            |      |
| Ethylbenzene              | 100-41-4    | 2.00            | < 2.00            |      |
| Isopropylbenzene          | 98-82-8     | 2.00            | < 2.00            |      |
| m,p-Xylene                | 179601-23-1 | 2.00            | < 2.00            |      |
| Methyl Acetate            | 79-20-9     | 5.00            | < 5.00            |      |
| Methyl tert-butyl ether   | 1634-04-4   | 2.00            | < 2.00            |      |
| Methylcyclohexane         | 108-87-2    | 2.00            | < 2.00            |      |
| Methylene chloride        | 75-09-2     | 2.00            | < 2.00            |      |
| Naphthalene               | 91-20-3     | 2.00            | < 2.00            |      |
| o-Xylene                  | 95-47-6     | 2.00            | < 2.00            |      |
| Styrene                   | 100-42-5    | 2.00            | < 2.00            |      |
| Tetrachloroethene         | 127-18-4    | 2.00            | < 2.00            |      |
| Toluene                   | 108-88-3    | 2.00            | < 2.00            |      |
| trans-1,2-Dichloroethene  | 156-60-5    | 2.00            | < 2.00            |      |
| trans-1,3-Dichloropropene | 10061-02-6  | 2.00            | < 2.00            |      |
| Trichloroethene           | 79-01-6     | 2.00            | < 2.00            |      |
| Trichlorofluoromethane    | 75-69-4     | 2.00            | < 2.00            |      |
| Vinyl chloride            | 75-01-4     | 1.00            | <b>4.33</b>       |      |

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 57.4   | 50.00         | 115   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 55.6   | 50.00         | 111   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 51.4   | 50.00         | 103   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 48.4   | 50.00         | 96.8  | 80-124 |      |



## ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental **Contact:** Mike Cronin  
**Project:** Millcreek Henries / 2249-001d  
**Lab Sample ID:** 1812358-003A  
**Client Sample ID:** MW-1  
**Collection Date:** 12/17/2018 1153h  
**Received Date:** 12/17/2018 1335h

Test Code: 8260-W

### Analytical Results

VOAs AWAL List by GC/MS Method 8260C/5030C

**Analyzed:** 12/17/2018 1539h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.00            | < 2.00            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.00            | < 2.00            |      |
| 1,2,3-Trichlorobenzene                | 87-61-6    | 2.00            | < 2.00            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.00            | < 2.00            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.00            | < 5.00            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.00            | < 2.00            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.00            | < 2.00            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.00            | < 2.00            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.00            | < 2.00            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.00            | < 2.00            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.00            | < 2.00            |      |
| 1,4-Dioxane                           | 123-91-1   | 50.0            | < 50.0            |      |
| 2-Butanone                            | 78-93-3    | 10.0            | < 10.0            |      |
| 2-Hexanone                            | 591-78-6   | 5.00            | < 5.00            |      |
| 4-Methyl-2-pentanone                  | 108-10-1   | 5.00            | < 5.00            |      |
| Acetone                               | 67-64-1    | 10.0            | < 10.0            |      |
| Benzene                               | 71-43-2    | 2.00            | < 2.00            |      |
| Bromochloromethane                    | 74-97-5    | 2.00            | < 2.00            |      |
| Bromodichloromethane                  | 75-27-4    | 2.00            | < 2.00            |      |
| Bromoform                             | 75-25-2    | 2.00            | < 2.00            |      |
| Bromomethane                          | 74-83-9    | 5.00            | < 5.00            |      |
| Carbon disulfide                      | 75-15-0    | 2.00            | < 2.00            |      |
| Carbon tetrachloride                  | 56-23-5    | 2.00            | < 2.00            |      |
| Chlorobenzene                         | 108-90-7   | 2.00            | < 2.00            |      |
| Chloroethane                          | 75-00-3    | 2.00            | < 2.00            |      |

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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1812358-003A

**Client Sample ID:** MW-1

**Analyzed:** 12/17/2018 1539h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

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| Compound                  | CAS Number  | Reporting Limit | Analytical Result | Qual |
|---------------------------|-------------|-----------------|-------------------|------|
| Chloroform                | 67-66-3     | 2.00            | < 2.00            |      |
| Chloromethane             | 74-87-3     | 3.00            | < 3.00            |      |
| cis-1,2-Dichloroethene    | 156-59-2    | 2.00            | <b>2.41</b>       |      |
| cis-1,3-Dichloropropene   | 10061-01-5  | 2.00            | < 2.00            |      |
| Cyclohexane               | 110-82-7    | 2.00            | < 2.00            |      |
| Dibromochloromethane      | 124-48-1    | 2.00            | < 2.00            |      |
| Dichlorodifluoromethane   | 75-71-8     | 2.00            | < 2.00            |      |
| Ethylbenzene              | 100-41-4    | 2.00            | < 2.00            |      |
| Isopropylbenzene          | 98-82-8     | 2.00            | < 2.00            |      |
| m,p-Xylene                | 179601-23-1 | 2.00            | < 2.00            |      |
| Methyl Acetate            | 79-20-9     | 5.00            | < 5.00            |      |
| Methyl tert-butyl ether   | 1634-04-4   | 2.00            | < 2.00            |      |
| Methylcyclohexane         | 108-87-2    | 2.00            | < 2.00            |      |
| Methylene chloride        | 75-09-2     | 2.00            | < 2.00            |      |
| Naphthalene               | 91-20-3     | 2.00            | < 2.00            |      |
| o-Xylene                  | 95-47-6     | 2.00            | < 2.00            |      |
| Styrene                   | 100-42-5    | 2.00            | < 2.00            |      |
| Tetrachloroethene         | 127-18-4    | 2.00            | < 2.00            |      |
| Toluene                   | 108-88-3    | 2.00            | < 2.00            |      |
| trans-1,2-Dichloroethene  | 156-60-5    | 2.00            | < 2.00            |      |
| trans-1,3-Dichloropropene | 10061-02-6  | 2.00            | < 2.00            |      |
| Trichloroethene           | 79-01-6     | 2.00            | < 2.00            |      |
| Trichlorofluoromethane    | 75-69-4     | 2.00            | < 2.00            |      |
| Vinyl chloride            | 75-01-4     | 1.00            | <b>18.0</b>       |      |

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 57.2   | 50.00         | 114   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 54.6   | 50.00         | 109   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 49.9   | 50.00         | 99.7  | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 47.8   | 50.00         | 95.5  | 80-124 |      |



# ORGANIC ANALYTICAL REPORT

**Client:** Wasatch Environmental **Contact:** Mike Cronin  
**Project:** Millcreek Henries / 2249-001d  
**Lab Sample ID:** 1812358-004A  
**Client Sample ID:** MW-6  
**Collection Date:** 12/17/2018 1245h  
**Received Date:** 12/17/2018 1335h

Test Code: 8260-W

## Analytical Results

VOAs AWAL List by GC/MS Method 8260C/5030C

**Analyzed:** 12/18/2018 1220h

**Units:** µg/L **Dilution Factor:** 20 **Method:** SW8260C

| Compound               | CAS Number | Reporting Limit | Analytical Result | Qual |
|------------------------|------------|-----------------|-------------------|------|
| cis-1,2-Dichloroethene | 156-59-2   | 40.0            | 486               | ~    |

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 1,120  | 1,000         | 112   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 1,060  | 1,000         | 106   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 1,020  | 1,000         | 102   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 961    | 1,000         | 96.1  | 80-124 |      |

~ - The reporting limits were raised due to high analyte concentrations.

**Analyzed:** 12/17/2018 1559h

**Units:** µg/L **Dilution Factor:** 1 **Method:** SW8260C

| Compound                              | CAS Number | Reporting Limit | Analytical Result | Qual |
|---------------------------------------|------------|-----------------|-------------------|------|
| 1,1,1-Trichloroethane                 | 71-55-6    | 2.00            | < 2.00            |      |
| 1,1,2,2-Tetrachloroethane             | 79-34-5    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane | 76-13-1    | 2.00            | < 2.00            |      |
| 1,1,2-Trichloroethane                 | 79-00-5    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethane                    | 75-34-3    | 2.00            | < 2.00            |      |
| 1,1-Dichloroethene                    | 75-35-4    | 2.00            | < 2.00            |      |
| 1,2,3-Trichlorobenzene                | 87-61-6    | 2.00            | < 2.00            |      |
| 1,2,4-Trichlorobenzene                | 120-82-1   | 2.00            | < 2.00            |      |
| 1,2-Dibromo-3-chloropropane           | 96-12-8    | 5.00            | < 5.00            |      |
| 1,2-Dibromoethane                     | 106-93-4   | 2.00            | < 2.00            |      |
| 1,2-Dichlorobenzene                   | 95-50-1    | 2.00            | < 2.00            |      |
| 1,2-Dichloroethane                    | 107-06-2   | 2.00            | < 2.00            |      |
| 1,2-Dichloropropane                   | 78-87-5    | 2.00            | < 2.00            |      |
| 1,3-Dichlorobenzene                   | 541-73-1   | 2.00            | < 2.00            |      |
| 1,4-Dichlorobenzene                   | 106-46-7   | 2.00            | < 2.00            |      |
| 1,4-Dioxane                           | 123-91-1   | 50.0            | < 50.0            |      |
| 2-Butanone                            | 78-93-3    | 10.0            | 69.6              |      |
| 2-Hexanone                            | 591-78-6   | 5.00            | < 5.00            |      |

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Laboratory Director

Jose Rocha  
QA Officer



**Lab Sample ID:** 1812358-004A

**Client Sample ID:** MW-6

**Analyzed:** 12/17/2018 1559h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

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Laboratory Director

Jose Rocha  
QA Officer

| Compound                  | CAS Number  | Reporting Limit | Analytical Result | Qual |
|---------------------------|-------------|-----------------|-------------------|------|
| 4-Methyl-2-pentanone      | 108-10-1    | 5.00            | < 5.00            |      |
| Acetone                   | 67-64-1     | 10.0            | <b>13.6</b>       |      |
| Benzene                   | 71-43-2     | 2.00            | < 2.00            |      |
| Bromochloromethane        | 74-97-5     | 2.00            | < 2.00            |      |
| Bromodichloromethane      | 75-27-4     | 2.00            | < 2.00            |      |
| Bromoform                 | 75-25-2     | 2.00            | < 2.00            |      |
| Bromomethane              | 74-83-9     | 5.00            | < 5.00            |      |
| Carbon disulfide          | 75-15-0     | 2.00            | < 2.00            |      |
| Carbon tetrachloride      | 56-23-5     | 2.00            | < 2.00            |      |
| Chlorobenzene             | 108-90-7    | 2.00            | < 2.00            |      |
| Chloroethane              | 75-00-3     | 2.00            | < 2.00            |      |
| Chloroform                | 67-66-3     | 2.00            | < 2.00            |      |
| Chloromethane             | 74-87-3     | 3.00            | < 3.00            |      |
| cis-1,3-Dichloropropene   | 10061-01-5  | 2.00            | < 2.00            |      |
| Cyclohexane               | 110-82-7    | 2.00            | < 2.00            |      |
| Dibromochloromethane      | 124-48-1    | 2.00            | < 2.00            |      |
| Dichlorodifluoromethane   | 75-71-8     | 2.00            | < 2.00            |      |
| Ethylbenzene              | 100-41-4    | 2.00            | < 2.00            |      |
| Isopropylbenzene          | 98-82-8     | 2.00            | < 2.00            |      |
| m,p-Xylene                | 179601-23-1 | 2.00            | < 2.00            |      |
| Methyl Acetate            | 79-20-9     | 5.00            | < 5.00            |      |
| Methyl tert-butyl ether   | 1634-04-4   | 2.00            | < 2.00            |      |
| Methylcyclohexane         | 108-87-2    | 2.00            | < 2.00            |      |
| Methylene chloride        | 75-09-2     | 2.00            | < 2.00            |      |
| Naphthalene               | 91-20-3     | 2.00            | <b>2.16</b>       |      |
| o-Xylene                  | 95-47-6     | 2.00            | < 2.00            |      |
| Styrene                   | 100-42-5    | 2.00            | < 2.00            |      |
| Tetrachloroethene         | 127-18-4    | 2.00            | < 2.00            |      |
| Toluene                   | 108-88-3    | 2.00            | < 2.00            |      |
| trans-1,2-Dichloroethene  | 156-60-5    | 2.00            | <b>8.77</b>       |      |
| trans-1,3-Dichloropropene | 10061-02-6  | 2.00            | < 2.00            |      |
| Trichloroethene           | 79-01-6     | 2.00            | < 2.00            |      |
| Trichlorofluoromethane    | 75-69-4     | 2.00            | < 2.00            |      |
| Vinyl chloride            | 75-01-4     | 1.00            | <b>5.34</b>       |      |



**Lab Sample ID:** 1812358-004A

**Client Sample ID:** MW-6

**Analyzed:** 12/17/2018 1559h

**Units:** µg/L

**Dilution Factor:** 1

**Method:** SW8260C

| Surrogate                   | Units: µg/L | CAS        | Result | Amount Spiked | % REC | Limits | Qual |
|-----------------------------|-------------|------------|--------|---------------|-------|--------|------|
| Surr: 1,2-Dichloroethane-d4 |             | 17060-07-0 | 56.9   | 50.00         | 114   | 72-151 |      |
| Surr: 4-Bromofluorobenzene  |             | 460-00-4   | 52.6   | 50.00         | 105   | 80-152 |      |
| Surr: Dibromofluoromethane  |             | 1868-53-7  | 50.7   | 50.00         | 101   | 72-135 |      |
| Surr: Toluene-d8            |             | 2037-26-5  | 48.2   | 50.00         | 96.5  | 80-124 |      |

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Jose Rocha  
QA Officer





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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** LCS

| Analyte                                 | Result | Units          | Method          | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------------------|--------|----------------|-----------------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| <b>Lab Sample ID: LCS VOC-1 121718A</b> |        |                |                 |        |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W                       |        | Date Analyzed: | 12/17/2018 934h |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane                   | 22.4   | µg/L           | SW8260C         | 0.142  | 2.00            | 20.00         | 0                 | 112  | 73 - 139 |              |       |           |      |
| 1,1-Dichloroethene                      | 20.4   | µg/L           | SW8260C         | 0.275  | 2.00            | 20.00         | 0                 | 102  | 37 - 144 |              |       |           |      |
| 1,2-Dichlorobenzene                     | 20.2   | µg/L           | SW8260C         | 0.105  | 2.00            | 20.00         | 0                 | 101  | 70 - 130 |              |       |           |      |
| 1,2-Dichloroethane                      | 22.8   | µg/L           | SW8260C         | 0.0988 | 2.00            | 20.00         | 0                 | 114  | 76 - 132 |              |       |           |      |
| 1,2-Dichloropropane                     | 20.0   | µg/L           | SW8260C         | 0.0968 | 2.00            | 20.00         | 0                 | 99.8 | 81 - 121 |              |       |           |      |
| Benzene                                 | 19.7   | µg/L           | SW8260C         | 0.0956 | 2.00            | 20.00         | 0                 | 98.6 | 82 - 132 |              |       |           |      |
| Chlorobenzene                           | 19.9   | µg/L           | SW8260C         | 0.0832 | 2.00            | 20.00         | 0                 | 99.5 | 74 - 126 |              |       |           |      |
| Chloroform                              | 21.3   | µg/L           | SW8260C         | 0.0998 | 2.00            | 20.00         | 0                 | 106  | 85 - 124 |              |       |           |      |
| Ethylbenzene                            | 19.9   | µg/L           | SW8260C         | 0.103  | 2.00            | 20.00         | 0                 | 99.6 | 67 - 118 |              |       |           |      |
| Isopropylbenzene                        | 20.4   | µg/L           | SW8260C         | 0.131  | 2.00            | 20.00         | 0                 | 102  | 68 - 127 |              |       |           |      |
| Methyl tert-butyl ether                 | 23.3   | µg/L           | SW8260C         | 0.206  | 2.00            | 20.00         | 0                 | 117  | 58 - 131 |              |       |           |      |
| Methylene chloride                      | 20.2   | µg/L           | SW8260C         | 0.400  | 2.00            | 20.00         | 0                 | 101  | 65 - 154 |              |       |           |      |
| Naphthalene                             | 15.9   | µg/L           | SW8260C         | 0.159  | 2.00            | 20.00         | 0                 | 79.4 | 63 - 129 |              |       |           |      |
| Toluene                                 | 19.7   | µg/L           | SW8260C         | 0.0858 | 2.00            | 20.00         | 0                 | 98.6 | 69 - 129 |              |       |           |      |
| Trichloroethene                         | 20.8   | µg/L           | SW8260C         | 0.105  | 2.00            | 20.00         | 0                 | 104  | 75 - 136 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4             | 56.5   | µg/L           | SW8260C         |        |                 | 50.00         |                   | 113  | 80 - 136 |              |       |           |      |
| Surr: 4-Bromofluorobenzene              | 50.1   | µg/L           | SW8260C         |        |                 | 50.00         |                   | 100  | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane              | 51.3   | µg/L           | SW8260C         |        |                 | 50.00         |                   | 103  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8                        | 48.6   | µg/L           | SW8260C         |        |                 | 50.00         |                   | 97.2 | 81 - 123 |              |       |           |      |

|                                         |      |                |                  |        |      |       |   |      |          |  |  |  |  |
|-----------------------------------------|------|----------------|------------------|--------|------|-------|---|------|----------|--|--|--|--|
| <b>Lab Sample ID: LCS VOC-1 121818A</b> |      |                |                  |        |      |       |   |      |          |  |  |  |  |
| Test Code: 8260-W                       |      | Date Analyzed: | 12/18/2018 1022h |        |      |       |   |      |          |  |  |  |  |
| 1,1,1-Trichloroethane                   | 23.1 | µg/L           | SW8260C          | 0.142  | 2.00 | 20.00 | 0 | 116  | 73 - 139 |  |  |  |  |
| 1,1-Dichloroethene                      | 20.6 | µg/L           | SW8260C          | 0.275  | 2.00 | 20.00 | 0 | 103  | 37 - 144 |  |  |  |  |
| 1,2-Dichlorobenzene                     | 19.6 | µg/L           | SW8260C          | 0.105  | 2.00 | 20.00 | 0 | 98.0 | 70 - 130 |  |  |  |  |
| 1,2-Dichloroethane                      | 22.4 | µg/L           | SW8260C          | 0.0988 | 2.00 | 20.00 | 0 | 112  | 76 - 132 |  |  |  |  |
| 1,2-Dichloropropane                     | 20.0 | µg/L           | SW8260C          | 0.0968 | 2.00 | 20.00 | 0 | 100  | 81 - 121 |  |  |  |  |
| Benzene                                 | 19.9 | µg/L           | SW8260C          | 0.0956 | 2.00 | 20.00 | 0 | 99.6 | 82 - 132 |  |  |  |  |

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All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** LCS

| Analyte                     |                   | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|-------------------|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | LCS VOC-1 121818A | Date Analyzed: | 12/18/2018 1022h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-W            |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| Chlorobenzene               |                   | 19.8           | µg/L             | SW8260C | 0.0832 | 2.00            | 20.00         | 0                 | 99.0 | 74 - 126 |              |       |           |      |
| Chloroform                  |                   | 21.5           | µg/L             | SW8260C | 0.0998 | 2.00            | 20.00         | 0                 | 107  | 85 - 124 |              |       |           |      |
| Ethylbenzene                |                   | 20.5           | µg/L             | SW8260C | 0.103  | 2.00            | 20.00         | 0                 | 103  | 67 - 118 |              |       |           |      |
| Isopropylbenzene            |                   | 20.9           | µg/L             | SW8260C | 0.131  | 2.00            | 20.00         | 0                 | 104  | 68 - 127 |              |       |           |      |
| Methyl tert-butyl ether     |                   | 22.1           | µg/L             | SW8260C | 0.206  | 2.00            | 20.00         | 0                 | 110  | 58 - 131 |              |       |           |      |
| Methylene chloride          |                   | 19.4           | µg/L             | SW8260C | 0.400  | 2.00            | 20.00         | 0                 | 96.9 | 65 - 154 |              |       |           |      |
| Naphthalene                 |                   | 15.1           | µg/L             | SW8260C | 0.159  | 2.00            | 20.00         | 0                 | 75.6 | 63 - 129 |              |       |           |      |
| Tetrahydrofuran             |                   | 16.4           | µg/L             | SW8260C | 0.681  | 2.00            | 20.00         | 0                 | 81.8 | 59 - 125 |              |       |           |      |
| Toluene                     |                   | 19.9           | µg/L             | SW8260C | 0.0858 | 2.00            | 20.00         | 0                 | 99.3 | 69 - 129 |              |       |           |      |
| Trichloroethene             |                   | 21.2           | µg/L             | SW8260C | 0.105  | 2.00            | 20.00         | 0                 | 106  | 75 - 136 |              |       |           |      |
| Xylenes, Total              |                   | 61.4           | µg/L             | SW8260C | 0.310  | 2.00            | 60.00         | 0                 | 102  | 66 - 124 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                   | 56.1           | µg/L             | SW8260C |        |                 | 50.00         |                   | 112  | 80 - 136 |              |       |           |      |
| Surr: 4-Bromofluorobenzene  |                   | 48.2           | µg/L             | SW8260C |        |                 | 50.00         |                   | 96.4 | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane  |                   | 50.7           | µg/L             | SW8260C |        |                 | 50.00         |                   | 101  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8            |                   | 47.4           | µg/L             | SW8260C |        |                 | 50.00         |                   | 94.9 | 81 - 123 |              |       |           |      |



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                               |  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|---------------------------------------|--|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|--------|--------------|-------|-----------|------|
| Lab Sample ID: MB VOC-1 121718A       |  | Date Analyzed: | 12/17/2018 1013h |         |        |                 |               |                   |      |        |              |       |           |      |
| Test Code: 8260-W                     |  |                |                  |         |        |                 |               |                   |      |        |              |       |           |      |
| 1,1,1-Trichloroethane                 |  | < 2.00         | µg/L             | SW8260C | 0.142  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2,2-Tetrachloroethane             |  | < 2.00         | µg/L             | SW8260C | 0.0872 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloro-1,2,2-trifluoroethane |  | < 2.00         | µg/L             | SW8260C | 0.322  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1,2-Trichloroethane                 |  | < 2.00         | µg/L             | SW8260C | 0.0847 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethane                    |  | < 2.00         | µg/L             | SW8260C | 0.116  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,1-Dichloroethene                    |  | < 2.00         | µg/L             | SW8260C | 0.275  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2,3-Trichlorobenzene                |  | < 2.00         | µg/L             | SW8260C | 0.220  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2,4-Trichlorobenzene                |  | < 2.00         | µg/L             | SW8260C | 0.271  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromo-3-chloropropane           |  | < 5.00         | µg/L             | SW8260C | 0.312  | 5.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dibromoethane                     |  | < 2.00         | µg/L             | SW8260C | 0.0828 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.105  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloroethane                    |  | < 2.00         | µg/L             | SW8260C | 0.0988 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,2-Dichloropropane                   |  | < 2.00         | µg/L             | SW8260C | 0.0968 | 2.00            |               |                   |      |        |              |       |           |      |
| 1,3-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.118  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,4-Dichlorobenzene                   |  | < 2.00         | µg/L             | SW8260C | 0.272  | 2.00            |               |                   |      |        |              |       |           |      |
| 1,4-Dioxane                           |  | < 50.0         | µg/L             | SW8260C | 11.9   | 50.0            |               |                   |      |        |              |       |           |      |
| 2-Butanone                            |  | < 10.0         | µg/L             | SW8260C | 0.587  | 10.0            |               |                   |      |        |              |       |           |      |
| 2-Hexanone                            |  | < 5.00         | µg/L             | SW8260C | 0.215  | 5.00            |               |                   |      |        |              |       |           |      |
| 4-Methyl-2-pentanone                  |  | < 5.00         | µg/L             | SW8260C | 0.238  | 5.00            |               |                   |      |        |              |       |           |      |
| Acetone                               |  | < 10.0         | µg/L             | SW8260C | 1.13   | 10.0            |               |                   |      |        |              |       |           |      |
| Benzene                               |  | < 2.00         | µg/L             | SW8260C | 0.0956 | 2.00            |               |                   |      |        |              |       |           |      |
| Bromochloromethane                    |  | < 2.00         | µg/L             | SW8260C | 0.146  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromodichloromethane                  |  | < 2.00         | µg/L             | SW8260C | 0.0819 | 2.00            |               |                   |      |        |              |       |           |      |
| Bromoform                             |  | < 2.00         | µg/L             | SW8260C | 0.131  | 2.00            |               |                   |      |        |              |       |           |      |
| Bromomethane                          |  | < 5.00         | µg/L             | SW8260C | 3.45   | 5.00            |               |                   |      |        |              |       |           |      |
| Carbon disulfide                      |  | < 2.00         | µg/L             | SW8260C | 0.293  | 2.00            |               |                   |      |        |              |       |           |      |
| Carbon tetrachloride                  |  | < 2.00         | µg/L             | SW8260C | 0.178  | 2.00            |               |                   |      |        |              |       |           |      |



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                     |                  | Result         | Units            | Method  | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-----------------------------|------------------|----------------|------------------|---------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID:              | MB VOC-1 121718A | Date Analyzed: | 12/17/2018 1013h |         |        |                 |               |                   |      |          |              |       |           |      |
| Test Code:                  | 8260-W           |                |                  |         |        |                 |               |                   |      |          |              |       |           |      |
| Chlorobenzene               |                  | < 2.00         | µg/L             | SW8260C | 0.0832 | 2.00            |               |                   |      |          |              |       |           |      |
| Chloroethane                |                  | < 2.00         | µg/L             | SW8260C | 1.01   | 2.00            |               |                   |      |          |              |       |           |      |
| Chloroform                  |                  | < 2.00         | µg/L             | SW8260C | 0.0998 | 2.00            |               |                   |      |          |              |       |           |      |
| Chloromethane               |                  | < 3.00         | µg/L             | SW8260C | 0.836  | 3.00            |               |                   |      |          |              |       |           |      |
| cis-1,2-Dichloroethene      |                  | < 2.00         | µg/L             | SW8260C | 0.129  | 2.00            |               |                   |      |          |              |       |           |      |
| cis-1,3-Dichloropropene     |                  | < 2.00         | µg/L             | SW8260C | 0.114  | 2.00            |               |                   |      |          |              |       |           |      |
| Cyclohexane                 |                  | < 2.00         | µg/L             | SW8260C | 0.488  | 2.00            |               |                   |      |          |              |       |           |      |
| Dibromochloromethane        |                  | < 2.00         | µg/L             | SW8260C | 0.0924 | 2.00            |               |                   |      |          |              |       |           |      |
| Dichlorodifluoromethane     |                  | < 2.00         | µg/L             | SW8260C | 0.163  | 2.00            |               |                   |      |          |              |       |           |      |
| Ethylbenzene                |                  | < 2.00         | µg/L             | SW8260C | 0.103  | 2.00            |               |                   |      |          |              |       |           |      |
| Isopropylbenzene            |                  | < 2.00         | µg/L             | SW8260C | 0.131  | 2.00            |               |                   |      |          |              |       |           |      |
| m,p-Xylene                  |                  | < 2.00         | µg/L             | SW8260C | 0.205  | 2.00            |               |                   |      |          |              |       |           |      |
| Methyl Acetate              |                  | < 5.00         | µg/L             | SW8260C | 1.21   | 5.00            |               |                   |      |          |              |       |           |      |
| Methyl tert-butyl ether     |                  | < 2.00         | µg/L             | SW8260C | 0.206  | 2.00            |               |                   |      |          |              |       |           |      |
| Methylcyclohexane           |                  | < 2.00         | µg/L             | SW8260C | 0.282  | 2.00            |               |                   |      |          |              |       |           |      |
| Methylene chloride          |                  | < 2.00         | µg/L             | SW8260C | 0.400  | 2.00            |               |                   |      |          |              |       |           |      |
| Naphthalene                 |                  | < 2.00         | µg/L             | SW8260C | 0.159  | 2.00            |               |                   |      |          |              |       |           |      |
| o-Xylene                    |                  | < 2.00         | µg/L             | SW8260C | 0.119  | 2.00            |               |                   |      |          |              |       |           |      |
| Styrene                     |                  | < 2.00         | µg/L             | SW8260C | 0.149  | 2.00            |               |                   |      |          |              |       |           |      |
| Tetrachloroethene           |                  | < 2.00         | µg/L             | SW8260C | 0.170  | 2.00            |               |                   |      |          |              |       |           |      |
| Toluene                     |                  | < 2.00         | µg/L             | SW8260C | 0.0858 | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,2-Dichloroethene    |                  | < 2.00         | µg/L             | SW8260C | 0.327  | 2.00            |               |                   |      |          |              |       |           |      |
| trans-1,3-Dichloropropene   |                  | < 2.00         | µg/L             | SW8260C | 0.127  | 2.00            |               |                   |      |          |              |       |           |      |
| Trichloroethene             |                  | < 2.00         | µg/L             | SW8260C | 0.105  | 2.00            |               |                   |      |          |              |       |           |      |
| Trichlorofluoromethane      |                  | < 2.00         | µg/L             | SW8260C | 0.180  | 2.00            |               |                   |      |          |              |       |           |      |
| Vinyl chloride              |                  | < 1.00         | µg/L             | SW8260C | 0.184  | 1.00            |               |                   |      |          |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4 |                  | 55.4           | µg/L             | SW8260C |        |                 | 50.00         |                   | 111  | 80 - 136 |              |       |           |      |



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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MBLK

| Analyte                                                                | Result | Units | Method  | MDL   | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|------------------------------------------------------------------------|--------|-------|---------|-------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| <b>Lab Sample ID: MB VOC-1 121718A</b> Date Analyzed: 12/17/2018 1013h |        |       |         |       |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W                                                      |        |       |         |       |                 |               |                   |      |          |              |       |           |      |
| Surr: 4-Bromofluorobenzene                                             | 54.2   | µg/L  | SW8260C |       |                 | 50.00         |                   | 108  | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane                                             | 50.1   | µg/L  | SW8260C |       |                 | 50.00         |                   | 100  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8                                                       | 48.3   | µg/L  | SW8260C |       |                 | 50.00         |                   | 96.5 | 81 - 123 |              |       |           |      |
| <b>Lab Sample ID: MB VOC-1 121818A</b> Date Analyzed: 12/18/2018 1101h |        |       |         |       |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W                                                      |        |       |         |       |                 |               |                   |      |          |              |       |           |      |
| cis-1,2-Dichloroethene                                                 | < 2.00 | µg/L  | SW8260C | 0.129 | 2.00            |               |                   |      |          |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4                                            | 55.5   | µg/L  | SW8260C |       |                 | 50.00         |                   | 111  | 80 - 136 |              |       |           |      |
| Surr: 4-Bromofluorobenzene                                             | 52.8   | µg/L  | SW8260C |       |                 | 50.00         |                   | 106  | 85 - 121 |              |       |           |      |
| Surr: Dibromofluoromethane                                             | 50.6   | µg/L  | SW8260C |       |                 | 50.00         |                   | 101  | 78 - 132 |              |       |           |      |
| Surr: Toluene-d8                                                       | 48.9   | µg/L  | SW8260C |       |                 | 50.00         |                   | 97.8 | 81 - 123 |              |       |           |      |



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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MS

| Analyte                              | Result | Units          | Method           | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|--------------------------------------|--------|----------------|------------------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| <b>Lab Sample ID: 1812358-001AMS</b> |        |                |                  |        |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W                    |        | Date Analyzed: | 12/17/2018 1618h |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane                | 22.8   | µg/L           | SW8260C          | 0.142  | 2.00            | 20.00         | 0                 | 114  | 67 - 147 |              |       |           |      |
| 1,1-Dichloroethene                   | 21.3   | µg/L           | SW8260C          | 0.275  | 2.00            | 20.00         | 0                 | 107  | 51 - 152 |              |       |           |      |
| 1,2-Dichlorobenzene                  | 19.7   | µg/L           | SW8260C          | 0.105  | 2.00            | 20.00         | 0                 | 98.3 | 70 - 130 |              |       |           |      |
| 1,2-Dichloroethane                   | 22.2   | µg/L           | SW8260C          | 0.0988 | 2.00            | 20.00         | 0                 | 111  | 39 - 162 |              |       |           |      |
| 1,2-Dichloropropane                  | 19.5   | µg/L           | SW8260C          | 0.0968 | 2.00            | 20.00         | 0                 | 97.6 | 59 - 135 |              |       |           |      |
| Benzene                              | 19.8   | µg/L           | SW8260C          | 0.0956 | 2.00            | 20.00         | 0                 | 99.2 | 66 - 145 |              |       |           |      |
| Chlorobenzene                        | 19.6   | µg/L           | SW8260C          | 0.0832 | 2.00            | 20.00         | 0                 | 97.9 | 63 - 140 |              |       |           |      |
| Chloroform                           | 21.0   | µg/L           | SW8260C          | 0.0998 | 2.00            | 20.00         | 0                 | 105  | 50 - 146 |              |       |           |      |
| Ethylbenzene                         | 19.8   | µg/L           | SW8260C          | 0.103  | 2.00            | 20.00         | 0                 | 99.0 | 69 - 133 |              |       |           |      |
| Isopropylbenzene                     | 20.3   | µg/L           | SW8260C          | 0.131  | 2.00            | 20.00         | 0                 | 102  | 60 - 147 |              |       |           |      |
| Methyl tert-butyl ether              | 21.7   | µg/L           | SW8260C          | 0.206  | 2.00            | 20.00         | 0                 | 108  | 37 - 189 |              |       |           |      |
| Methylene chloride                   | 20.0   | µg/L           | SW8260C          | 0.400  | 2.00            | 20.00         | 0                 | 100  | 30 - 192 |              |       |           |      |
| Naphthalene                          | 14.1   | µg/L           | SW8260C          | 0.159  | 2.00            | 20.00         | 0                 | 70.6 | 41 - 131 |              |       |           |      |
| Toluene                              | 19.6   | µg/L           | SW8260C          | 0.0858 | 2.00            | 20.00         | 0                 | 98.0 | 18 - 192 |              |       |           |      |
| Trichloroethene                      | 20.8   | µg/L           | SW8260C          | 0.105  | 2.00            | 20.00         | 0                 | 104  | 61 - 153 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4          | 56.0   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 112  | 72 - 151 |              |       |           |      |
| Surr: 4-Bromofluorobenzene           | 50.2   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 100  | 80 - 152 |              |       |           |      |
| Surr: Dibromofluoromethane           | 50.7   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 101  | 72 - 135 |              |       |           |      |
| Surr: Toluene-d8                     | 47.6   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 95.2 | 80 - 124 |              |       |           |      |

|                                      |     |                |                  |      |      |       |   |      |          |  |  |  |  |
|--------------------------------------|-----|----------------|------------------|------|------|-------|---|------|----------|--|--|--|--|
| <b>Lab Sample ID: 1812358-004AMS</b> |     |                |                  |      |      |       |   |      |          |  |  |  |  |
| Test Code: 8260-W                    |     | Date Analyzed: | 12/18/2018 1239h |      |      |       |   |      |          |  |  |  |  |
| 1,1,1-Trichloroethane                | 479 | µg/L           | SW8260C          | 2.84 | 40.0 | 400.0 | 0 | 120  | 67 - 147 |  |  |  |  |
| 1,1-Dichloroethene                   | 427 | µg/L           | SW8260C          | 5.50 | 40.0 | 400.0 | 0 | 107  | 51 - 152 |  |  |  |  |
| 1,2-Dichlorobenzene                  | 390 | µg/L           | SW8260C          | 2.10 | 40.0 | 400.0 | 0 | 97.6 | 70 - 130 |  |  |  |  |
| 1,2-Dichloroethane                   | 457 | µg/L           | SW8260C          | 1.98 | 40.0 | 400.0 | 0 | 114  | 39 - 162 |  |  |  |  |
| 1,2-Dichloropropane                  | 405 | µg/L           | SW8260C          | 1.94 | 40.0 | 400.0 | 0 | 101  | 59 - 135 |  |  |  |  |
| Benzene                              | 406 | µg/L           | SW8260C          | 1.91 | 40.0 | 400.0 | 0 | 102  | 66 - 145 |  |  |  |  |

Report Date: 12/19/2018 Page 17 of 33

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached COC. Confidential Business Information: This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.





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Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MS

| Analyte                       |  | Result         | Units            | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|-------------------------------|--|----------------|------------------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| Lab Sample ID: 1812358-004AMS |  | Date Analyzed: | 12/18/2018 1239h |         |      |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W             |  |                |                  |         |      |                 |               |                   |      |          |              |       |           |      |
| Chlorobenzene                 |  | 401            | µg/L             | SW8260C | 1.66 | 40.0            | 400.0         | 0                 | 100  | 63 - 140 |              |       |           |      |
| Chloroform                    |  | 435            | µg/L             | SW8260C | 2.00 | 40.0            | 400.0         | 0                 | 109  | 50 - 146 |              |       |           |      |
| Ethylbenzene                  |  | 402            | µg/L             | SW8260C | 2.06 | 40.0            | 400.0         | 0                 | 101  | 69 - 133 |              |       |           |      |
| Isopropylbenzene              |  | 414            | µg/L             | SW8260C | 2.62 | 40.0            | 400.0         | 0                 | 103  | 60 - 147 |              |       |           |      |
| Methyl tert-butyl ether       |  | 468            | µg/L             | SW8260C | 4.12 | 40.0            | 400.0         | 0                 | 117  | 37 - 189 |              |       |           |      |
| Methylene chloride            |  | 403            | µg/L             | SW8260C | 8.00 | 40.0            | 400.0         | 0                 | 101  | 30 - 192 |              |       |           |      |
| Naphthalene                   |  | 302            | µg/L             | SW8260C | 3.18 | 40.0            | 400.0         | 28                | 68.5 | 41 - 131 |              |       |           |      |
| Tetrahydrofuran               |  | 360            | µg/L             | SW8260C | 13.6 | 40.0            | 400.0         | 0                 | 90.1 | 43 - 146 |              |       |           |      |
| Toluene                       |  | 394            | µg/L             | SW8260C | 1.72 | 40.0            | 400.0         | 0                 | 98.6 | 18 - 192 |              |       |           |      |
| Trichloroethene               |  | 424            | µg/L             | SW8260C | 2.10 | 40.0            | 400.0         | 0                 | 106  | 61 - 153 |              |       |           |      |
| Xylenes, Total                |  | 1,230          | µg/L             | SW8260C | 6.20 | 40.0            | 1,200         | 0                 | 103  | 42 - 167 |              |       |           |      |
| Surr: 1,2-Dichloroethane-d4   |  | 1,120          | µg/L             | SW8260C |      |                 | 1,000         |                   | 112  | 72 - 151 |              |       |           |      |
| Surr: 4-Bromofluorobenzene    |  | 941            | µg/L             | SW8260C |      |                 | 1,000         |                   | 94.1 | 80 - 152 |              |       |           |      |
| Surr: Dibromofluoromethane    |  | 1,020          | µg/L             | SW8260C |      |                 | 1,000         |                   | 102  | 72 - 135 |              |       |           |      |
| Surr: Toluene-d8              |  | 932            | µg/L             | SW8260C |      |                 | 1,000         |                   | 93.2 | 80 - 124 |              |       |           |      |



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Kyle F. Gross  
Laboratory Director

Jose Rocha  
QA Officer

## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

**QC Type:** MSD

| Analyte                               | Result | Units          | Method           | MDL    | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD | RPD Limit | Qual |
|---------------------------------------|--------|----------------|------------------|--------|-----------------|---------------|-------------------|------|----------|--------------|-------|-----------|------|
| <b>Lab Sample ID: 1812358-001AMSD</b> |        |                |                  |        |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W                     |        | Date Analyzed: | 12/17/2018 1638h |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane                 | 21.9   | µg/L           | SW8260C          | 0.142  | 2.00            | 20.00         | 0                 | 109  | 67 - 147 | 22.8         | 3.90  | 25        |      |
| 1,1-Dichloroethene                    | 20.4   | µg/L           | SW8260C          | 0.275  | 2.00            | 20.00         | 0                 | 102  | 51 - 152 | 21.3         | 4.46  | 25        |      |
| 1,2-Dichlorobenzene                   | 18.9   | µg/L           | SW8260C          | 0.105  | 2.00            | 20.00         | 0                 | 94.6 | 70 - 130 | 19.7         | 3.84  | 25        |      |
| 1,2-Dichloroethane                    | 20.6   | µg/L           | SW8260C          | 0.0988 | 2.00            | 20.00         | 0                 | 103  | 39 - 162 | 22.2         | 7.44  | 25        |      |
| 1,2-Dichloropropane                   | 18.9   | µg/L           | SW8260C          | 0.0968 | 2.00            | 20.00         | 0                 | 94.6 | 59 - 135 | 19.5         | 3.12  | 25        |      |
| Benzene                               | 19.1   | µg/L           | SW8260C          | 0.0956 | 2.00            | 20.00         | 0                 | 95.4 | 66 - 145 | 19.9         | 3.90  | 25        |      |
| Chlorobenzene                         | 18.8   | µg/L           | SW8260C          | 0.0832 | 2.00            | 20.00         | 0                 | 93.8 | 63 - 140 | 19.6         | 4.23  | 25        |      |
| Chloroform                            | 20.0   | µg/L           | SW8260C          | 0.0998 | 2.00            | 20.00         | 0                 | 100  | 50 - 146 | 21           | 4.73  | 25        |      |
| Ethylbenzene                          | 18.6   | µg/L           | SW8260C          | 0.103  | 2.00            | 20.00         | 0                 | 93.0 | 69 - 133 | 19.8         | 6.30  | 25        |      |
| Isopropylbenzene                      | 19.6   | µg/L           | SW8260C          | 0.131  | 2.00            | 20.00         | 0                 | 97.9 | 60 - 147 | 20.3         | 3.86  | 25        |      |
| Methyl tert-butyl ether               | 20.6   | µg/L           | SW8260C          | 0.206  | 2.00            | 20.00         | 0                 | 103  | 37 - 189 | 21.7         | 4.91  | 25        |      |
| Methylene chloride                    | 18.6   | µg/L           | SW8260C          | 0.400  | 2.00            | 20.00         | 0                 | 93.3 | 30 - 192 | 20           | 7.19  | 25        |      |
| Naphthalene                           | 13.4   | µg/L           | SW8260C          | 0.159  | 2.00            | 20.00         | 0                 | 67.0 | 41 - 131 | 14.1         | 5.23  | 25        |      |
| Toluene                               | 18.8   | µg/L           | SW8260C          | 0.0858 | 2.00            | 20.00         | 0                 | 93.8 | 18 - 192 | 19.6         | 4.38  | 25        |      |
| Trichloroethene                       | 20.3   | µg/L           | SW8260C          | 0.105  | 2.00            | 20.00         | 0                 | 102  | 61 - 153 | 20.8         | 2.53  | 25        |      |
| Surr: 1,2-Dichloroethane-d4           | 55.2   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 110  | 72 - 151 |              |       |           |      |
| Surr: 4-Bromofluorobenzene            | 49.5   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 98.9 | 80 - 152 |              |       |           |      |
| Surr: Dibromofluoromethane            | 50.3   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 101  | 72 - 135 |              |       |           |      |
| Surr: Toluene-d8                      | 47.2   | µg/L           | SW8260C          |        |                 | 50.00         |                   | 94.5 | 80 - 124 |              |       |           |      |
| <b>Lab Sample ID: 1812358-004AMSD</b> |        |                |                  |        |                 |               |                   |      |          |              |       |           |      |
| Test Code: 8260-W                     |        | Date Analyzed: | 12/18/2018 1259h |        |                 |               |                   |      |          |              |       |           |      |
| 1,1,1-Trichloroethane                 | 472    | µg/L           | SW8260C          | 2.84   | 40.0            | 400.0         | 0                 | 118  | 67 - 147 | 479          | 1.30  | 25        |      |
| 1,1-Dichloroethene                    | 438    | µg/L           | SW8260C          | 5.50   | 40.0            | 400.0         | 0                 | 110  | 51 - 152 | 427          | 2.64  | 25        |      |
| 1,2-Dichlorobenzene                   | 402    | µg/L           | SW8260C          | 2.10   | 40.0            | 400.0         | 0                 | 101  | 70 - 130 | 390          | 2.93  | 25        |      |
| 1,2-Dichloroethane                    | 462    | µg/L           | SW8260C          | 1.98   | 40.0            | 400.0         | 0                 | 116  | 39 - 162 | 457          | 1.04  | 25        |      |
| 1,2-Dichloropropane                   | 419    | µg/L           | SW8260C          | 1.94   | 40.0            | 400.0         | 0                 | 105  | 59 - 135 | 405          | 3.25  | 25        |      |
| Benzene                               | 413    | µg/L           | SW8260C          | 1.91   | 40.0            | 400.0         | 0                 | 103  | 66 - 145 | 406          | 1.56  | 25        |      |

Report Date: 12/19/2018 Page 19 of 33

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## QC SUMMARY REPORT

**Client:** Wasatch Environmental

**Lab Set ID:** 1812358

**Project:** Millcreek Henries / 2249-001d

**Contact:** Mike Cronin

**Dept:** MSVOA

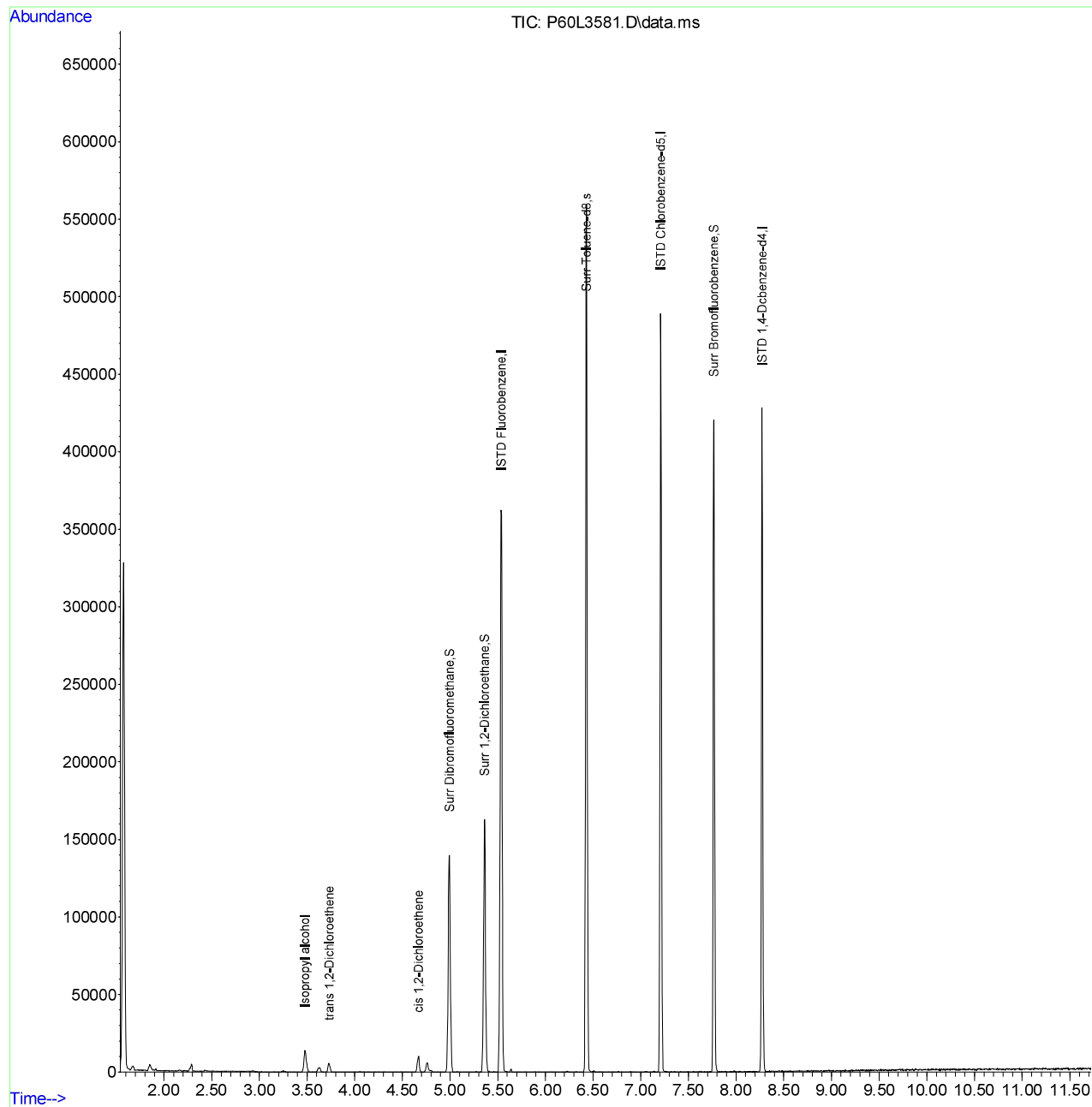
**QC Type:** MSD

| Analyte                        |  | Result         | Units            | Method  | MDL  | Reporting Limit | Amount Spiked | Spike Ref. Amount | %REC | Limits   | RPD Ref. Amt | % RPD  | RPD Limit | Qual |
|--------------------------------|--|----------------|------------------|---------|------|-----------------|---------------|-------------------|------|----------|--------------|--------|-----------|------|
| Lab Sample ID: 1812358-004AMSD |  | Date Analyzed: | 12/18/2018 1259h |         |      |                 |               |                   |      |          |              |        |           |      |
| Test Code: 8260-W              |  |                |                  |         |      |                 |               |                   |      |          |              |        |           |      |
| Chlorobenzene                  |  | 415            | µg/L             | SW8260C | 1.66 | 40.0            | 400.0         | 0                 | 104  | 63 - 140 | 401          | 3.33   | 25        |      |
| Chloroform                     |  | 435            | µg/L             | SW8260C | 2.00 | 40.0            | 400.0         | 0                 | 109  | 50 - 146 | 435          | 0.0460 | 25        |      |
| Ethylbenzene                   |  | 418            | µg/L             | SW8260C | 2.06 | 40.0            | 400.0         | 0                 | 105  | 69 - 133 | 402          | 3.85   | 25        |      |
| Isopropylbenzene               |  | 428            | µg/L             | SW8260C | 2.62 | 40.0            | 400.0         | 0                 | 107  | 60 - 147 | 414          | 3.52   | 25        |      |
| Methyl tert-butyl ether        |  | 466            | µg/L             | SW8260C | 4.12 | 40.0            | 400.0         | 0                 | 116  | 37 - 189 | 468          | 0.429  | 25        |      |
| Methylene chloride             |  | 413            | µg/L             | SW8260C | 8.00 | 40.0            | 400.0         | 0                 | 103  | 30 - 192 | 403          | 2.50   | 25        |      |
| Naphthalene                    |  | 309            | µg/L             | SW8260C | 3.18 | 40.0            | 400.0         | 28                | 70.4 | 41 - 131 | 302          | 2.42   | 25        |      |
| Tetrahydrofuran                |  | 373            | µg/L             | SW8260C | 13.6 | 40.0            | 400.0         | 0                 | 93.3 | 43 - 146 | 360          | 3.55   | 25        |      |
| Toluene                        |  | 407            | µg/L             | SW8260C | 1.72 | 40.0            | 400.0         | 0                 | 102  | 18 - 192 | 394          | 3.14   | 25        |      |
| Trichloroethene                |  | 440            | µg/L             | SW8260C | 2.10 | 40.0            | 400.0         | 0                 | 110  | 61 - 153 | 424          | 3.79   | 25        |      |
| Xylenes, Total                 |  | 1,260          | µg/L             | SW8260C | 6.20 | 40.0            | 1,200         | 0                 | 105  | 42 - 167 | 1230         | 2.29   | 25        |      |
| Surr: 1,2-Dichloroethane-d4    |  | 1,110          | µg/L             | SW8260C |      |                 | 1,000         |                   | 111  | 72 - 151 |              |        |           |      |
| Surr: 4-Bromofluorobenzene     |  | 956            | µg/L             | SW8260C |      |                 | 1,000         |                   | 95.6 | 80 - 152 |              |        |           |      |
| Surr: Dibromofluoromethane     |  | 1,020          | µg/L             | SW8260C |      |                 | 1,000         |                   | 102  | 72 - 135 |              |        |           |      |
| Surr: Toluene-d8               |  | 951            | µg/L             | SW8260C |      |                 | 1,000         |                   | 95.1 | 80 - 124 |              |        |           |      |

# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\17DEC18\  
 Data File : P60L3581.D  
 Acq On : 17 Dec 2018 03:00 pm  
 Operator :  
 Sample : 1812358-001A  
 Misc : SAMP 5.0ML 10F3 DG  
 ALS Vial : 19 Sample Multiplier: 1

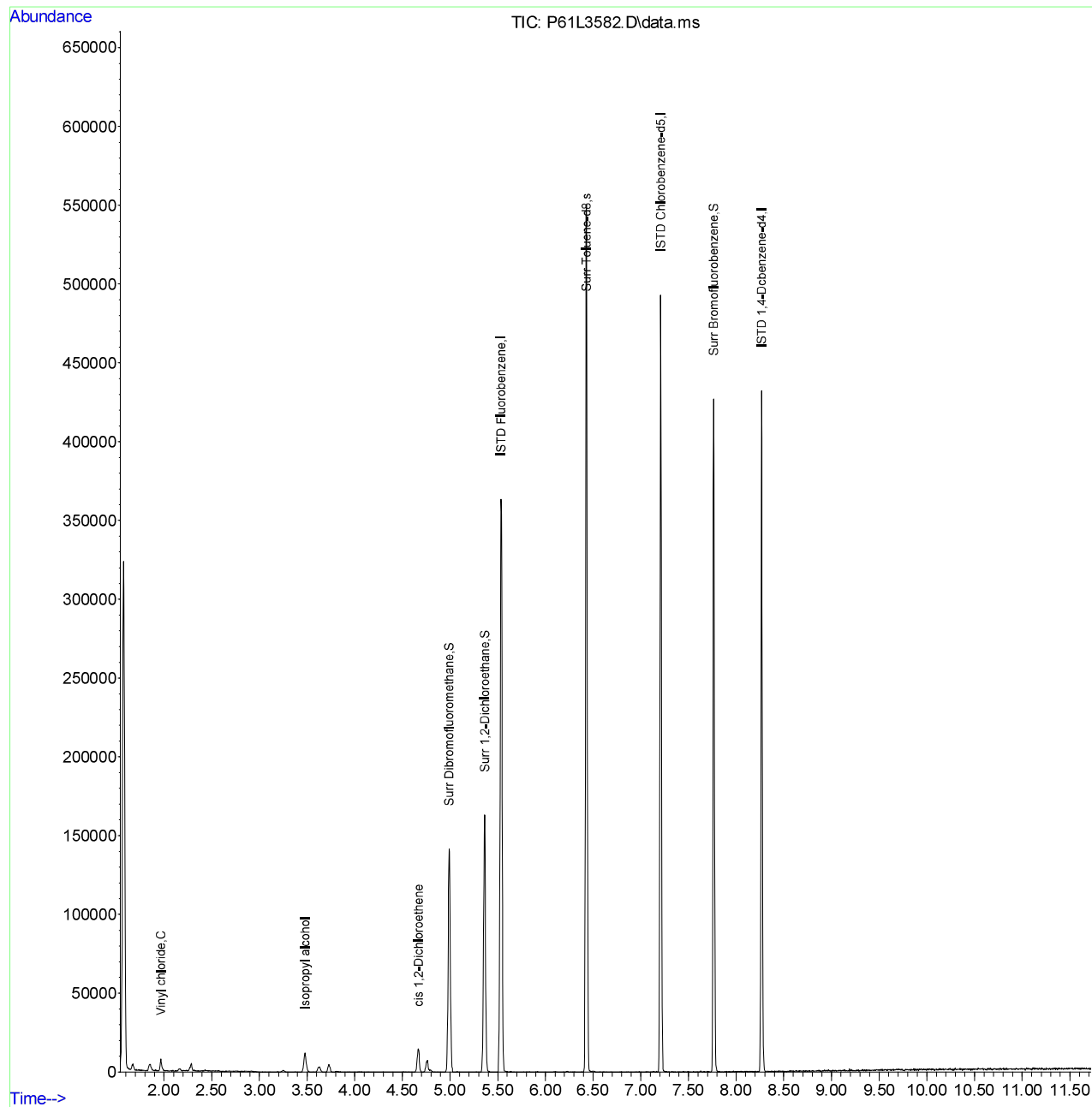
Quant Time: Dec 17 15:11:57 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\17DEC18A\  
 Data File : P61L3582.D  
 Acq On : 17 Dec 2018 03:19 pm  
 Operator :  
 Sample : 1812358-002A  
 Misc : SAMP 5.0ML 10F3 DG  
 ALS Vial : 20 Sample Multiplier: 1

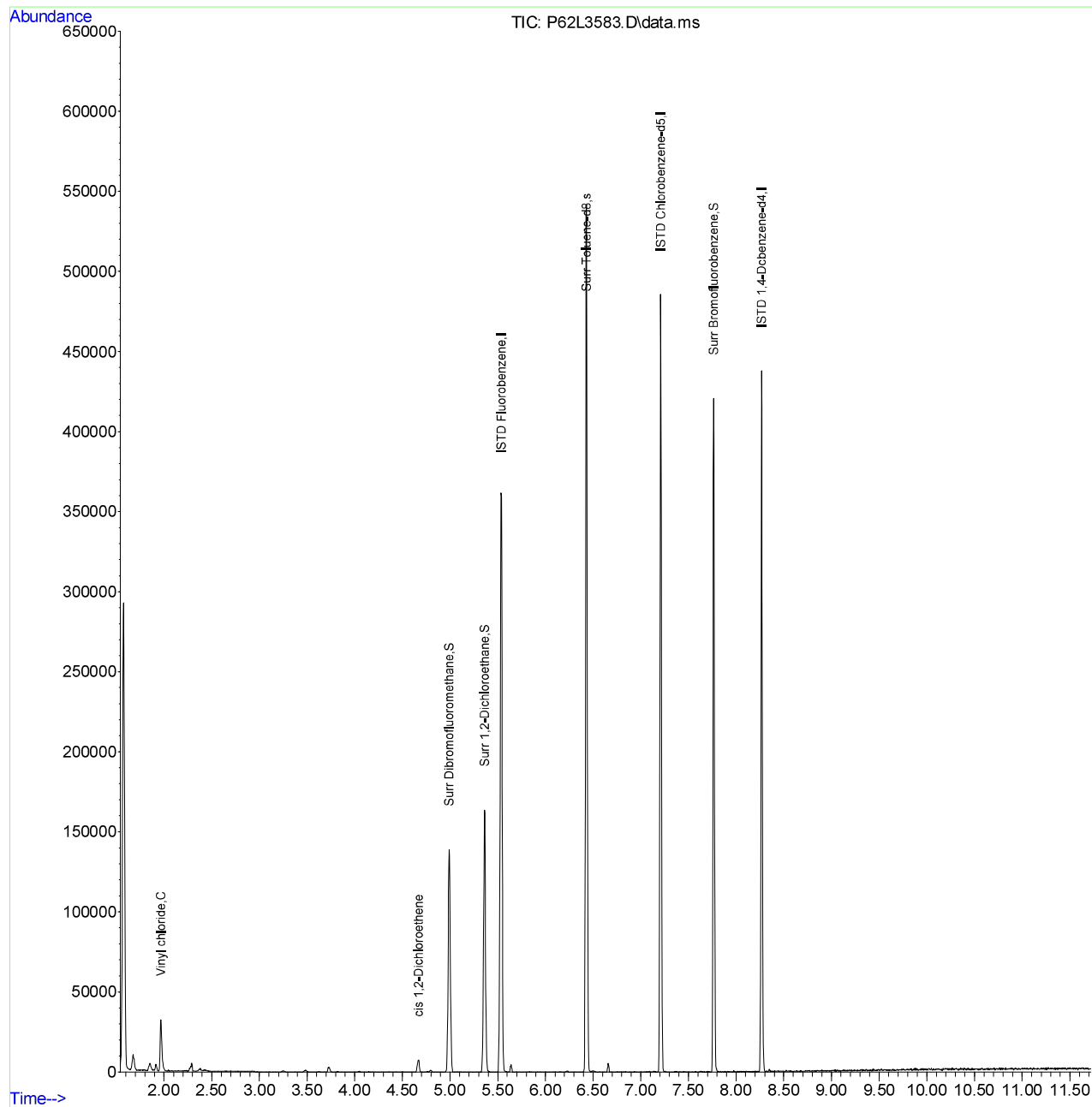
Quant Time: Dec 17 15:31:39 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\17DEC18\  
 Data File : P62L3583.D  
 Acq On : 17 Dec 2018 03:39 pm  
 Operator :  
 Sample : 1812358-003A  
 Misc : SAMP 5.0ML 10F3 DG  
 ALS Vial : 21 Sample Multiplier: 1

Quant Time: Dec 17 15:51:21 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration

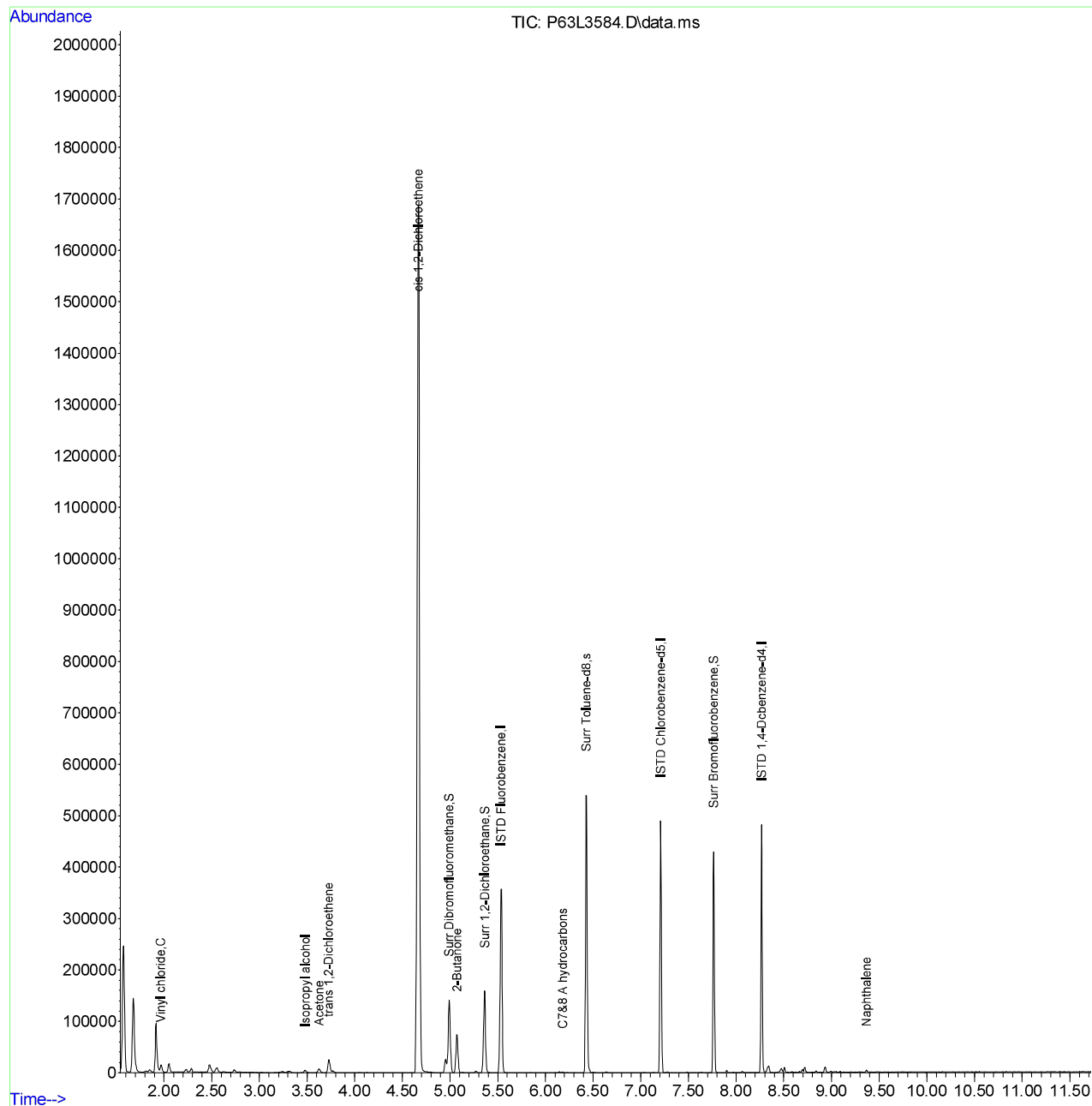




# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\17DEC18\  
 Data File : P63L3584.D  
 Acq On : 17 Dec 2018 03:59 pm  
 Operator :  
 Sample : 1812358-004A  
 Misc : SAMP 5.0ML 10F3 DG  
 ALS Vial : 22 Sample Multiplier: 1

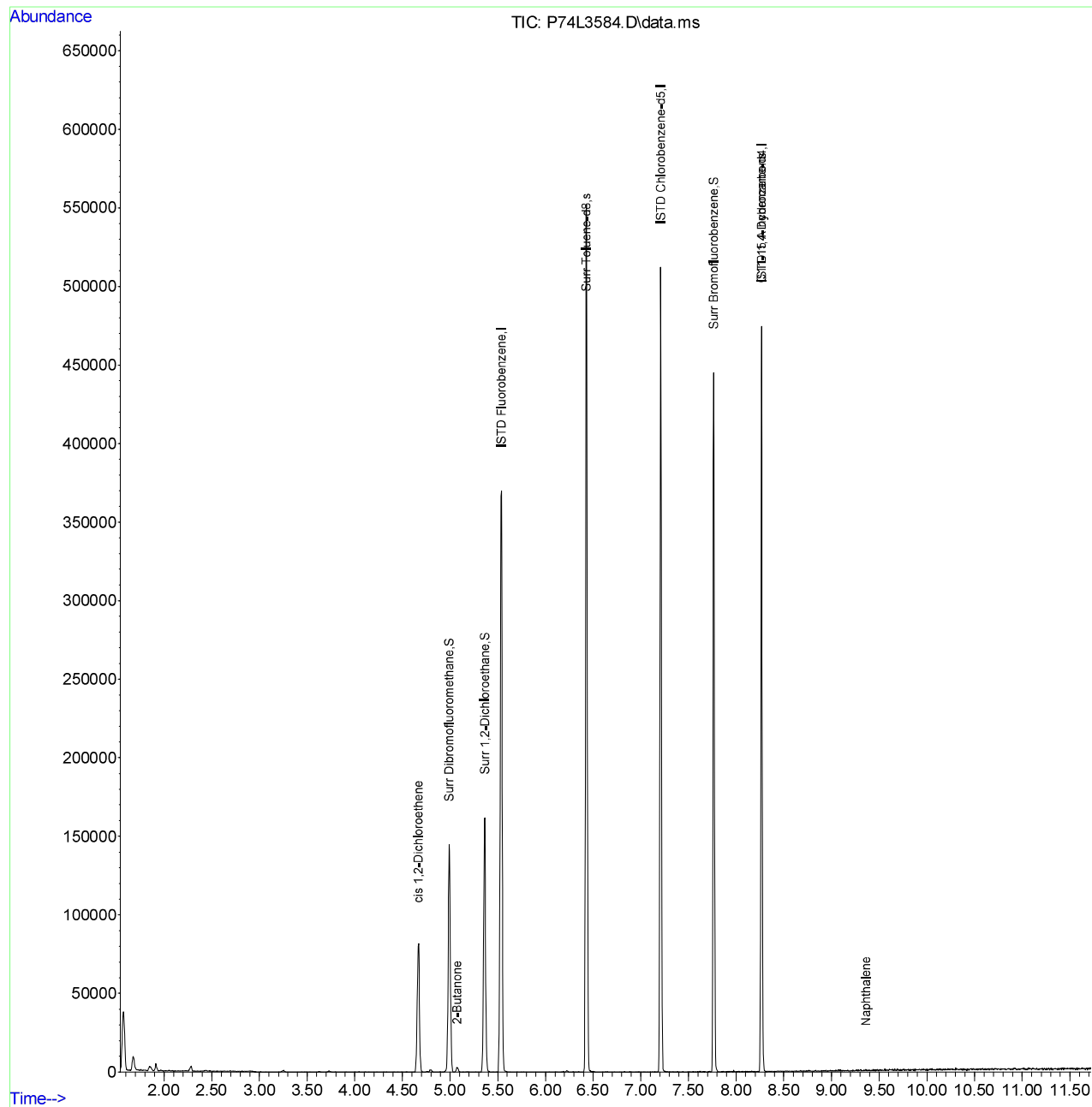
Quant Time: Dec 17 16:10:59 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\18DEC18\  
 Data File : P74L3584.D  
 Acq On : 18 Dec 2018 12:20 pm  
 Operator :  
 Sample : 1812358-004A  
 Misc : SAMP 2.5ML/50ML 20F3 DG  
 ALS Vial : 9 Sample Multiplier: 20

Quant Time: Dec 18 12:32:10 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration



(Not Reviewed)

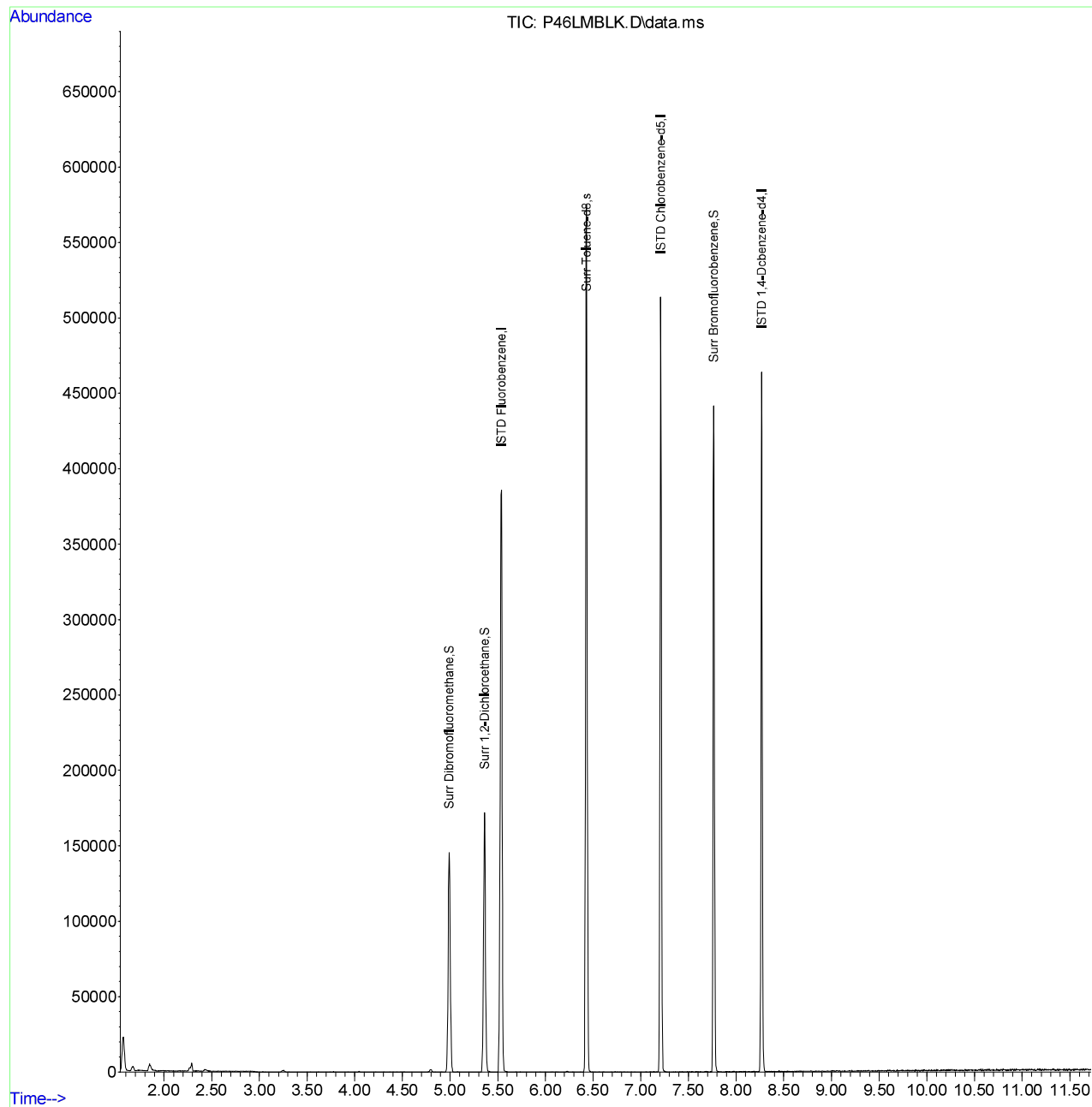
Quant Time: Dec 17 09:45:54 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\17DEC18A\  
 Data File : P46LMBLK.D  
 Acq On : 17 Dec 2018 10:13 am  
 Operator :  
 Sample : MB VOC-1 121718A  
 Misc : MBLK 5.0ML DG  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 17 10:25:04 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration



(Not Reviewed)

Quant Time: Dec 17 16:30:39 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration



(Not Reviewed)

Quant Time: Dec 17 16:50:19 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration

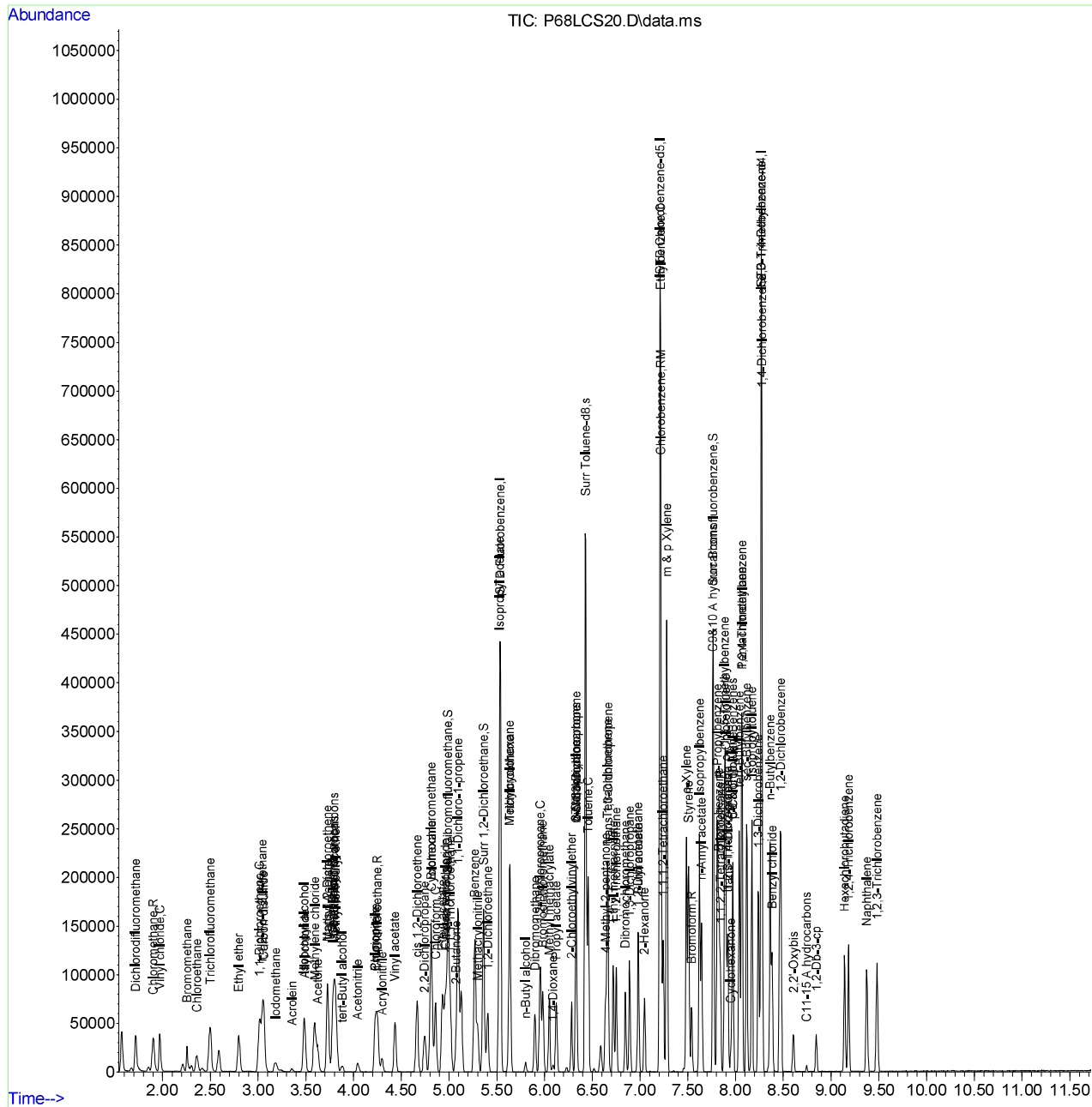




(Not Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\18DEC18A\  
Data File : P68LCS20.D  
Acq On : 18 Dec 2018 10:22 am  
Operator :  
Sample : LCS VOC-1 121818A  
Misc : LCS SEE COVERSHEET FOR ID AND AMOUNTS DG  
ALS Vial : 3 Sample Multiplier: 1

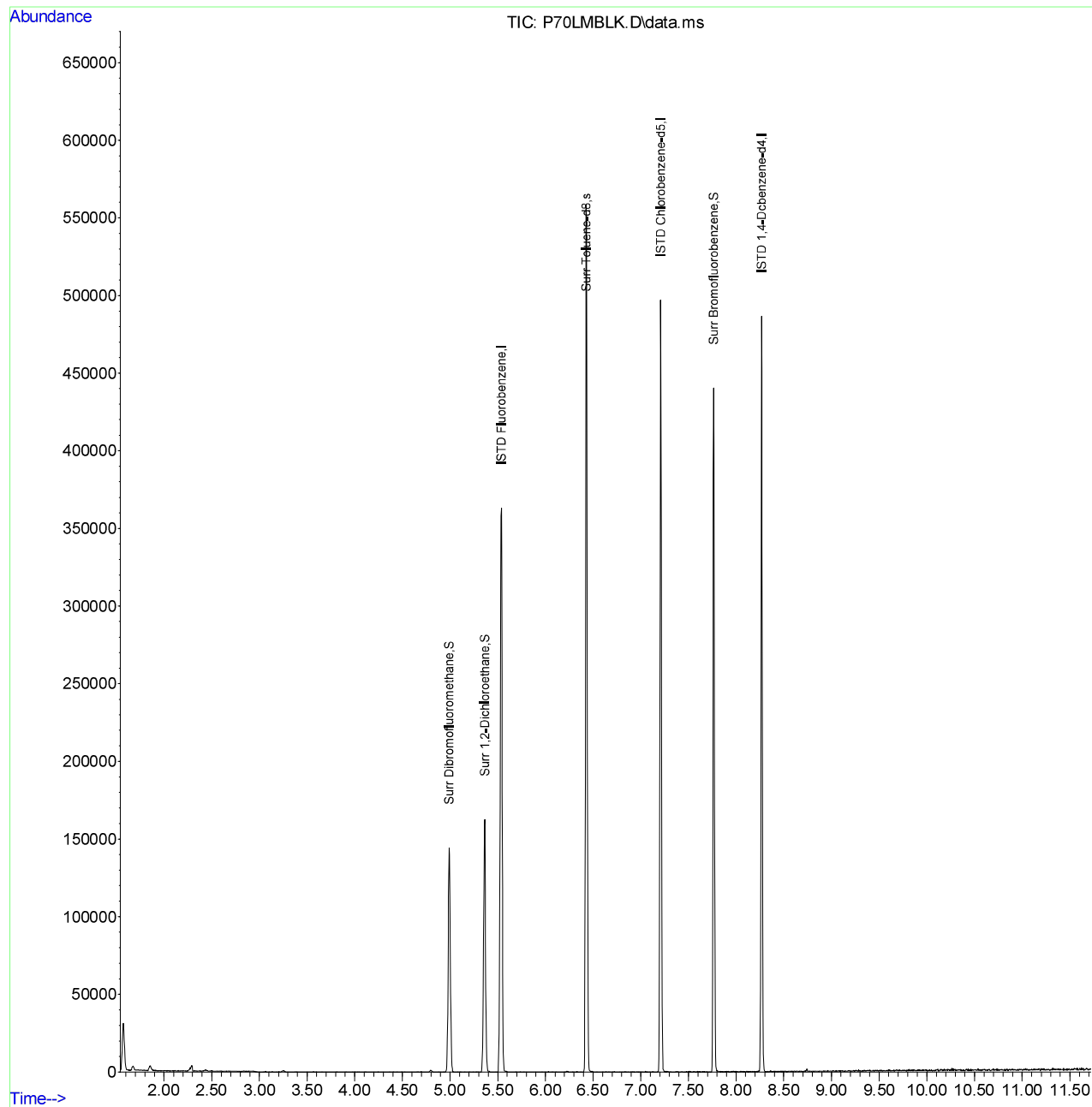
Quant Time: Dec 18 10:34:04 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration



# Quantitation Report (QT Reviewed)

Data Path : C:\MassHunter\GCMS\1\data\DEC18-1\18DEC18A\  
 Data File : P70LMBLK.D  
 Acq On : 18 Dec 2018 11:01 am  
 Operator :  
 Sample : MB VOC-1 121818A  
 Misc : MBLK 5.0ML DG  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Dec 18 11:13:23 2018  
 Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
 Quant Title : VOA Calibration  
 QLast Update : Mon Oct 15 11:03:16 2018  
 Response via : Initial Calibration



(Not Reviewed)

Quant Time: Dec 18 12:51:48 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration



(Not Reviewed)

Quant Time: Dec 18 13:11:24 2018  
Quant Method : C:\MassHunter\GCMS\1\methods\VOA1W\_129.M  
Quant Title : VOA Calibration  
QLast Update : Mon Oct 15 11:03:16 2018  
Response via : Initial Calibration



**WORK ORDER Summary**Work Order: **1812358**

Page 1 of 1

Client: Wasatch Environmental

Due Date: 12/28/2018

Client ID: WAS580

Contact: Mike Cronin

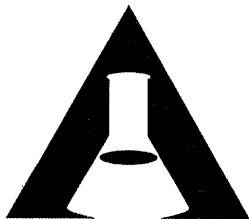
Project: Millcreek Henries / 2249-001d

QC Level: III

WO Type: Standard

Comments: PA Rush / QC3;

| Sample ID                                                 | Client Sample ID | Collected Date   | Received Date    | Test Code | Matrix  | Sel | Storage |
|-----------------------------------------------------------|------------------|------------------|------------------|-----------|---------|-----|---------|
| 1812358-001A                                              | MW-3             | 12/17/2018 1023h | 12/17/2018 1335h | 8260-W    | Aqueous |     | Purge 3 |
| Test Group: 8260-W-AWAL; # of Analytes: 53 / # of Surr: 4 |                  |                  |                  |           |         |     |         |
| 1812358-002A                                              | MW-2             | 12/17/2018 1109h | 12/17/2018 1335h | 8260-W    | Aqueous |     | Purge 3 |
| Test Group: 8260-W-AWAL; # of Analytes: 53 / # of Surr: 4 |                  |                  |                  |           |         |     |         |
| 1812358-003A                                              | MW-1             | 12/17/2018 1153h | 12/17/2018 1335h | 8260-W    | Aqueous |     | Purge 3 |
| Test Group: 8260-W-AWAL; # of Analytes: 53 / # of Surr: 4 |                  |                  |                  |           |         |     |         |
| 1812358-004A                                              | MW-6             | 12/17/2018 1245h | 12/17/2018 1335h | 8260-W    | Aqueous |     | Purge 3 |
| Test Group: 8260-W-AWAL; # of Analytes: 53 / # of Surr: 4 |                  |                  |                  |           |         |     |         |



# American West Analytical Laboratories

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Fax # (801) 263-8687 Email awal@awal-labs.com

www.awal-labs.com

## CHAIN OF CUSTODY

All analysis will be conducted using NELAP accredited methods and all data will be reported using AWAL's standard analyte lists and reporting limits (PQL) unless specifically requested otherwise on this Chain of Custody and/or attached documentation.

1812358

AWAL Lab Sample Set #

Page 1 of 1

| QC Level: |   | Turn Around Time: |    | Unless other arrangements have been made, signed reports will be emailed by |   | Due Date: |   |   |     |                                                                                                                                                                                                                                                                                                                  |  |                                                                                                                                                                                                                           |  |
|-----------|---|-------------------|----|-----------------------------------------------------------------------------|---|-----------|---|---|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1         | 2 | 3                 | 3+ | 1                                                                           | 2 | 3         | 4 | 5 | Std | 5:00 pm on the day they are due.                                                                                                                                                                                                                                                                                 |  | 12/28                                                                                                                                                                                                                     |  |
|           |   |                   |    |                                                                             |   |           |   |   |     | <input type="checkbox"/> Report down to the MDL<br><input type="checkbox"/> Include EDD:<br><input type="checkbox"/> Lab Filter for:                                                                                                                                                                             |  | Laboratory Use Only<br>COC Tape Was:<br>1 Present on Outer Package<br>Y N NA<br>2 Unbroken on Outer Package<br>Y N<br>3 Present on Sample<br>Y N<br>4 Unbroken on Sample<br>Y N                                           |  |
|           |   |                   |    |                                                                             |   |           |   |   |     | For Compliance With:<br><input type="checkbox"/> NELAP<br><input type="checkbox"/> RCRA<br><input type="checkbox"/> CWA<br><input type="checkbox"/> SDWA<br><input type="checkbox"/> ELAP / A2LA<br><input type="checkbox"/> NLLAP<br><input type="checkbox"/> Non-Compliance<br><input type="checkbox"/> Other: |  |                                                                                                                                                                                                                           |  |
|           |   |                   |    |                                                                             |   |           |   |   |     | Known Hazards & Sample Comments                                                                                                                                                                                                                                                                                  |  | Samples Were:<br>1 Shipped or hand delivered<br>2 Ambient or Chilled on ice<br>3 Temperature 5.9 °C<br>4 Received Intact<br>Y N<br>5 Properly Preserved<br>Y N Checked at bench<br>6 Received Within Holding Times<br>Y N |  |
|           |   |                   |    |                                                                             |   |           |   |   |     |                                                                                                                                                                                                                                                                                                                  |  | Sample Labels and COC Record Match?<br>Y N                                                                                                                                                                                |  |

|    | Sample ID: | Date Sampled | Time Sampled | # of Containers | Sample Matrix |
|----|------------|--------------|--------------|-----------------|---------------|
| 1  | MW-3       | 12-17-18     | 1023         | 3               | W X           |
| 2  | MW-2       | 12-17-18     | 1109         | 3               | W X           |
| 3  | MW-1       | 12-17-18     | 1153         | 3               | W X           |
| 4  | MW-6       | 12-17-18     | 1245         | 3               | W X           |
| 5  |            |              |              |                 |               |
| 6  |            |              |              |                 |               |
| 7  |            |              |              |                 |               |
| 8  |            |              |              |                 |               |
| 9  |            |              |              |                 |               |
| 10 |            |              |              |                 |               |
| 11 |            |              |              |                 |               |
| 12 |            |              |              |                 |               |
| 13 |            |              |              |                 |               |
| 14 |            |              |              |                 |               |
| 15 |            |              |              |                 |               |

|                                |                              |                            |                              |
|--------------------------------|------------------------------|----------------------------|------------------------------|
| Relinquished by:<br>Signature: | Date: 12-17-18<br>Time: 1335 | Received by:               | Date: 12-17-18<br>Time: 1335 |
| Print Name: Blake B. Draney    |                              | Print Name: Selma Hay      |                              |
| Relinquished by:<br>Signature: | Date:                        | Received by:<br>Signature: | Date:                        |
| Print Name:                    | Time:                        | Print Name:                | Time:                        |
| Relinquished by:<br>Signature: | Date:                        | Received by:<br>Signature: | Date:                        |
| Print Name:                    | Time:                        | Print Name:                | Time:                        |

|                       |
|-----------------------|
| Special Instructions: |
|                       |
|                       |
|                       |
|                       |
|                       |



## **Appendix N**

### **Indoor Air Laboratory Analytical Report**



## Case Narrative

**Method:** TO15  
**Analysis:** VOA  
**Preparation SOP #:** IH-AN-014  
**Work Order:** 1835293

**Client:** Wasatch Environmental, Inc.  
**Matrix:** Air

**Analysis / Method:** Method TO15 is an EPA method used in the analysis of air samples for volatile organics by GC/MS, which have been sampled in a silonized canister.

**General Set Information:** ALS received four summa canisters for VOA analysis. The samples were analyzed within thirty days of sampling. Recoveries of target analytes are reported on the Analytical Report in units of ppb v/v and  $\mu\text{g}/\text{m}^3$ .

**Sample Preparation:** This method has no extraction procedure for air samples. The sample preparation date is the same as the date of analysis. Two hundred milliliters of air sample and 100 milliliters of Internal Standard were trapped using an Entech 7200 microscale purge and trap concentrator.

**Instrument Calibration:** The GC/MS was hardware tuned to meet the criteria for 4-Bromofluorobenzene as specified in the SOP. This tune check is valid for 24 hours.

**Initial and Continuing Calibration Verification:** The initial calibration curve, which was analyzed prior to sample analysis, met the specified criteria of the SOP. For the initial calibration curve, the %RSD of the response factors for the TO-15 analytes were checked. The ICV that was analyzed with the curve met the specified criteria of the SOP.

A continuing calibration standard (CCS) was analyzed prior to sample analysis. The CCS met the criteria as specified in the SOP.

**Method Blank Analysis:** A laboratory method blank was prepared using 200 milliliters of humidified ultra high purity nitrogen and 100 milliliters of Internal Standards and analyzed prior to sample analysis. The blank was free of volatile organic contaminants below the reporting limit.

**Data Qualifier Codes:** A "J" qualifier indicates that the result is greater than the MDL but less than the PQL. Analytes found in field samples, which also appear in the method blank above the PQL are reported with a "B" qualifier in the flag column. The "E" qualifier indicates a reported value above the analytical linear range.

**LCS/LCSD:** An LCS and LCSD pair was analyzed for the analytical batch.

**Dilutions:** None.

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**NC/CAR:** None.

**Miscellaneous Comments:** Instrument designation is 5975-K. Field samples were analyzed using auto sampler positions that were free from volatile contaminants.

**Sample Calculations:** Target Compounds

$$\text{Relative Response Factor: } \mathbf{RRF} = \left[ \frac{\mathbf{A_x}}{\mathbf{A_{is}}} \right] \left[ \frac{\mathbf{C_{is}}}{\mathbf{C_x}} \right]$$

Where **A<sub>x</sub>** is the area of the characteristic ion for the compound to be measured, **A<sub>is</sub>** is the area of the characteristic ion for the internal standard, **C<sub>is</sub>** is the concentration of the internal standard, and **C<sub>x</sub>** is the concentration of the compound to be measured.

$$\text{Concentration in ppb v/v: } \mathbf{C} = \left[ \frac{(\mathbf{A_x}) (\mathbf{I_s}) (\mathbf{Df})}{(\mathbf{A_{is}}) (\mathbf{RRF})} \right]$$

$$\text{Concentration in ug/m}^3: \quad \mathbf{C} = \mathbf{ppb \text{ v/v} (MW/24.45)}$$

Where **I<sub>s</sub>** is the amount of internal standard spiked in ppb, **Df** is a dilution factor (1 if no dilutions are made), **RRF** is the relative response factor (assumed to be 1 for non target analytes) and **MW** is the molecular weight of the compound of interest.

|                   |                          |
|-------------------|--------------------------|
| <u>Benson Boy</u> | <u>December 27, 2018</u> |
| Analyst           | Date                     |



## ANALYTICAL REPORT

Report Date: December 27, 2018

Blake Downey  
Wasatch Environmental  
2410 California Ave  
Salt Lake City, UT 84104

Phone: (435) 760-8269

E-mail: [bd@wasatch-environmental.com](mailto:bd@wasatch-environmental.com)

Workorder: **34-1835293**

Project ID: 2249-cold/Millcreek Henres

Purchase Order: NA

Project Manager Jessica Helland

| Client Sample ID | Lab ID     | Collect Date | Receive Date | Sampling Site    |
|------------------|------------|--------------|--------------|------------------|
| IA-8             | 1835293001 | NA           | 12/18/18     | Millcreek Henres |
| OA-2             | 1835293002 | NA           | 12/18/18     | Millcreek Henres |
| IA-6             | 1835293003 | NA           | 12/18/18     | Millcreek Henres |
| IA-7             | 1835293004 | NA           | 12/18/18     | Millcreek Henres |

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RIGHT SOLUTIONS RIGHT PARTNER



# ANALYTICAL REPORT

Workorder: **34-1835293**

Client: Wasatch Environmental,  
Inc.

Project Manager: Jessica Helland

## Analytical Results

|                                    |              |                                 |                                                                                          |                      |                                                                 |
|------------------------------------|--------------|---------------------------------|------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------|
| Sample ID: <b>IA-8</b>             |              | Sampling Site: Millcreek Henres |                                                                                          | Received: 12/18/2018 |                                                                 |
| Lab ID: 1835293001                 |              | Media: Summa 6 Liter Canister   |                                                                                          |                      |                                                                 |
| Matrix: Air                        |              | Sampling Parameter: NA          |                                                                                          |                      |                                                                 |
| <b>Analysis Method - EPA TO-15</b> |              |                                 |                                                                                          |                      |                                                                 |
| Preparation: Not Applicable        |              |                                 | Analysis: EPA TO-15, Air<br>Batch: IVOA/4201 (HBN: 229851)<br>Analyzed: 12/20/2018 08:42 |                      | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |
| Analyte                            | Result (ppb) | Result (ug/m³)                  | MDL (ppb)                                                                                | RL (ppb)             | Dilution Qual                                                   |
| Vinyl chloride                     | ND           | <0.38                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| 1,1-Dichloroethene                 | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| trans-1,2-Dichloroethene           | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| cis-1,2-Dichloroethene             | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| 1,1-Dichloroethane                 | ND           | <0.61                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| 1,2-Dichloroethane                 | ND           | <0.61                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| Trichloroethene                    | ND           | <0.81                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| Tetrachloroethene                  | 0.97         | 6.5                             | 0.15                                                                                     | 0.50                 | 1                                                               |

|                                    |              |                                 |                                                                                          |                      |                                                                 |      |
|------------------------------------|--------------|---------------------------------|------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------|------|
| Sample ID: <b>OA-2</b>             |              | Sampling Site: Millcreek Henres |                                                                                          | Received: 12/18/2018 |                                                                 |      |
| Lab ID: 1835293002                 |              | Media: Summa 6 Liter Canister   |                                                                                          |                      |                                                                 |      |
| Matrix: Air                        |              | Sampling Parameter: NA          |                                                                                          |                      |                                                                 |      |
| <b>Analysis Method - EPA TO-15</b> |              |                                 |                                                                                          |                      |                                                                 |      |
| Preparation: Not Applicable        |              |                                 | Analysis: EPA TO-15, Air<br>Batch: IVOA/4201 (HBN: 229851)<br>Analyzed: 12/20/2018 01:02 |                      | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |      |
| Analyte                            | Result (ppb) | Result (ug/m³)                  | MDL (ppb)                                                                                | RL (ppb)             | Dilution                                                        | Qual |
| Vinyl chloride                     | ND           | <0.38                           | 0.15                                                                                     | 0.50                 | 1                                                               | U    |
| 1,1-Dichloroethene                 | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1                                                               | U    |
| trans-1,2-Dichloroethene           | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1                                                               | U    |
| cis-1,2-Dichloroethene             | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1                                                               | U    |
| 1,1-Dichloroethane                 | ND           | <0.61                           | 0.15                                                                                     | 0.50                 | 1                                                               | U    |
| 1,2-Dichloroethane                 | ND           | <0.61                           | 0.15                                                                                     | 0.50                 | 1                                                               | U    |
| Trichloroethene                    | ND           | <0.81                           | 0.15                                                                                     | 0.50                 | 1                                                               | U    |
| Tetrachloroethene                  | ND           | <1.0                            | 0.15                                                                                     | 0.50                 | 1                                                               | U    |



## ANALYTICAL REPORT

Workorder: **34-1835293**

Client: Wasatch Environmental,  
Inc.

Project Manager: Jessica Helland

### Analytical Results

|                             |              |                                 |                                                                                          |                      |                                                                 |
|-----------------------------|--------------|---------------------------------|------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------|
| Sample ID: <b>IA-6</b>      |              | Sampling Site: Millcreek Henres |                                                                                          | Received: 12/18/2018 |                                                                 |
| Lab ID: 1835293003          |              | Media: Summa 6 Liter Canister   |                                                                                          |                      |                                                                 |
| Matrix: Air                 |              | Sampling Parameter: NA          |                                                                                          |                      |                                                                 |
| Analysis Method - EPA TO-15 |              |                                 |                                                                                          |                      |                                                                 |
| Preparation: Not Applicable |              |                                 | Analysis: EPA TO-15, Air<br>Batch: IVOA/4201 (HBN: 229851)<br>Analyzed: 12/20/2018 09:19 |                      | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |
| Analyte                     | Result (ppb) | Result (ug/m³)                  | MDL (ppb)                                                                                | RL (ppb)             | Dilution Qual                                                   |
| Vinyl chloride              | ND           | <0.38                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| 1,1-Dichloroethene          | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| trans-1,2-Dichloroethene    | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| cis-1,2-Dichloroethene      | ND           | <0.59                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| 1,1-Dichloroethane          | ND           | <0.61                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| 1,2-Dichloroethane          | ND           | <0.61                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| Trichloroethene             | ND           | <0.81                           | 0.15                                                                                     | 0.50                 | 1 U                                                             |
| Tetrachloroethene           | 1.3          | 9.0                             | 0.15                                                                                     | 0.50                 | 1                                                               |

|                             |              |                |                                                                                          |          |                                                                 |      |
|-----------------------------|--------------|----------------|------------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------|------|
| Sample ID: <b>IA-7</b>      |              |                | Sampling Site: Millcreek Henres                                                          |          | Received: 12/18/2018                                            |      |
| Lab ID: 1835293004          |              |                | Media: Summa 6 Liter Canister                                                            |          |                                                                 |      |
| Matrix: Air                 |              |                | Sampling Parameter: NA                                                                   |          |                                                                 |      |
| Analysis Method - EPA TO-15 |              |                |                                                                                          |          |                                                                 |      |
| Preparation: Not Applicable |              |                | Analysis: EPA TO-15, Air<br>Batch: IVOA/4201 (HBN: 229851)<br>Analyzed: 12/20/2018 01:42 |          | Instrument ID: 5975-K<br>Percent Solid: NA<br>Report Basis: Wet |      |
| Analyte                     | Result (ppb) | Result (ug/m³) | MDL (ppb)                                                                                | RL (ppb) | Dilution                                                        | Qual |
| Vinyl chloride              | ND           | <0.38          | 0.15                                                                                     | 0.50     | 1                                                               | U    |
| 1,1-Dichloroethene          | ND           | <0.59          | 0.15                                                                                     | 0.50     | 1                                                               | U    |
| trans-1,2-Dichloroethene    | ND           | <0.59          | 0.15                                                                                     | 0.50     | 1                                                               | U    |
| cis-1,2-Dichloroethene      | ND           | <0.59          | 0.15                                                                                     | 0.50     | 1                                                               | U    |
| 1,1-Dichloroethane          | ND           | <0.61          | 0.15                                                                                     | 0.50     | 1                                                               | U    |
| 1,2-Dichloroethane          | ND           | <0.61          | 0.15                                                                                     | 0.50     | 1                                                               | U    |
| Trichloroethene             | ND           | <0.81          | 0.15                                                                                     | 0.50     | 1                                                               | U    |
| Tetrachloroethene           | 0.28         | 1.9            | 0.15                                                                                     | 0.50     | 1                                                               | J    |

### Comments

**Quality Control: EPA TO-15 - (HBN: 229851)**

The LCS/LSCD percent recovery did not meet performance limits for all compounds. This is not a method a requirement.





## ANALYTICAL REPORT

**Workorder:** 34-1835293

**Client:** Wasatch Environmental,  
Inc.

**Project Manager:** Jessica Helland

**Report Authorization** (/S/ is an electronic signature that complies with 21 CFR Part 11)

| Method    | Analyst                            | Peer Review                          |
|-----------|------------------------------------|--------------------------------------|
| EPA TO-15 | /S/ Benson Boy<br>12/20/2018 15:29 | /S/ Lisa M. Reid<br>12/27/2018 14:39 |

### Laboratory Contact Information

ALS Environmental  
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Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: [alslt.lab@ALSGlobal.com](mailto:alslt.lab@ALSGlobal.com)  
Web: [www.alssl.com](http://www.alssl.com)

### General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

| Testing Sector | Accreditation Body | Certificate Number | Website |
|----------------|--------------------|--------------------|---------|
| Environmental  | PJLA (DoD ELAP)    |                    |         |
|                | Utah (TNI)         |                    |         |
|                | Nevada             |                    |         |
|                | Oklahoma           |                    |         |
|                | Iowa               |                    |         |



## ANALYTICAL REPORT

**Workorder:** 34-1835293

**Client:** Wasatch Environmental,  
Inc.

**Project Manager:** Jessica Helland

### Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.

RL = Reporting Limit, a verified value of method/media/instrument sensitivity.

CRDL = Contract Required Detection Limit

Reg. Limit = Regulatory Limit.

ND = Not Detected, testing result not detected above the MDL or RL.

< This testing result is less than the numerical value.

\*\* No result could be reported, see sample comments for details.

### Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.

J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.

B = Qualifier indicates that the analyte was detected in the blank.

E = Qualifier indicates that the analyte result exceeds calibration range.

P = Qualifier indicates that the RPD between the two columns is greater than 40%.



# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1835293

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** EPA TO-15

**Batch:** IVOA/4201 (HBN: 229851)

**Analyzed By:** Benson Boy

## Blank

**MB:** 633626

**Analyzed:** 12/19/2018 16:01

**Units:** ppb

| Analyte                  | Result | MDL  | RL    |
|--------------------------|--------|------|-------|
| Vinyl chloride           | ND     | 0.15 | 0.500 |
| 1,1-Dichloroethene       | ND     | 0.15 | 0.500 |
| trans-1,2-Dichloroethene | ND     | 0.15 | 0.500 |
| cis-1,2-Dichloroethene   | ND     | 0.15 | 0.500 |
| 1,1-Dichloroethane       | ND     | 0.15 | 0.500 |
| 1,2-Dichloroethane       | ND     | 0.15 | 0.500 |
| Trichloroethene          | ND     | 0.15 | 0.500 |
| Tetrachloroethene        | ND     | 0.15 | 0.500 |

## Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 633627

**Analyzed:** 12/19/2018 12:21

**Dilution:** 1

**Units:** ppb

**LCSD:** 633628

**Analyzed:** 12/19/2018 13:01

**Dilution:** 1

**Units:** ppb

| Analyte                  | Result | Target | % Rec | QC Limits |       | Result | % Rec | RPD    | QC Limits |      |
|--------------------------|--------|--------|-------|-----------|-------|--------|-------|--------|-----------|------|
| Vinyl chloride           | 11.0   | 10.0   | 110   | 51.9      | 146.1 | 10.5   | 105   | 4.59   | 0.0       | 25.0 |
| 1,1-Dichloroethene       | 9.53   | 10.0   | 95.3  | 53.6      | 144.6 | 9.49   | 94.9  | 0.410  | 0.0       | 25.0 |
| trans-1,2-Dichloroethene | 9.08   | 10.0   | 90.8  | 62.5      | 139.3 | 9.05   | 90.5  | 0.238  | 0.0       | 25.0 |
| cis-1,2-Dichloroethene   | 9.16   | 10.0   | 91.6  | 63.7      | 141.6 | 9.09   | 90.9  | 0.785  | 0.0       | 25.0 |
| 1,1-Dichloroethane       | 9.29   | 10.0   | 92.9  | 62.2      | 134.2 | 9.29   | 92.9  | 0.0151 | 0.0       | 25.0 |
| 1,2-Dichloroethane       | 8.83   | 10.0   | 88.3  | 52.7      | 143.7 | 8.88   | 88.8  | 0.591  | 0.0       | 25.0 |
| Trichloroethene          | 8.36   | 10.0   | 83.6  | 70.9      | 137.0 | 8.48   | 84.8  | 1.36   | 0.0       | 25.0 |
| Tetrachloroethene        | 8.05   | 10.0   | 80.5  | 60.0      | 146.0 | 8.02   | 80.2  | 0.386  | 0.0       | 25.0 |

## Surrogate Recoveries

| Surrogate   | 4-Bromofluorobenzene |        |            |
|-------------|----------------------|--------|------------|
| QC Limits   | 67.7                 | 129.9  |            |
| Units       | ppb                  |        |            |
| Lab ID      | Result               | Target | % Recovery |
| 633627-LCS  | 19.4                 | 20.0   | 97.0       |
| 633628-LCSD | 19.4                 | 20.0   | 97.2       |
| 633626-MB   | 19.1                 | 20.0   | 95.7       |
| 1835379001  | 20.0                 | 20.0   | 99.8       |
| 1835379002  | 20.1                 | 20.0   | 100        |
| 1835379003  | 20.1                 | 20.0   | 101        |
| 1835379004  | 20.0                 | 20.0   | 99.9       |
| 1835379005  | 19.9                 | 20.0   | 99.6       |
| 1835290001  | 19.3                 | 20.0   | 96.6       |



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1835293

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** EPA TO-15

**Batch:** IVOA/4201 (HBN: 229851)

**Analyzed By:** Benson Boy

### Surrogate Recoveries

| Surrogate  | 4-Bromofluorobenzene |        |            |
|------------|----------------------|--------|------------|
| QC Limits  | 67.7                 | 129.9  |            |
| Units      | ppb                  |        |            |
| Lab ID     | Result               | Target | % Recovery |
| 1835290002 | 18.9                 | 20.0   | 94.5       |
| 1835290003 | 19.5                 | 20.0   | 97.3       |
| 1835290004 | 19.0                 | 20.0   | 95.1       |
| 1835293002 | 19.1                 | 20.0   | 95.6       |
| 1835293004 | 19.1                 | 20.0   | 95.4       |
| 1835256003 | 18.7                 | 20.0   | 93.3       |
| 1835293001 | 18.6                 | 20.0   | 93.0       |
| 1835293003 | 18.1                 | 20.0   | 90.7       |

### Comments

The LCS/LSCD percent recovery did not meet performance limits for all compounds. This is not a method a requirement.

### QC Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

|                                    |                                      |
|------------------------------------|--------------------------------------|
| <b>Analyst</b>                     | <b>Peer Review</b>                   |
| /S/ Benson Boy<br>12/20/2018 15:31 | /S/ Lisa M. Reid<br>12/27/2018 14:39 |

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit
- - Result is above the calibration range
- # - The Matrix Spike, Matrix Spike duplicate or Matrix Duplicate is reported for your information only. The sample matrix may be inappropriate for the method selected.

RPD - Relative % Difference (Spike / Spike Duplicate)  
ND - Not Detected (U - Qualifier also flags analyte as not detected)  
NA - Not Applicable  
QC results are not adjusted for moisture correction, where applicable

AN 11 1835293

Environmental Division

Canister Chain of Custody

1835293



Client: WAGatch Environmental

Project/Job/Task: 2349-c01d / Mill Creek House

Account No:

Please do not apply adhesive labels directly on Canisters

Manilla tags are provided, attached to Canisters for your convenience, to apply adhesive labels

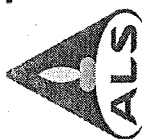
| Canister Serial No.: | Date Cleaned | Initial Vacuum (inches of Hg vacuum) | VFR flow rate (ml/min) | Initials: | Field Vacuum before sampling (inches of Hg vacuum) | Final Vacuum after sampling (Inches of Hg vacuum) | Client Sample Identification | Other Client Information | ALS use only |
|----------------------|--------------|--------------------------------------|------------------------|-----------|----------------------------------------------------|---------------------------------------------------|------------------------------|--------------------------|--------------|
| 284 -                | 12/5/18      | >25                                  |                        | AW        | 28.1                                               | 5.0                                               | IA-8                         | NOX 10-5                 |              |
| 681 -                |              |                                      |                        |           | 29.4                                               | 6.0                                               | OA-2                         | NOX 10-5                 |              |
| 6061 -               |              |                                      |                        |           | 26.0                                               | 4.0                                               | IA-6                         | NOX 10-5                 |              |
| 449 -                |              |                                      |                        |           | 22.4                                               | 4.0                                               | IA-7                         | NOX 10-5                 |              |
|                      |              |                                      |                        |           |                                                    |                                                   |                              |                          |              |
| VFR Serial No.:      |              |                                      |                        |           |                                                    |                                                   |                              |                          |              |
| 2009 -               | 12/13/18     |                                      | ~11.3                  | AW        |                                                    |                                                   |                              |                          |              |
| 360 -                |              |                                      |                        |           |                                                    |                                                   |                              |                          |              |
| 887 -                |              |                                      |                        |           |                                                    |                                                   |                              |                          |              |
| 711 -                |              |                                      |                        |           |                                                    |                                                   |                              |                          |              |

Original Field Sample Chain-of-Custody

| Relinquished By: (Signature) | Date/Time         | Received By: (Signature) | Reason for Transfer/Storage Location | Return to:               |
|------------------------------|-------------------|--------------------------|--------------------------------------|--------------------------|
| <i>[Signature]</i>           | 12/13/18 12pm     | <i>[Signature]</i>       | Pick-up                              | ALS Laboratory Group     |
| <i>[Signature]</i>           | 12/18/18 10:53 AM | <i>[Signature]</i>       | Drop-off                             | 960 W. LeVoy Drive       |
|                              |                   |                          |                                      | Salt Lake City, UT 84123 |
|                              |                   |                          |                                      | 800-356-9135             |

If canisters are kept for longer than the original project scheduled sampling, a \$40 per can - per week rental fee will be assessed. If a project is cancelled after ALS has shipped cans, in addition to the cost of the initial shipping, a \$40 weekly rental fee will be charged for each unused can until they are returned to ALS.

# Batch Worklist



Batch: IVOA/4201

Rule: EPA TO-15, Air

Created: 12/20/2018 09:25

Analyst: B. Boy

Instrument: 5975-K

Status: RE

HBN: 229851



Workorder: 1835256 [ENV\_LVL1]  
 Workorder: 1835290 [ENV\_LVL2]  
 Workorder: 1835293 [ENV\_LVL4]  
 Workorder: 1835379 [ENV\_LVL4]

| Pos | Lab ID     | Sample ID                       | Prep Initial | Prep Final | Dust Weight | Type   | Mx | Container    | Procedure  | Mgr  | Expire Date | Due Date   | Run Date   |
|-----|------------|---------------------------------|--------------|------------|-------------|--------|----|--------------|------------|------|-------------|------------|------------|
| 1   | 633626     | MB for HBN 229851 [IVOA/4201]   |              |            |             | MB     | 1  |              | ETO15...1Q | 6216 |             | 12/20/2018 | 12/19/2018 |
| 2   | 633627     | LCS for HBN 229851 [IVOA/4201]  |              |            |             | LCS    | 1  |              | ETO15...1Q | 6216 |             | 12/20/2018 | 12/19/2018 |
| 3   | 633628     | LCSD for HBN 229851 [IVOA/4201] |              |            |             | LCSD   | 1  |              | ETO15...1Q | 6216 |             | 12/20/2018 | 12/19/2018 |
| 4   | 633629     | RLVS for HBN 229851 [IVOA/4201] |              |            |             | RLVS   | 1  |              | ETO15...1Q | 6216 |             | 12/20/2018 | 12/19/2018 |
| 5   | 1835379001 | Air 1                           |              |            |             | SAMPLE | 1  | 1835379001-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 6   | 1835379002 | Air 3                           |              |            |             | SAMPLE | 1  | 1835379002-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 7   | 1835379003 | Air 4                           |              |            |             | SAMPLE | 1  | 1835379003-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 8   | 1835379004 | Air 5                           |              |            |             | SAMPLE | 1  | 1835379004-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 9   | 1835379005 | Air 6                           |              |            |             | SAMPLE | 1  | 1835379005-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 10  | 1835290001 | SV-1                            |              |            |             | SAMPLE | 1  | 1835290001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 11  | 1835290002 | SV-2                            |              |            |             | SAMPLE | 1  | 1835290002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 12  | 1835290003 | SV-3                            |              |            |             | SAMPLE | 1  | 1835290003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 13  | 1835290004 | SV-4                            |              |            |             | SAMPLE | 1  | 1835290004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 14  | 1835293001 | IA-8                            |              |            |             | SAMPLE | 1  | 1835293001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 15  | 1835293002 | OA-2                            |              |            |             | SAMPLE | 1  | 1835293002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 16  | 1835293003 | IA-6                            |              |            |             | SAMPLE | 1  | 1835293003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 17  | 1835293004 | IA-7                            |              |            |             | SAMPLE | 1  | 1835293004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 18  | 1835256003 | KT181212-1                      |              |            |             | SAMPLE | 1  | 1835256003-A | ETO15...1  | 5875 |             | 12/27/2018 |            |





**Analyst Notebook**

TO15

HBN: 229851

Workorder #'s/Sample #'s:

1835379001-005

1835290001-004

1835293001-004

1835256003

Date of analysis/extraction: 12/19/18

Analyst: BB

Instrument : 5975-K

QC/QD: 45202 (200ml)

RLVS: 45202 (10 ml)

ISTD; 44228 (100 ml)

Column: DB-1

Inst. Program: TO-15; Initial 40 °C for 4 min; 10 °C/min to 220 °C hold for 3 mins.

Run time: 26 min for 5975-K

Carrier Gas: Helium

Cold Trap Dehydration

Initial Calibration Curve/Quantitation method: TO15KH18 (HBN: 227674) ICV; 44731

Dilutions: none

**Comments:**

The percent difference for target compounds in the CCV standard must be less than 30% relative to the target. The following compound(s) did not meet this criteria; estimates.

The LCS/LSCD percent recovery did not meet performance limits for all compounds. This is not a method a requirement.

## 5.6 GC/MS Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

| <u>GC/MS Technical Review Criteria</u>                                                                                                                            | <u>Analyst Initials</u> | <u>Reviewer Initials</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|
| <u>Batch(es)/SDG:</u> 229451                                                                                                                                      |                         |                          |
| <u>Sample Set IDs if Applicable:</u> 1435293                                                                                                                      |                         |                          |
| <u>GC/MS Tuning passed criteria (BFB or DFTPP)</u>                                                                                                                | BFB                     |                          |
| <u>Calibration standards analyzed and meets criteria</u>                                                                                                          | BFB                     |                          |
| <u>Standards traceability checked and meets criteria</u>                                                                                                          | BFB                     |                          |
| <u>Standard curve coefficient evaluated and meets criteria</u>                                                                                                    | BFB                     |                          |
| <u>ICVs analyzed and meet acceptance criteria</u>                                                                                                                 | BFB                     |                          |
| <u>CCVs analyzed and meet acceptance criteria</u>                                                                                                                 | BFB                     |                          |
| <u>Method Blanks analyzed and meet acceptance criteria</u>                                                                                                        | BFB                     |                          |
| <u>Review of spectral assignments</u>                                                                                                                             | BFB                     |                          |
| <u>Relative Retention Time checked</u>                                                                                                                            | BFB                     |                          |
| <u>Internal Standards checked</u>                                                                                                                                 | BFB                     |                          |
| <u>Surrogate recoveries checked and appropriately addressed</u>                                                                                                   | BFB                     |                          |
| <u>Sample Frequency – Analyzed within appropriate tune window</u>                                                                                                 | BFB                     |                          |
| <u>Method Preparation Blanks analyzed and meet acceptance criteria</u>                                                                                            | BFB                     |                          |
| <u>MSs, MSDs, and/or MDs analyzed and calculations checked; applicable flags applied on QC reports; LCSs analyzed and meet acceptance criteria when performed</u> | BFB                     |                          |
| <u>RLVS analyzed</u>                                                                                                                                              | BFB                     |                          |
| <u>Preparation and analysis hold times met</u>                                                                                                                    | BFB                     |                          |
| <u>Preparation deviations and re-preparations noted when performed</u>                                                                                            | BFB                     |                          |
| <u>Analysis deviations and re-analyses noted when performed</u>                                                                                                   | BFB                     |                          |
| <u>Sample dilution factors noted on reports</u>                                                                                                                   | BFB                     |                          |
| <u>Electronic records in HBN transcription accuracy and completeness checked</u>                                                                                  | BFB                     |                          |
| <u>Preparation and analysis calculations checked</u>                                                                                                              | BFB                     |                          |
| <u>NCRs are completed as necessary NC/CAR#</u>                                                                                                                    | N/A                     |                          |
| <u>Report forms are complete and accurate</u>                                                                                                                     | BFB                     |                          |
| <u>Manual integrations checked</u>                                                                                                                                | BFB                     |                          |

|          |                               |    |          | sequence |       |   |       |              |  |
|----------|-------------------------------|----|----------|----------|-------|---|-------|--------------|--|
| KE52BFB  | 12/19/2018 11:42              | BB | TO15KH18 | 3        | 25.99 | 1 | WATER | BFB          |  |
|          | 0                             |    |          |          |       |   |       |              |  |
|          | COMMENTS: 44228               |    |          |          |       |   |       |              |  |
| KE53LCS  | 12/19/2018 12:21              | BB | TO15KH18 | 2        | 25.99 | 1 | WATER | 10 PPB LCS   |  |
|          | 277824                        |    |          |          |       |   |       |              |  |
|          | COMMENTS: (200ml) 45202 44228 |    |          |          |       |   |       |              |  |
| KE54LCSD | 12/19/2018 13:01              | BB | TO15KH18 | 2        | 25.99 | 1 | WATER | 10 PPB LCSD  |  |
|          | 280576                        |    |          |          |       |   |       |              |  |
|          | COMMENTS: (200ml) 45202 44228 |    |          |          |       |   |       |              |  |
| KE55RLVS | 12/19/2018 13:39              | BB | TO15KH18 | 2        | 25.99 | 1 | WATER | 0.5 PPB RLVS |  |
|          | 256960                        |    |          |          |       |   |       |              |  |
|          | COMMENTS: (10ml) 45202 44228  |    |          |          |       |   |       |              |  |
| KE56BLK  | 12/19/2018 14:18              | BB | TO15KH18 | 3        | 25.99 | 1 | WATER | BLANK        |  |
|          | 235200                        |    |          |          |       |   |       |              |  |
|          | COMMENTS: 44228               |    |          |          |       |   |       |              |  |
| KE57BLK  | 12/19/2018 16:01              | BB | TO15KH18 | 3        | 25.99 | 1 | WATER | BLANK        |  |
|          | 225536                        |    |          |          |       |   |       |              |  |
|          | COMMENTS: 44228               |    |          |          |       |   |       |              |  |
| KE58I001 | 12/19/2018 17:01              | BB | TO15KH18 | 4        | 25.99 | 1 | WATER | 1835379001   |  |
|          | 221312                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE59I002 | 12/19/2018 17:41              | BB | TO15KH18 | 14       | 25.99 | 1 | WATER | 1835379002   |  |
|          | 230912                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE60I003 | 12/19/2018 18:21              | BB | TO15KH18 | 15       | 25.99 | 1 | WATER | 1835379003   |  |
|          | 232640                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE61I004 | 12/19/2018 19:01              | BB | TO15KH18 | 16       | 25.99 | 1 | WATER | 1835379004   |  |
|          | 232064                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE62I005 | 12/19/2018 19:41              | BB | TO15KH18 | 3        | 25.99 | 1 | WATER | 1835379005   |  |
|          | 238272                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE63I001 | 12/19/2018 21:43              | BB | TO15KH18 | 9        | 25.99 | 1 | WATER | 1835290001   |  |
|          | 242816                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE64I002 | 12/19/2018 22:24              | BB | TO15KH18 | 10       | 25.99 | 1 | WATER | 1835290002   |  |
|          | 265344                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE65I003 | 12/19/2018 23:04              | BB | TO15KH18 | 11       | 25.99 | 1 | WATER | 1835290003   |  |
|          | 287232                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |
| KE66I002 | 12/19/2018 23:42              | BB | TO15KH18 | 10       | 25.99 | 1 | WATER | 1835290002   |  |
|          | 267520                        |    |          |          |       |   |       |              |  |
|          | COMMENTS: 1:20 dil 10ml       |    |          |          |       |   |       |              |  |
| KE67I004 | 12/20/2018 00:21              | BB | TO15KH18 | 12       | 25.99 | 1 | WATER | 1835290004   |  |
|          | 259904                        |    |          |          |       |   |       |              |  |
|          | COMMENTS:                     |    |          |          |       |   |       |              |  |

seqnce

|          |                                   |    |          |    |       |   |       |            |
|----------|-----------------------------------|----|----------|----|-------|---|-------|------------|
| KE68I002 | 12/20/2018 01:02                  | BB | TO15KH18 | 6  | 25.99 | 1 | WATER | 1835293002 |
|          | 247232                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE69I004 | 12/20/2018 01:42                  | BB | TO15KH18 | 8  | 25.99 | 1 | WATER | 1835293004 |
|          | 277184                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE70I001 | 12/20/2018 02:23                  | BB | TO15KH18 | 13 | 25.99 | 1 | WATER | 1835256003 |
|          | 334592                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE71I001 | 12/20/2018 03:02                  | BB | TO15KH18 | 13 | 25.99 | 1 | WATER | 1835256003 |
|          | 249856                            |    |          |    |       |   |       |            |
|          | COMMENTS: 1:20 DIL 10ML           |    |          |    |       |   |       |            |
| KE72I003 | 12/20/2018 03:40                  | BB | TO15KH18 | 7  | 25.99 | 1 | WATER | 1835293003 |
|          | 241280                            |    |          |    |       |   |       |            |
|          | COMMENTS: 1:20 dil 10ml           |    |          |    |       |   |       |            |
| KE74I004 | 12/20/2018 07:57                  | BB | TO15KH18 | 8  | 25.99 | 1 | WATER | 1835293004 |
|          | 0                                 |    |          |    |       |   |       |            |
|          | COMMENTS: 1:20 dil 10ml           |    |          |    |       |   |       |            |
| KE75I001 | 12/20/2018 08:42                  | BB | TO15KH18 | 4  | 25.99 | 1 | WATER | 1835293001 |
|          | 240128                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE76I003 | 12/20/2018 09:19                  | BB | TO15KH18 | 7  | 25.99 | 1 | WATER | 1835293003 |
|          | 279808                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE77I001 | 12/20/2018 09:58                  | BB | TO15KH18 | 16 | 25.99 | 1 | WATER | 1835288001 |
|          | 219264                            |    |          |    |       |   |       |            |
|          | COMMENTS: 1:1000 dil 20ml of 100x |    |          |    |       |   |       |            |

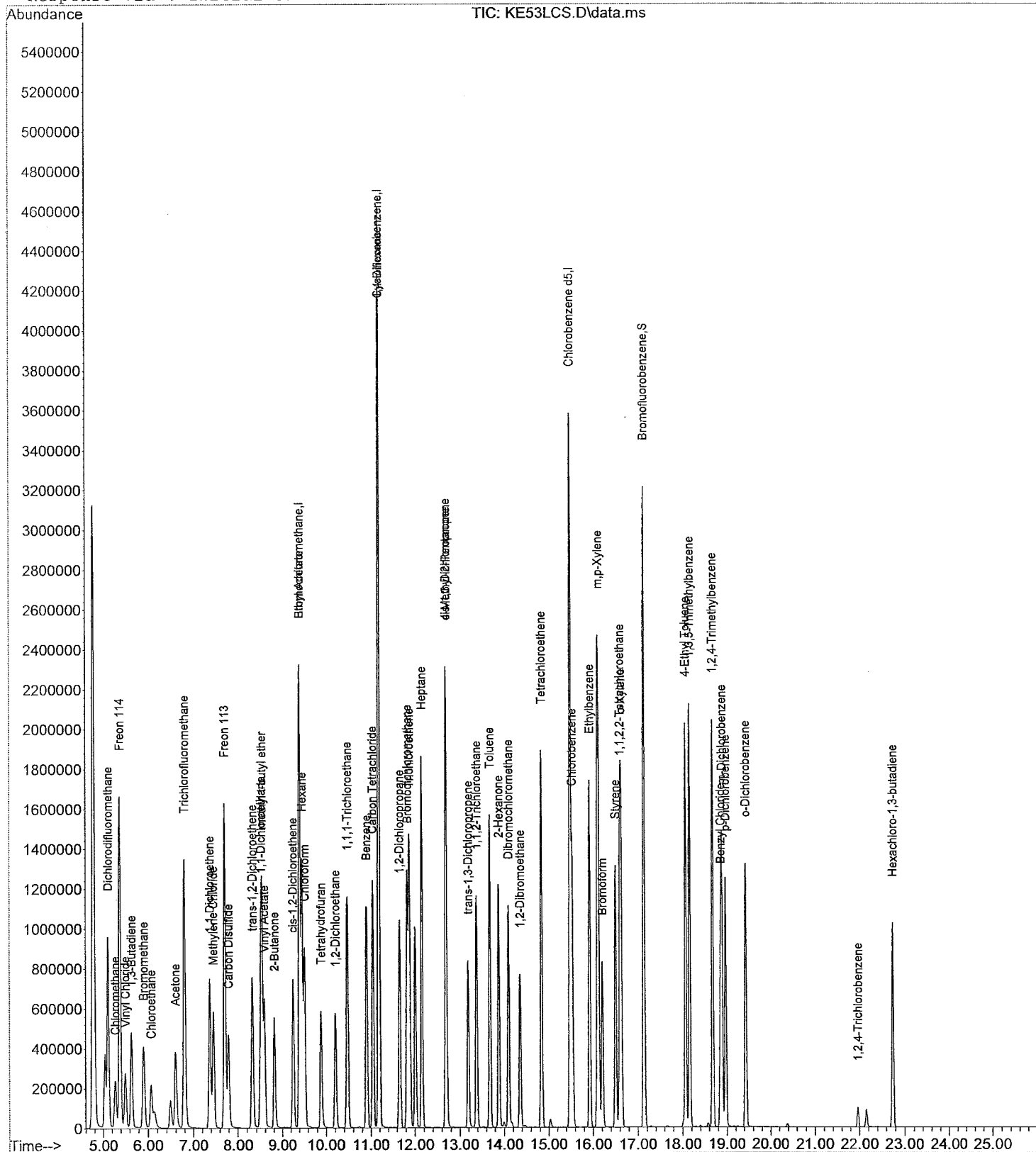
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE53LCS.D Vial: 2  
Acq Time : 12/19/2018 12:21 Operator: BB  
Sample : 10 PPB LCS Inst : 5975-K  
Misc : (200ml) 45202 44228 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 19 13:06:58 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE53LCS.D Vial: 2  
 Acq Time : 12/19/2018 12:21 Operator: BB  
 Sample : 10 PPB LCS Inst : 5975-K  
 Misc : (200ml) 45202 44228 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 19 13:06:58 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc    | Units | Area%     |
|-------------------------------|-------|------|----------|---------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 277824   | 20.00   | ppb   | 92.07     |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 3704571  | 20.00   | ppb   | 98.42     |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2871380  | 20.00   | ppb   | 102.26    |
| System Monitoring Compounds   |       |      |          |         |       | %Recovery |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1565078  | 19.40   | ppb   | 96.99%    |
| -Target Compounds             |       |      |          |         |       | Qvalue    |
| 2) Dichlorodifluoromethane    | 5.11  | 85   | 1531046  | 10.0030 | ppb   | 99        |
| 3) Chloromethane              | 5.28  | 50   | 481821   | 11.5137 | ppb   | 100       |
| 4) Freon 114                  | 5.38  | 135  | 1128276  | 10.5124 | ppb   | 100       |
| 5) Vinyl Chloride             | 5.50  | 62   | 528178   | 10.9681 | ppb   | 100       |
| 6) 1,3-Butadiene              | 5.64  | 54   | 410786   | 10.8475 | ppb   | 98        |
| 7) Bromomethane               | 5.90  | 94   | 486965   | 10.6315 | ppb   | 99        |
| 8) Chloroethane               | 6.07  | 64   | 319855   | 10.3725 | ppb   | 99        |
| 9) Acetone                    | 6.59  | 43   | 807883   | 9.3544  | ppb   | 99        |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 1283976  | 9.4155  | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 794693   | 9.5312  | ppb   | 97        |
| 12) Methylene Chloride        | 7.45  | 84   | 397694   | 8.6801  | ppb   | 95        |
| 13) Freon 113                 | 7.71  | 151  | 746572   | 8.8270  | ppb   | 95        |
| 14) Carbon Disulfide          | 7.79  | 76   | 1080344  | 9.6051  | ppb   | 100       |
| 15) trans-1,2-Dichloroethene  | 8.32  | 96   | 454980   | 9.0761  | ppb   | 97        |
| 16) 1,1-Dichloroethane        | 8.50  | 63   | 867816   | 9.2906  | ppb   | 99        |
| 17) methyl t-butyl ether      | 8.53  | 73   | 1240559  | 8.8422  | ppb   | 99        |
| 18) Vinyl Acetate             | 8.59  | 86   | 119257   | 9.4001  | ppb   | 91        |
| 19) 2-Butanone                | 8.81  | 43   | 1032035  | 9.3630  | ppb   | 99        |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 479439   | 9.1642  | ppb   | 97        |
| 22) Ethyl Acetate             | 9.40  | 61   | 170879   | 8.8336  | ppb   | 94        |
| 23) Hexane                    | 9.46  | 57   | 849881   | 9.1407  | ppb   | 99        |
| 24) Chloroform                | 9.52  | 83   | 961909   | 8.6507  | ppb   | 99        |
| 25) Tetrahydrofuran           | 9.88  | 42   | 559727   | 9.1003  | ppb   | 97        |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 660938   | 8.8280  | ppb   | 99        |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 1003486  | 8.6336  | ppb   | 98        |
| 28) Benzene                   | 10.90 | 78   | 1314751  | 8.5300  | ppb   | 99        |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 1047348  | 8.9792  | ppb   | 100       |
| 30) Cyclohexane               | 11.18 | 84   | 674234   | 8.6423  | ppb   | 96        |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 520900   | 8.6670  | ppb   | 100       |
| 32) Bromodichloromethane      | 11.83 | 83   | 941587   | 8.8138  | ppb   | 100       |
| 33) Trichloroethene           | 11.88 | 130  | 657101   | 8.3623  | ppb   | 99        |
| 34) Heptane                   | 12.15 | 71   | 519478   | 8.7510  | ppb   | 96        |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 734424   | 8.7201  | ppb   | 100       |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 1316985  | 9.0054  | ppb   | 99        |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 618179   | 8.9373  | ppb   | 99        |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 514760   | 8.2505  | ppb   | 99        |
| 39) Toluene                   | 13.68 | 91   | 1557661  | 8.4976  | ppb   | 100       |
| 40) 2-Hexanone                | 13.88 | 43   | 1136281  | 8.8637  | ppb   | 100       |
| 41) Dibromochloromethane      | 14.10 | 129  | 835630   | 8.7988  | ppb   | 99        |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 739642   | 8.3896  | ppb   | 100       |
| 43) Tetrachloroethene         | 14.83 | 166  | 731013   | 8.0494  | ppb   | 97        |
| 45) Chlorobenzene             | 15.54 | 112  | 1094024  | 7.8142  | ppb   | 100       |
| 46) Ethylbenzene              | 15.93 | 91   | 1761663  | 7.7135  | ppb   | 99        |
| 47) m,p-Xylene                | 16.12 | 91   | 2738207  | 15.1145 | ppb   | 100       |
| 48) Bromoform                 | 16.21 | 173  | 537341   | 7.8889  | ppb   | 100       |
| 49) Styrene                   | 16.51 | 104  | 921943   | 7.5617  | ppb   | 100       |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 925718   | 7.6608  | ppb   | 99        |

(#)=qualifier out of range (m)=manual integration

KE53LCS.D TO15KH18.m Thu Dec 20 09:27:02 2018



# Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE53LCS.D Vial: 2  
 Acq Time : 12/19/2018 12:21 Operator: BB  
 Sample : 10 PPB LCS Inst : 5975-K  
 Misc : (200ml) 45202 44228 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 19 13:06:58 2018 Results File: T015KH18.RES

Quant Method : I:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc   | Unit | Qvalue |
|------------------------------|-------|------|----------|--------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 1297657  | 7.3322 | ppb  | 99     |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 1870020  | 8.2967 | ppb  | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 1652935  | 8.0234 | ppb  | 100    |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 1635286  | 8.5807 | ppb  | 99     |
| 56) Benzyl Chloride          | 18.85 | 91   | 797531   | 9.4430 | ppb  | 99     |
| 57) m-Dichlorobenzene        | 18.88 | 146  | 864446   | 9.0395 | ppb  | 99     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 771887   | 9.4866 | ppb  | 98     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 828428   | 9.1660 | ppb  | 99     |
| 60) 1,2,4-Trichlorobenzene   | 21.97 | 180  | 47122    | 5.9945 | ppb  | 98     |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 233210   | 7.4295 | ppb  | 99     |

(#) = qualifier out of range (m) = manual integration

KE53LCS.D T015KH18.m Thu Dec 20 09:27:02 2018

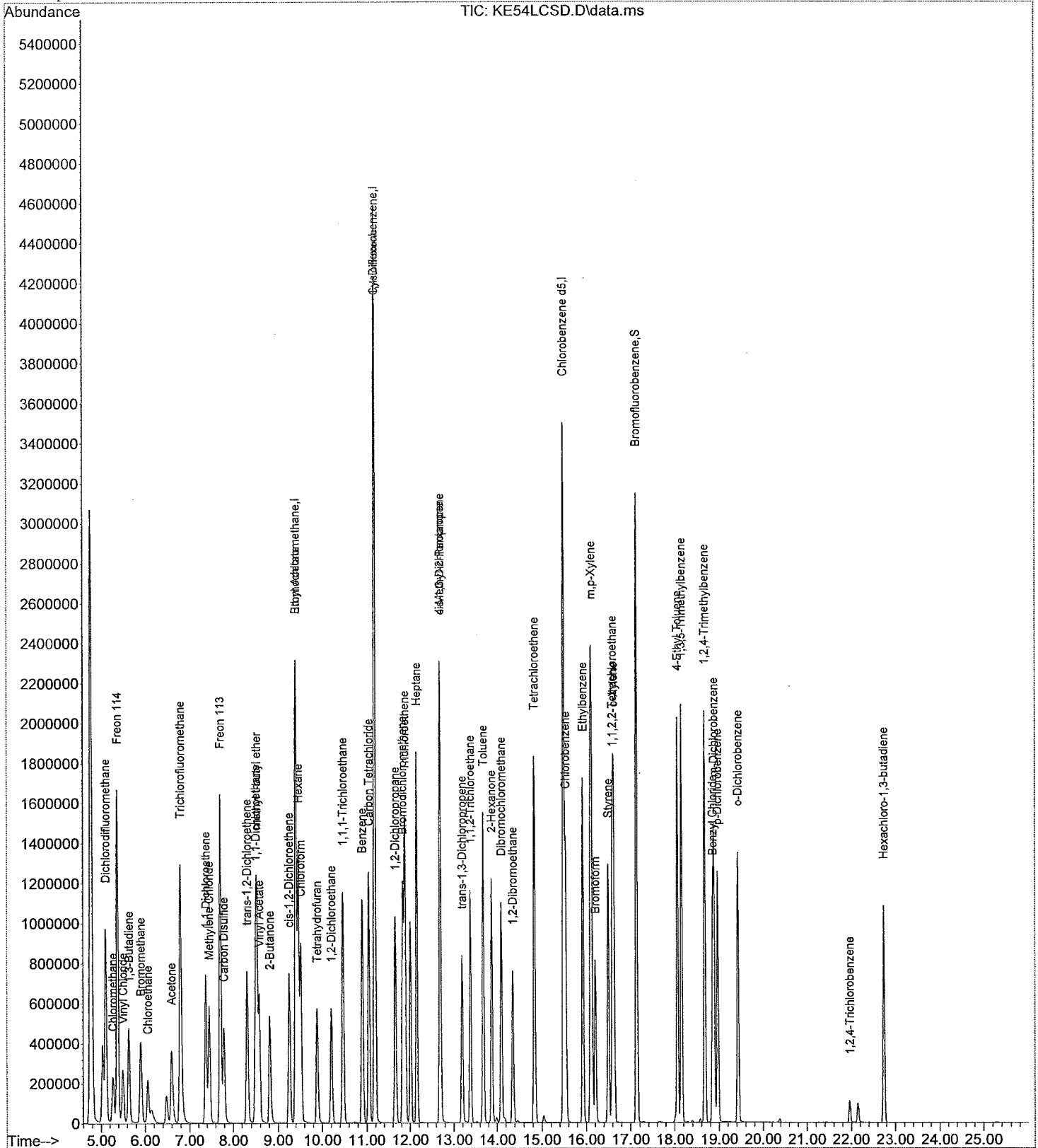
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE54LCSD.D Vial: 2  
Acq Time : 12/19/2018 13:01 Operator: BB  
Sample : 10 PPB LCSD Inst : 5975-K  
Misc : (200ml) 45202 44228 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 19 16:45:32 2018

Results File: T015KH18.RES

Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE54LCSD.D Vial: 2  
 Acq Time : 12/19/2018 13:01 Operator: BB  
 Sample : 10 PPB LCSD Inst : 5975-K  
 Misc : (200ml) 45202 44228 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 19 16:45:32 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.40  | 130  | 280576   | 20.00 | ppb   | 92.98 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3666931  | 20.00 | ppb   | 97.42 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2804694  | 20.00 | ppb   | 99.89 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1531492  | 19.43 | ppb   | 97.17%    |

| Target Compounds              | R.T.  | QIon | Response | Conc    | Units | Qvalue |
|-------------------------------|-------|------|----------|---------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.11  | 85   | 1534992  | 9.9304  | ppb   | 100    |
| 3) Chloromethane              | 5.27  | 50   | 463750   | 10.9732 | ppb   | 100    |
| 4) Freon 114                  | 5.37  | 135  | 1125542  | 10.3840 | ppb   | 98     |
| 5) Vinyl Chloride             | 5.50  | 62   | 509488   | 10.4762 | ppb   | 100    |
| 6) 1,3-Butadiene              | 5.64  | 54   | 398630   | 10.4232 | ppb   | 98     |
| 7) Bromomethane               | 5.90  | 94   | 479702   | 10.3702 | ppb   | 99     |
| 8) Chloroethane               | 6.06  | 64   | 317605   | 10.1985 | ppb   | 99     |
| 9) Acetone                    | 6.59  | 43   | 811055   | 9.2991  | ppb   | 100    |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 1286222  | 9.3395  | ppb   | 100    |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 799278   | 9.4922  | ppb   | 98     |
| 12) Methylene Chloride        | 7.45  | 84   | 401004   | 8.6665  | ppb   | 94     |
| 13) Freon 113                 | 7.71  | 151  | 755289   | 8.8425  | ppb   | 96     |
| 14) Carbon Disulfide          | 7.79  | 76   | 1094344  | 9.6341  | ppb   | 100    |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 458394   | 9.0545  | ppb   | 96     |
| 16) 1,1-Dichloroethane        | 8.50  | 63   | 876276   | 9.2891  | ppb   | 99     |
| 17) methyl t-butyl ether      | 8.53  | 73   | 1250861  | 8.8282  | ppb   | 99     |
| 18) Vinyl Acetate             | 8.59  | 86   | 119393   | 9.3185  | ppb   | 89     |
| 19) 2-Butanone                | 8.81  | 43   | 1036687  | 9.3130  | ppb   | 98     |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 480401   | 9.0925  | ppb   | 97     |
| 22) Ethyl Acetate             | 9.40  | 61   | 173334   | 9.0525  | ppb   | 95     |
| 23) Hexane                    | 9.46  | 57   | 851205   | 9.2489  | ppb   | 99     |
| 24) Chloroform                | 9.51  | 83   | 962504   | 8.7449  | ppb   | 100    |
| 25) Tetrahydrofuran           | 9.88  | 42   | 557955   | 9.1646  | ppb   | 98     |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 658097   | 8.8803  | ppb   | 99     |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 1004406  | 8.7302  | ppb   | 98     |
| 28) Benzene                   | 10.90 | 78   | 1315396  | 8.6217  | ppb   | 99     |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 1044351  | 9.0454  | ppb   | 100    |
| 30) Cyclohexane               | 11.18 | 84   | 669624   | 8.6713  | ppb   | 94     |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 517898   | 8.7055  | ppb   | 99     |
| 32) Bromodichloromethane      | 11.83 | 83   | 937309   | 8.8638  | ppb   | 100    |
| 33) Trichloroethene           | 11.88 | 130  | 659357   | 8.4771  | ppb   | 99     |
| 34) Heptane                   | 12.15 | 71   | 517241   | 8.8028  | ppb   | 96     |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 735178   | 8.8187  | ppb   | 99     |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 1326926  | 9.1666  | ppb   | 99     |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 617528   | 9.0195  | ppb   | 99     |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 509822   | 8.2553  | ppb   | 99     |
| 39) Toluene                   | 13.68 | 91   | 1545257  | 8.5165  | ppb   | 100    |
| 40) 2-Hexanone                | 13.88 | 43   | 1147120  | 9.0401  | ppb   | 100    |
| 41) Dibromochloromethane      | 14.10 | 129  | 830151   | 8.8308  | ppb   | 100    |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 738877   | 8.4669  | ppb   | 99     |
| 43) Tetrachloroethene         | 14.83 | 166  | 720798   | 8.0184  | ppb   | 97     |
| 45) Chlorobenzene             | 15.54 | 112  | 1084114  | 7.9275  | ppb   | 99     |
| 46) Ethylbenzene              | 15.93 | 91   | 1742882  | 7.8127  | ppb   | 99     |
| 47) m,p-Xylene                | 16.12 | 91   | 2711144  | 15.3210 | ppb   | 100    |
| 48) Bromoform                 | 16.21 | 173  | 535801   | 8.0533  | ppb   | 100    |
| 49) Styrene                   | 16.51 | 104  | 920341   | 7.7280  | ppb   | 100    |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 930827   | 7.8863  | ppb   | 100    |

(#)=qualifier out of range (m)=manual integration

KE54LCSD.D TO15KH18.m Thu Dec 20 09:27:06 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE54LCSD.D Vial: 2  
Acq Time : 12/19/2018 13:01 Operator: BB  
Sample : 10 PPB LCSD Inst : 5975-K  
Misc : (200ml) 45202 44228 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 19 16:45:32 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc   | Unit | Qvalue |
|------------------------------|-------|------|----------|--------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 1280902  | 7.4096 | ppb  | 100    |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 1869704  | 8.4925 | ppb  | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 1655053  | 8.2247 | ppb  | 99     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 1643345  | 8.8280 | ppb  | 99     |
| 56) Benzyl Chloride          | 18.85 | 91   | 807810   | 9.7921 | ppb  | 99     |
| 57) m-Dichlorobenzene        | 18.88 | 146  | 869292   | 9.3063 | ppb  | 99     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 772349   | 9.7179 | ppb  | 99     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 825714   | 9.3532 | ppb  | 99     |
| 60) 1,2,4-Trichlorobenzene   | 21.96 | 180  | 50246    | 6.5438 | ppb  | 98     |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 239666   | 7.8167 | ppb  | 100    |

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(#) = qualifier out of range (m) = manual integration

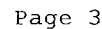
KE54LCSD.D TO15KH18.m

Thu Dec 20 09:27:07 2018

Page 2

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE55RLVS.D Vial: 2  
Acq Time : 12/19/2018 13:39 Operator: BB  
Sample : 0.5 PPB RLVS Inst : 5975-K  
Misc : (10ml) 45202 44228 Multiplr: 1.00  
MS Integration Params: rteint.p

```
Method       : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)
Title        : TO-15
Last Update   : Wed Dec 05 10:49:41 2018
Response via  : Initial Calibration
```



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE55RLVS.D Vial: 2  
 Acq Time : 12/19/2018 13:39 Operator: BB  
 Sample : 0.5 PPB RLVS Inst : 5975-K  
 Misc : (10ml) 45202 44228 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 19 16:45:38 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area%  |
|-------------------------|-------|------|----------|-------|-------|--------|
| 1) Bromochloromethane   | 9.40  | 130  | 256960   | 20.00 | ppb   | 85.15  |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3463997  | 20.00 | ppb   | 92.03  |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2925244  | 20.00 | ppb   | 104.18 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1668337  | 20.30 | ppb   | 101.49%   |

| Target Compounds              | R.T.  | QIon | Response | Conc   | Units | Qvalue |
|-------------------------------|-------|------|----------|--------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.11  | 85   | 89187    | 0.6300 | ppb   | 99     |
| 3) Chloromethane              | 5.27  | 50   | 28249    | 0.7299 | ppb   | 99     |
| 4) Freon 114                  | 5.37  | 135  | 65121    | 0.6560 | ppb   | 99     |
| 5) Vinyl Chloride             | 5.50  | 62   | 29533    | 0.6631 | ppb   | 99     |
| 6) 1,3-Butadiene              | 5.63  | 54   | 23358    | 0.6669 | ppb   | 97     |
| 7) Bromomethane               | 5.90  | 94   | 27653    | 0.6527 | ppb   | 98     |
| 8) Chloroethane               | 6.06  | 64   | 18052    | 0.6329 | ppb   | 99     |
| 9) Acetone                    | 6.60  | 43   | 57929    | 0.7252 | ppb   | 100    |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 71796    | 0.5692 | ppb   | 99     |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 42738    | 0.5542 | ppb   | 98     |
| 12) Methylene Chloride        | 7.46  | 84   | 27510    | 0.6492 | ppb   | 92     |
| 13) Freon 113                 | 7.71  | 151  | 40060    | 0.5121 | ppb   | 93     |
| 14) Carbon Disulfide          | 7.79  | 76   | 50559    | 0.4860 | ppb   | 99     |
| 15) trans-1,2-Dichloroethene  | 8.32  | 96   | 24037    | 0.5184 | ppb   | 95     |
| 16) 1,1-Dichloroethane        | 8.49  | 63   | 47740    | 0.5526 | ppb   | 98     |
| 17) methyl t-butyl ether      | 8.53  | 73   | 64175    | 0.4946 | ppb   | 100    |
| 18) Vinyl Acetate             | 8.58  | 86   | 5452     | 0.4646 | ppb   | 56     |
| 19) 2-Butanone                | 8.82  | 43   | 59341    | 0.5821 | ppb   | # 96   |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 26078    | 0.5389 | ppb   | 97     |
| 22) Ethyl Acetate             | 9.40  | 61   | 8860     | 0.4898 | ppb   | 85     |
| 23) Hexane                    | 9.46  | 57   | 43904    | 0.5050 | ppb   | 97     |
| 24) Chloroform                | 9.51  | 83   | 53185    | 0.5115 | ppb   | 97     |
| 25) Tetrahydrofuran           | 9.90  | 42   | 28729    | 0.4995 | ppb   | 95     |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 36916    | 0.5273 | ppb   | 96     |
| 27) 1,1,1-Trichloroethane     | 10.46 | 97   | 53409    | 0.4914 | ppb   | 97     |
| 28) Benzene                   | 10.90 | 78   | 72955    | 0.5062 | ppb   | 99     |
| 29) Carbon Tetrachloride      | 11.04 | 117  | 51033    | 0.4679 | ppb   | 99     |
| 30) Cyclohexane               | 11.18 | 84   | 40089    | 0.5495 | ppb   | # 1    |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 29031    | 0.5166 | ppb   | 99     |
| 32) Bromodichloromethane      | 11.83 | 83   | 45755    | 0.4580 | ppb   | 99     |
| 33) Trichloroethene           | 11.88 | 130  | 34855    | 0.4744 | ppb   | 95     |
| 34) Heptane                   | 12.15 | 71   | 26078    | 0.4698 | ppb   | 97     |
| 35) cis-1,3-Dichloropropene   | 12.68 | 75   | 33325    | 0.4232 | ppb   | 99     |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 65907    | 0.4820 | ppb   | 96     |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 26416    | 0.4084 | ppb   | 96     |
| 38) 1,1,2-Trichloroethane     | 13.37 | 97   | 28786    | 0.4934 | ppb   | 98     |
| 39) Toluene                   | 13.68 | 91   | 79893    | 0.4661 | ppb   | 100    |
| 40) 2-Hexanone                | 13.88 | 43   | 51262    | 0.4276 | ppb   | 97     |
| 41) Dibromochloromethane      | 14.10 | 129  | 35975    | 0.4051 | ppb   | 99     |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 37518    | 0.4551 | ppb   | 99     |
| 43) Tetrachloroethene         | 14.83 | 166  | 36988    | 0.4356 | ppb   | 95     |
| 45) Chlorobenzene             | 15.54 | 112  | 64151    | 0.4498 | ppb   | 96     |
| 46) Ethylbenzene              | 15.93 | 91   | 99740    | 0.4287 | ppb   | 98     |
| 47) m,p-Xylene                | 16.11 | 91   | 155369   | 0.8418 | ppb   | 99     |
| 48) Bromoform                 | 16.21 | 173  | 22641    | 0.3263 | ppb   | 98     |
| 49) Styrene                   | 16.51 | 104  | 45727    | 0.3681 | ppb   | 98     |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 54021    | 0.4388 | ppb   | 99     |

(#)=qualifier out of range (m)=manual integration

KE55RLVS.D TO15KH18.m Thu Dec 20 09:27:11 2018



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE55RLVS.D Vial: 2  
Acq Time : 12/19/2018 13:39 Operator: BB  
Sample : 0.5 PPB RLVS Inst : 5975-K  
Misc : (10ml) 45202 44228 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 19 16:45:38 2018

Results File: T015KH18.RES

Quant Method : I:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc         | Unit | Qvalue |
|------------------------------|-------|------|----------|--------------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 79969    | 0.4435       | ppb  | 97     |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 82267    | 0.3583       | ppb  | 97     |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 82216    | 0.3917       | ppb  | 98     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 68793    | 0.3543       | ppb  | 96     |
| 56) Benzyl Chloride          | 18.85 | 91   | 15455    | 0.1796       | ppb  | 92     |
| 57) m-Dichlorobenzene        | 18.89 | 146  | 31628    | 0.3246       | ppb  | 98     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 24626    | 0.2971       | ppb  | 97     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 29911    | 0.3249       | ppb  | 98     |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |      |        |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 9242     | 0.2890       | ppb  | 95     |

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(#) = qualifier out of range (m) = manual integration

KE55RLVS.D T015KH18.m Thu Dec 20 09:27:12 2018

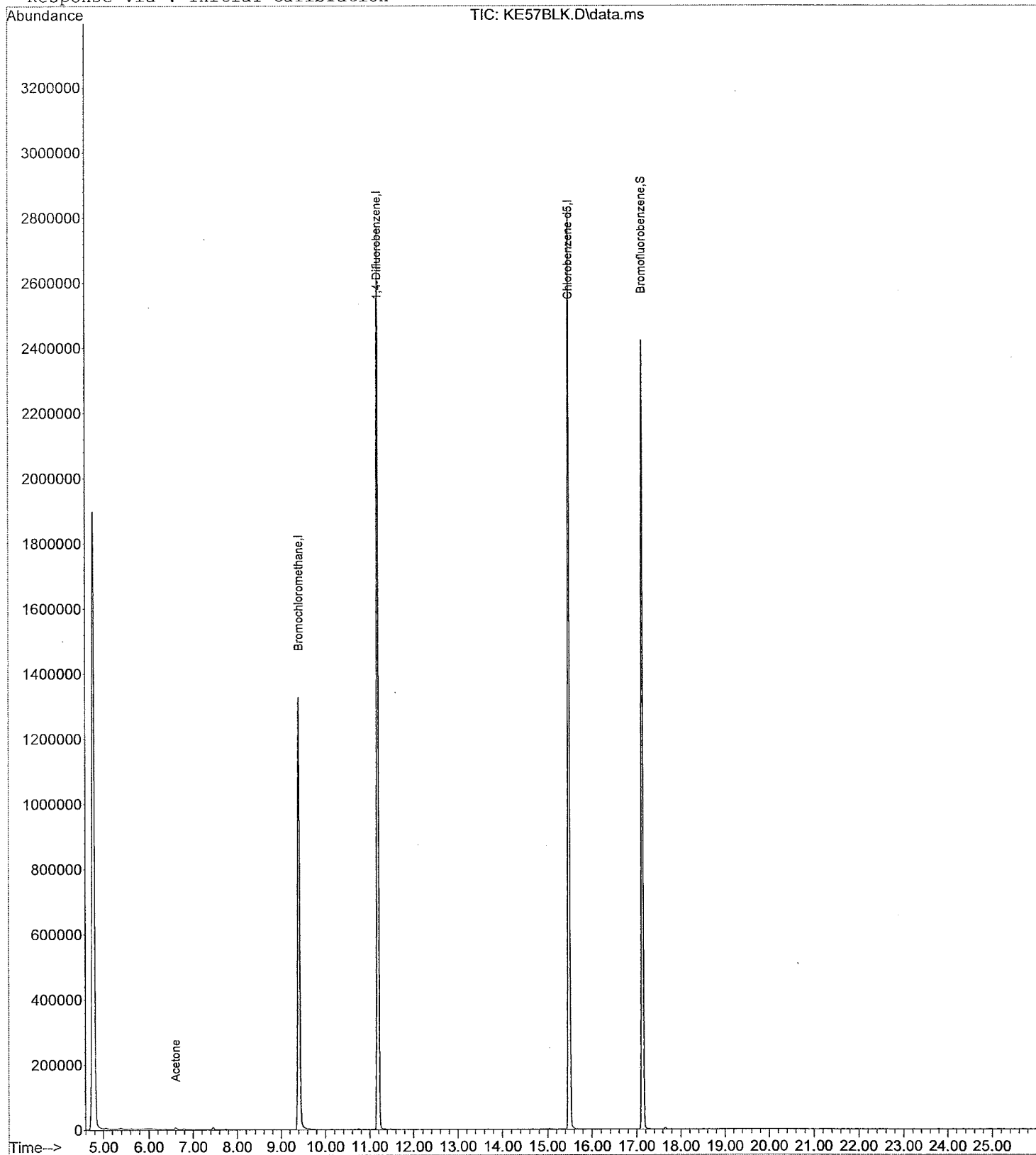
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE57BLK.D Vial: 3  
Acq Time : 12/19/2018 16:01 Operator: BB  
Sample : BLANK Inst : 5975-K  
Misc : 44228 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 19 16:38:15 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE57BLK.D Vial: 3  
 Acq Time : 12/19/2018 16:01 Operator: BB  
 Sample : BLANK Inst : 5975-K  
 Misc : 44228 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 19 16:38:15 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.41  | 130  | 225536   | 20.00 | ppb   | 74.74 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3019956  | 20.00 | ppb   | 80.23 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2228811  | 20.00 | ppb   | 79.38 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1198691  | 19.14 | ppb   | 95.70%    |

| Target Compounds              | R.T. | QIon | Response | Conc   | Units        | Qvalue |
|-------------------------------|------|------|----------|--------|--------------|--------|
| 2) Dichlorodifluoromethane    | 0.00 | 85   |          |        | Not Detected |        |
| 3) Chloromethane              | 0.00 | 50   |          |        | Not Detected |        |
| 4) Freon 114                  | 0.00 | 135  |          |        | Not Detected |        |
| 5) Vinyl Chloride             | 0.00 | 62   |          |        | Not Detected |        |
| 6) 1,3-Butadiene              | 0.00 | 54   |          |        | Not Detected |        |
| 7) Bromomethane               | 0.00 | 94   |          |        | Not Detected |        |
| 8) Chloroethane               | 0.00 | 64   |          |        | Not Detected |        |
| 9) Acetone                    | 6.60 | 43   | 12611    | 0.1799 | ppb          | 98     |
| 10) Trichlorofluoromethane    | 0.00 | 101  |          |        | Not Detected |        |
| 11) 1,1-Dichloroethene        | 0.00 | 61   |          |        | Not Detected |        |
| 12) Methylene Chloride        | 0.00 | 84   |          |        | Not Detected |        |
| 13) Freon 113                 | 0.00 | 151  |          |        | Not Detected |        |
| 14) Carbon Disulfide          | 0.00 | 76   |          |        | Not Detected |        |
| 15) trans-1,2-Dichloroethene  | 0.00 | 96   |          |        | Not Detected |        |
| 16) 1,1-Dichloroethane        | 0.00 | 63   |          |        | Not Detected |        |
| 17) methyl t-butyl ether      | 0.00 | 73   |          |        | Not Detected |        |
| 18) Vinyl Acetate             | 0.00 | 86   |          |        | Not Detected |        |
| 19) 2-Butanone                | 0.00 | 43   |          |        | Not Detected |        |
| 20) cis-1,2-Dichloroethene    | 0.00 | 96   |          |        | Not Detected |        |
| 22) Ethyl Acetate             | 0.00 | 61   |          |        | Not Detected |        |
| 23) Hexane                    | 0.00 | 57   |          |        | Not Detected |        |
| 24) Chloroform                | 0.00 | 83   |          |        | Not Detected |        |
| 25) Tetrahydrofuran           | 0.00 | 42   |          |        | Not Detected |        |
| 26) 1,2-Dichloroethane        | 0.00 | 62   |          |        | Not Detected |        |
| 27) 1,1,1-Trichloroethane     | 0.00 | 97   |          |        | Not Detected |        |
| 28) Benzene                   | 0.00 | 78   |          |        | Not Detected |        |
| 29) Carbon Tetrachloride      | 0.00 | 117  |          |        | Not Detected |        |
| 30) Cyclohexane               | 0.00 | 84   |          |        | Not Detected |        |
| 31) 1,2-Dichloropropane       | 0.00 | 63   |          |        | Not Detected |        |
| 32) Bromodichloromethane      | 0.00 | 83   |          |        | Not Detected |        |
| 33) Trichloroethene           | 0.00 | 130  |          |        | Not Detected |        |
| 34) Heptane                   | 0.00 | 71   |          |        | Not Detected |        |
| 35) cis-1,3-Dichloropropene   | 0.00 | 75   |          |        | Not Detected |        |
| 36) 4-Methyl-2-Pentanone      | 0.00 | 43   |          |        | Not Detected |        |
| 37) trans-1,3-Dichloropropene | 0.00 | 75   |          |        | Not Detected |        |
| 38) 1,1,2-Trichloroethane     | 0.00 | 97   |          |        | Not Detected |        |
| 39) Toluene                   | 0.00 | 91   |          |        | Not Detected |        |
| 40) 2-Hexanone                | 0.00 | 43   |          |        | Not Detected |        |
| 41) Dibromochloromethane      | 0.00 | 129  |          |        | Not Detected |        |
| 42) 1,2-Dibromoethane         | 0.00 | 107  |          |        | Not Detected |        |
| 43) Tetrachloroethene         | 0.00 | 166  |          |        | Not Detected |        |
| 45) Chlorobenzene             | 0.00 | 112  |          |        | Not Detected |        |
| 46) Ethylbenzene              | 0.00 | 91   |          |        | Not Detected |        |
| 47) m,p-Xylene                | 0.00 | 91   |          |        | Not Detected |        |
| 48) Bromoform                 | 0.00 | 173  |          |        | Not Detected |        |
| 49) Styrene                   | 0.00 | 104  |          |        | Not Detected |        |
| 50) 1,1,2,2-Tetrachloroethane | 0.00 | 83   |          |        | Not Detected |        |

(#)=qualifier out of range (m)=manual integration

KE57BLK.D TO15KH18.m Thu Dec 20 09:27:16 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE57BLK.D Vial: 3  
Acq Time : 12/19/2018 16:01 Operator: BB  
Sample : BLANK Inst : 5975-K  
Misc : 44228 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 19 16:38:15 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Compound                     | R.T. | QIon | Response | Conc | Unit     | Qvalue |
|------------------------------|------|------|----------|------|----------|--------|
| 51) o-Xylene                 | 0.00 | 91   |          | Not  | Detected |        |
| 53) 4-Ethyl Toluene          | 0.00 | 105  |          | Not  | Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00 | 105  |          | Not  | Detected |        |
| 55) 1,2,4-Trimethylbenzene   | 0.00 | 105  |          | Not  | Detected |        |
| 56) Benzyl Chloride          | 0.00 | 91   |          | Not  | Detected |        |
| 57) m-Dichlorobenzene        | 0.00 | 146  |          | Not  | Detected |        |
| 58) p-Dichlorobenzene        | 0.00 | 146  |          | Not  | Detected |        |
| 59) o-Dichlorobenzene        | 0.00 | 146  |          | Not  | Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00 | 180  |          | Not  | Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00 | 225  |          | Not  | Detected |        |

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(#) = qualifier out of range (m) = manual integration

KE57BLK.D TO15KH18.m Thu Dec 20 09:27:17 2018

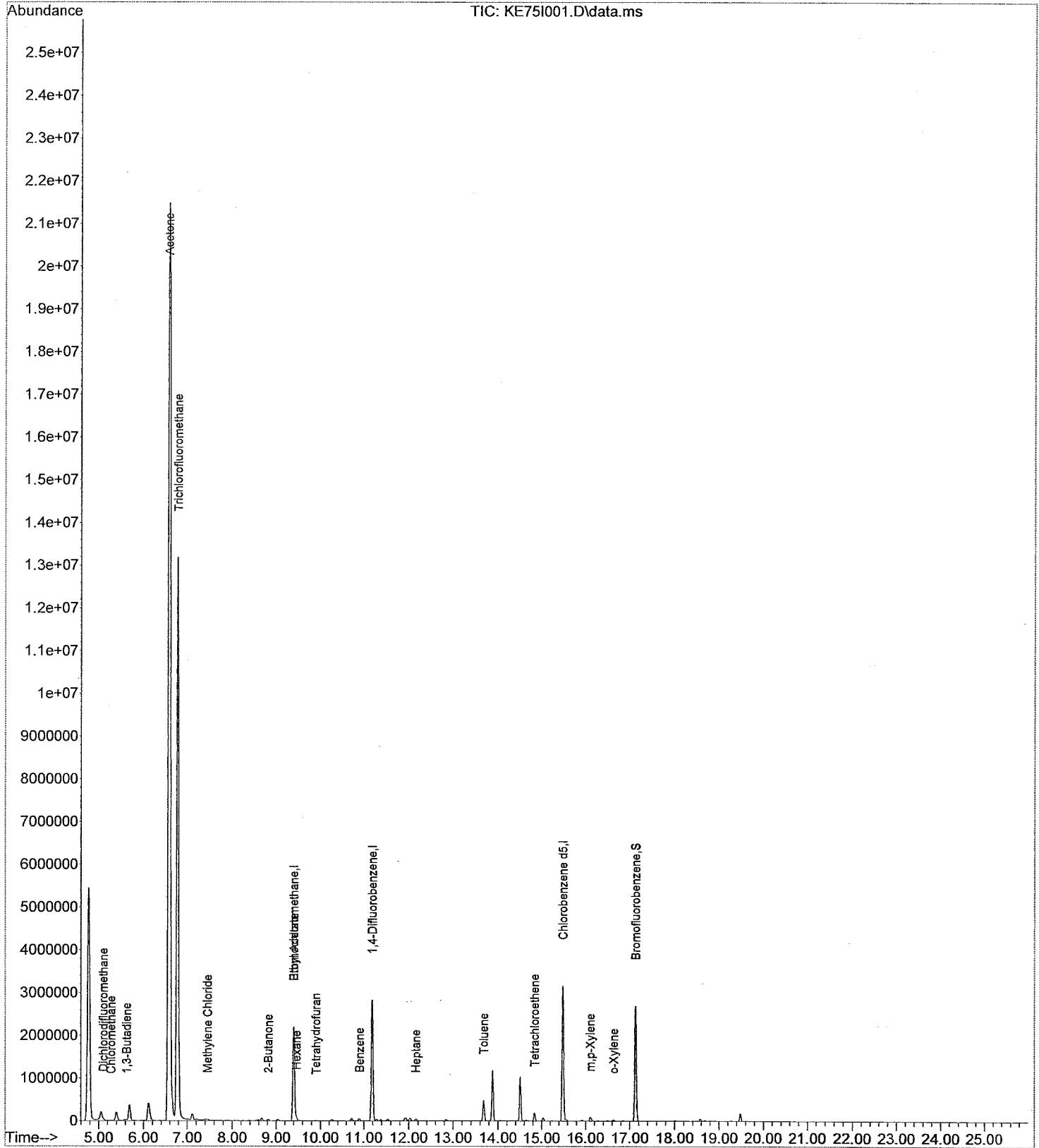
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE75I001.D Vial: 4  
Acq Time : 12/20/2018 08:42 Operator: BB  
Sample : 1835293001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:51:09 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE75I001.D Vial: 4  
 Acq Time : 12/20/2018 08:42 Operator: BB  
 Sample : 1835293001 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:51:09 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.40  | 130  | 240128   | 20.00 | ppb   | 79.58 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3028147  | 20.00 | ppb   | 80.45 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2493547  | 20.00 | ppb   | 88.81 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1303805  | 18.61 | ppb   | 93.04%    |

| Target Compounds              | R.T.  | QIon | Response | Conc         | Units | Qvalue |
|-------------------------------|-------|------|----------|--------------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.11  | 85   | 66637    | 0.5037       | ppb   | 99     |
| 3) Chloromethane              | 5.28  | 50   | 22057    | 0.6098       | ppb   | 96     |
| 4) Freon 114                  | 0.00  | 135  |          | Not Detected |       |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          | Not Detected |       |        |
| 6) 1,3-Butadiene              | 5.63  | 54   | 5342     | 0.1632       | ppb # | 17     |
| 7) Bromomethane               | 0.00  | 94   |          | Not Detected |       |        |
| 8) Chloroethane               | 0.00  | 64   |          | Not Detected |       |        |
| 9) Acetone                    | 6.56  | 43   | 39300854 | 526.5003     | ppb m |        |
| 10) Trichlorofluoromethane    | 6.78  | 101  | 32393    | 0.2748       | ppb   | 99     |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          | Not Detected |       |        |
| 12) Methylene Chloride        | 7.46  | 84   | 17442    | 0.4405       | ppb   | 91     |
| 13) Freon 113                 | 0.00  | 151  |          | Not Detected |       |        |
| 14) Carbon Disulfide          | 0.00  | 76   |          | Not Detected |       |        |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          | Not Detected |       |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          | Not Detected |       |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          | Not Detected |       |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          | Not Detected |       |        |
| 19) 2-Butanone                | 8.82  | 43   | 66243    | 0.6953       | ppb   | 96     |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          | Not Detected |       |        |
| 22) Ethyl Acetate             | 9.40  | 61   | 180073   | 11.3884      | ppb   | 87     |
| 23) Hexane                    | 9.46  | 57   | 35452    | 0.4665       | ppb   | 91     |
| 24) Chloroform                | 0.00  | 83   |          | Not Detected |       |        |
| 25) Tetrahydrofuran           | 9.89  | 42   | 7876     | 0.1567       | ppb # | 80     |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          | Not Detected |       |        |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 28) Benzene                   | 10.90 | 78   | 59956    | 0.4759       | ppb   | 99     |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          | Not Detected |       |        |
| 30) Cyclohexane               | 0.00  | 84   |          | Not Detected |       |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          | Not Detected |       |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          | Not Detected |       |        |
| 33) Trichloroethene           | 0.00  | 130  |          | Not Detected |       |        |
| 34) Heptane                   | 12.15 | 71   | 11769    | 0.2425       | ppb   | 90     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          | Not Detected |       |        |
| 36) 4-Methyl-2-Pentanone      | 0.00  | 43   |          | Not Detected |       |        |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          | Not Detected |       |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 39) Toluene                   | 13.68 | 91   | 465419   | 3.1062       | ppb   | 99     |
| 40) 2-Hexanone                | 0.00  | 43   |          | Not Detected |       |        |
| 41) Dibromochloromethane      | 0.00  | 129  |          | Not Detected |       |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          | Not Detected |       |        |
| 43) Tetrachloroethene         | 14.83 | 166  | 71656    | 0.9653       | ppb   | 96     |
| 45) Chlorobenzene             | 0.00  | 112  |          | Not Detected |       |        |
| 46) Ethylbenzene              | 0.00  | 91   |          | Not Detected |       |        |
| 47) m,p-Xylene                | 16.10 | 91   | 83540    | 0.5310       | ppb   | 98     |
| 48) Bromoform                 | 0.00  | 173  |          | Not Detected |       |        |
| 49) Styrene                   | 0.00  | 104  |          | Not Detected |       |        |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          | Not Detected |       |        |

(#) = qualifier out of range (m) = manual integration  
 KE75I001.D TO15KH18.m Thu Dec 20 14:53:15 2018



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE75I001.D Vial: 4  
Acq Time : 12/20/2018 08:42 Operator: BB  
Sample : 1835293001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:51:09 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc Unit    | Qvalue |
|------------------------------|-------|------|----------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 26203    | 0.1705 ppb   | 98     |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 55) 1,2,4-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |        |

-----  
(#) = qualifier out of range (m) = manual integration

KE75I001.D TO15KH18.m Thu Dec 20 14:53:15 2018

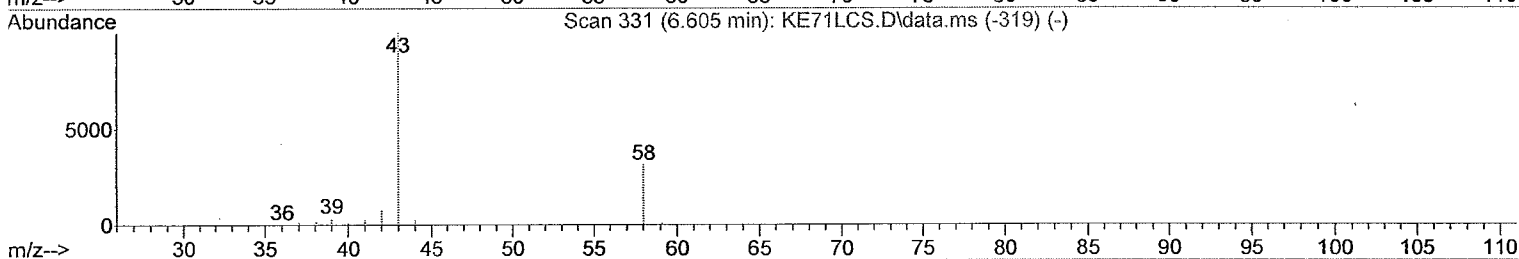
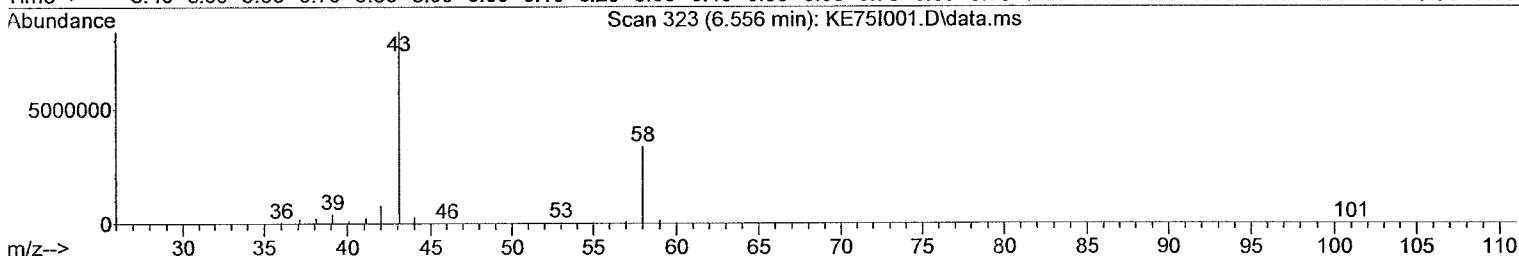
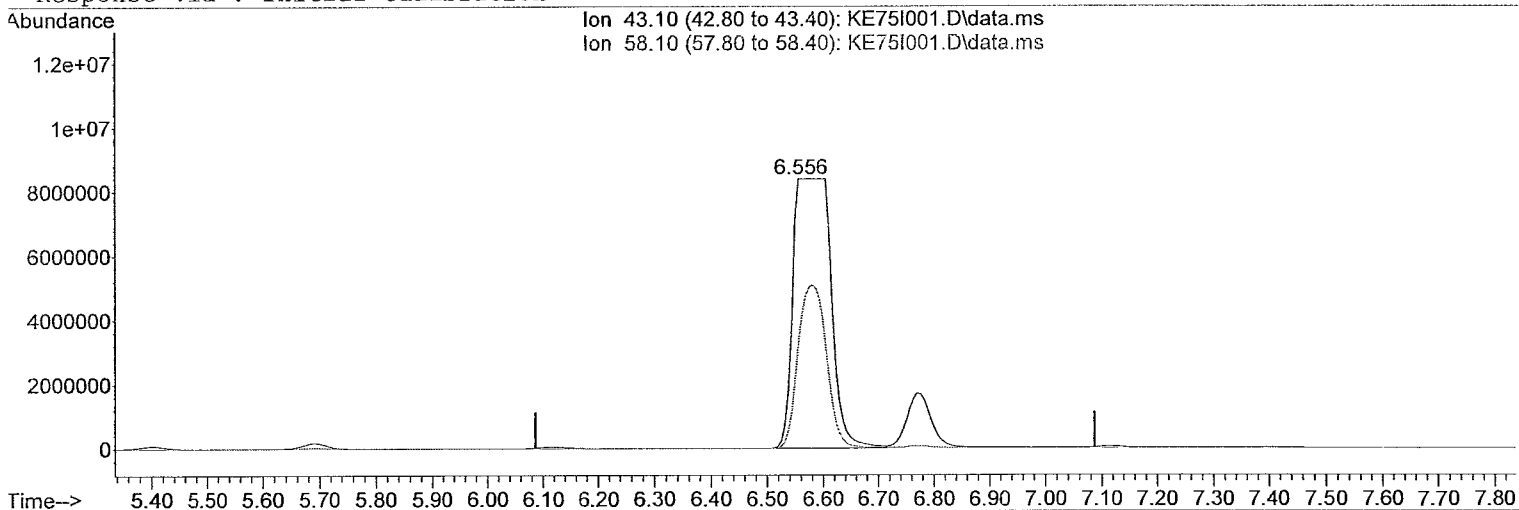
Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE75I001.D  
Acq On : 12/20/2018 08:42  
Operator : BB  
Sample : 1835293001  
Inst : 5975-K  
Misc :  
ALS Vial : 4 Sample Multiplier: 1

## MANUAL RE-INTEGRATION

- ☒ missed peak assignment  
☐ assigned incorrect name to peak  
☐ over-integrated peak's area  
☐ under-integrated peak's area  
☐ other \_\_\_\_\_

Quant Time: Dec 20 09:12:24 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration

initials BB date 12/20/18



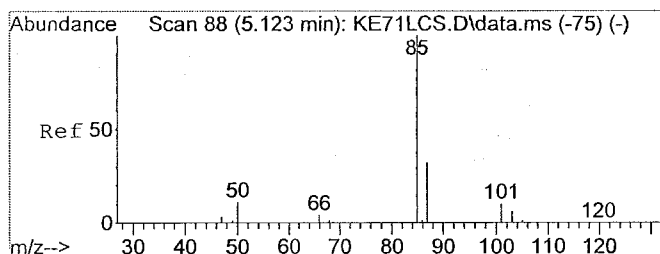
TIC: KE75I001.D\data.ms

(9) Acetone

6.556min (-0.030) 526.50 ppb m

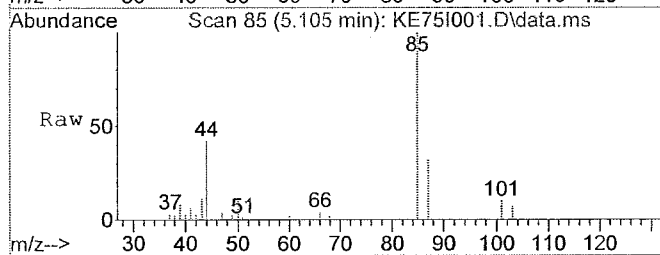
response 39300854

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 43.10 | 100.00 | 100.00 |
| 58.10 | 31.40  | 0.00#  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

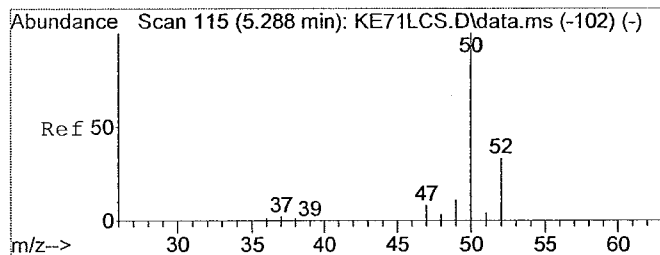
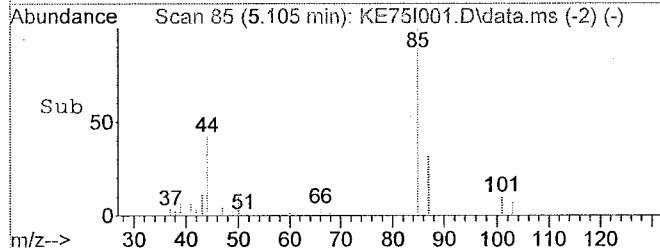
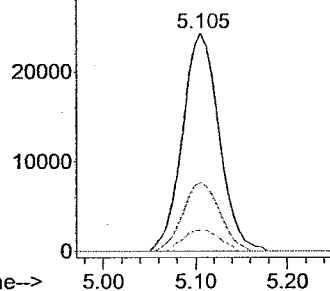


#2  
Dichlorodifluoromethane  
Concen: 0.50 ppb  
RT: 5.11 min Scan# 85  
Delta R.T. 0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 85    | Resp: | 66637 |
| Ion Ratio | Lower | Upper |       |
| 85        | 100   |       |       |
| 87        | 31.8  | 26.1  | 39.1  |
| 101       | 9.7   | 8.1   | 12.1  |
| 0         | 0.0   | 0.0   | 0.0   |

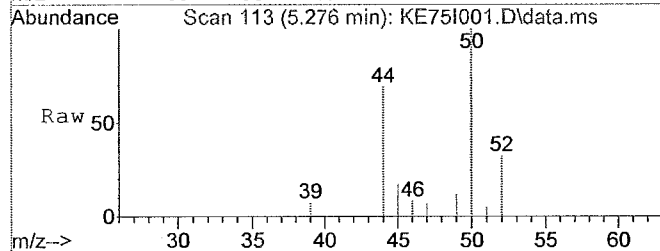


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30):

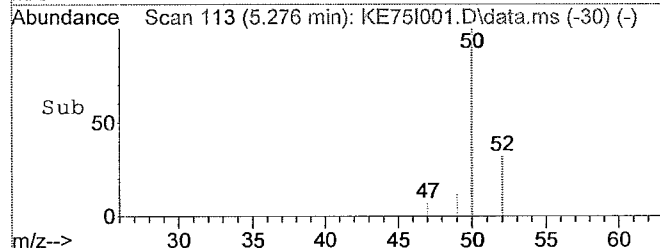
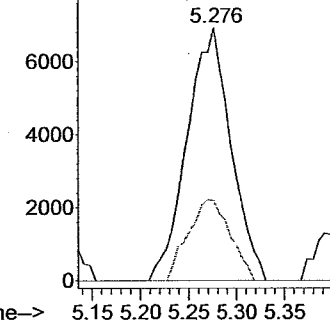


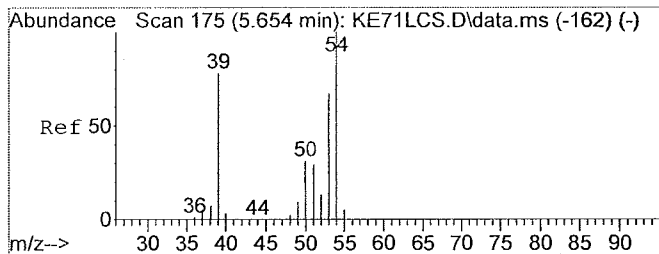
#3  
Chloromethane  
Concen: 0.61 ppb  
RT: 5.28 min Scan# 113  
Delta R.T. 0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 50    | Resp: | 22057 |
| Ion Ratio | Lower | Upper |       |
| 50        | 100   |       |       |
| 52        | 30.6  | 26.3  | 39.5  |
| 0         | 0.0   | 0.0   | 0.0   |
| 0         | 0.0   | 0.0   | 0.0   |

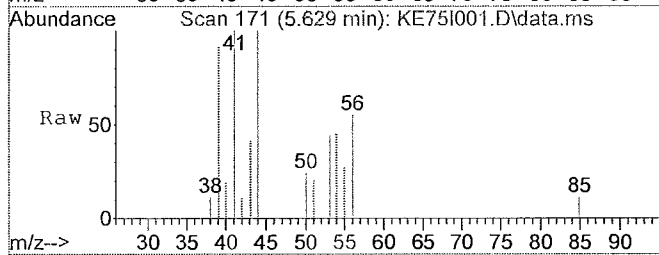


Abundance Ion 50.00 (49.70 to 50.30):  
Ion 52.00 (51.70 to 52.30):

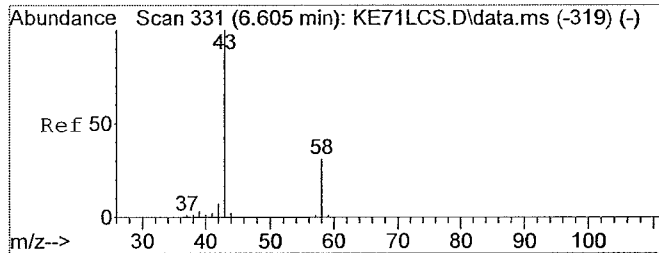
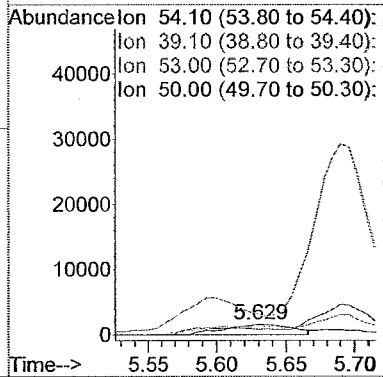
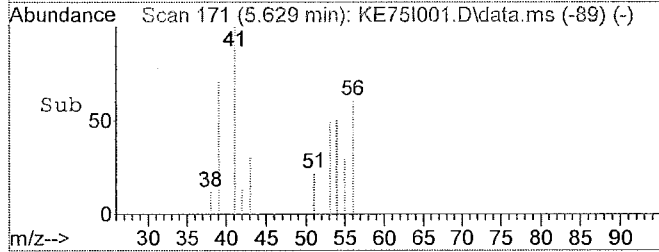




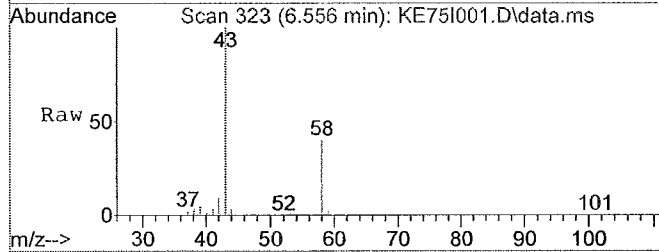
#6  
1,3-Butadiene  
Concen: 0.16 ppb  
RT: 5.63 min Scan# 171  
Delta R.T. 0.00 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42



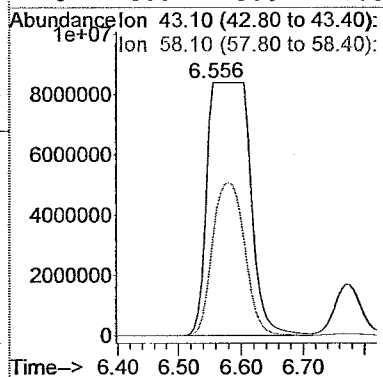
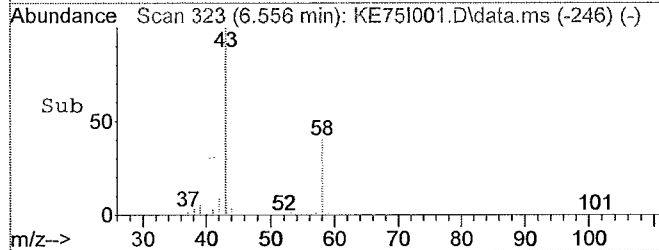
Tgt Ion: 54.1 Resp: 5342  
Ion Ratio Lower Upper  
54 100  
39 0.0 66.3 99.5#  
53 0.0 54.6 82.0#  
50 0.0 25.9 38.9#

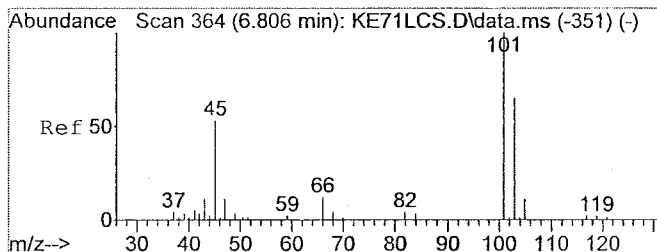


#9  
Acetone  
Concen: 526.50 ppb m  
RT: 6.56 min Scan# 323  
Delta R.T. -0.03 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42



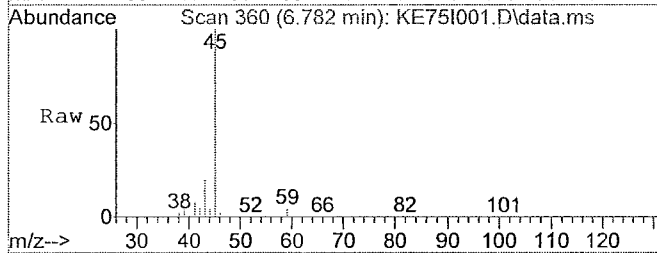
Tgt Ion: 43.1 Resp: 39300854  
Ion Ratio Lower Upper  
43 100  
58 0.0 25.1 37.7#  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



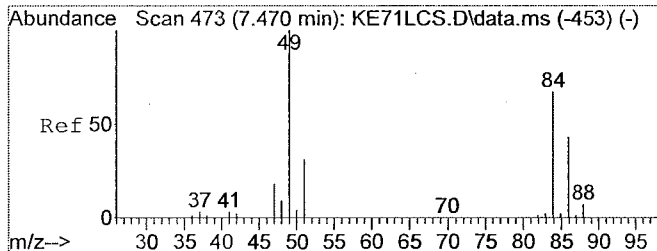
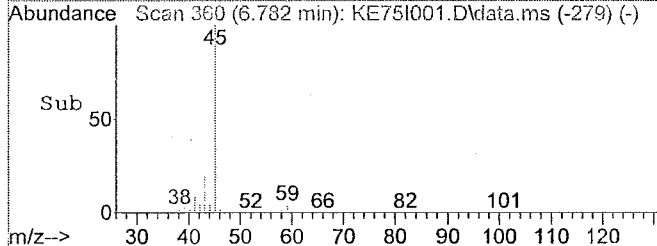
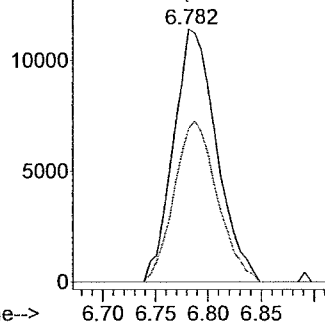


#10  
Trichlorofluoromethane  
Concen: 0.27 ppb  
RT: 6.78 min Scan# 360  
Delta R.T. -0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 101   | Resp: | 32393 |
| Ion Ratio | Lower | Upper |       |
| 101       | 100   |       |       |
| 103       | 63.6  | 51.6  | 77.4  |
| 0         | 0.0   | 0.0   | 0.0   |
| 0         | 0.0   | 0.0   | 0.0   |

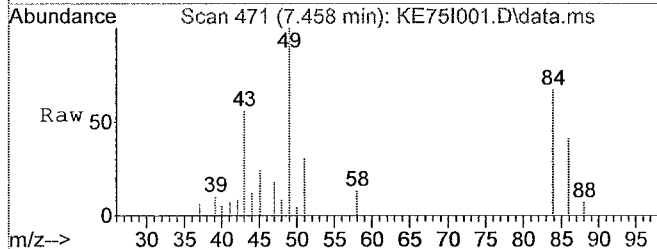


Abundance Ion 101.00 (100.70 to 101.30)  
Ion 103.00 (102.70 to 103.30)

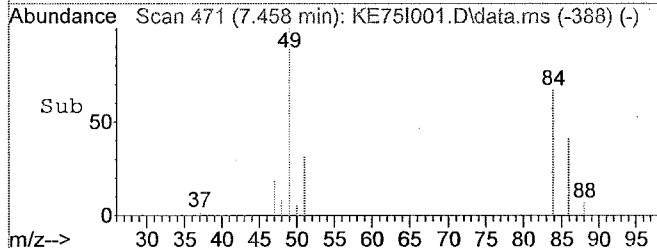
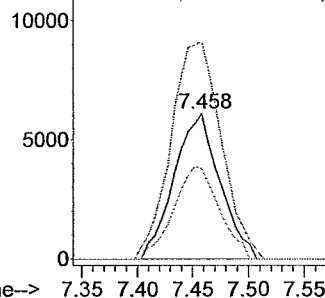


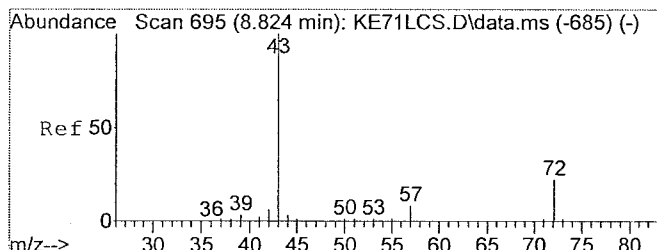
#12  
Methylene Chloride  
Concen: 0.44 ppb  
RT: 7.46 min Scan# 471  
Delta R.T. 0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 84    | Resp: | 17442 |
| Ion Ratio | Lower | Upper |       |
| 84        | 100   |       |       |
| 49        | 163.9 | 119.1 | 178.7 |
| 86        | 63.0  | 52.0  | 78.0  |
| 0         | 0.0   | 0.0   | 0.0   |



Abundance Ion 84.00 (83.70 to 84.30):  
Ion 49.00 (48.70 to 49.30):  
Ion 86.00 (85.70 to 86.30):

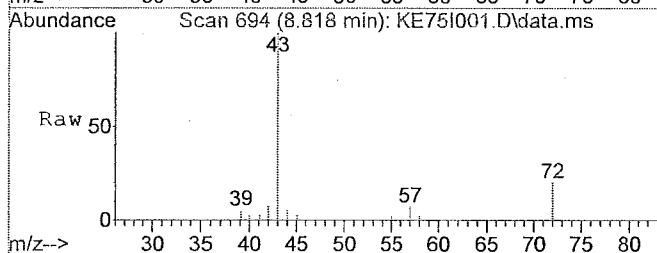




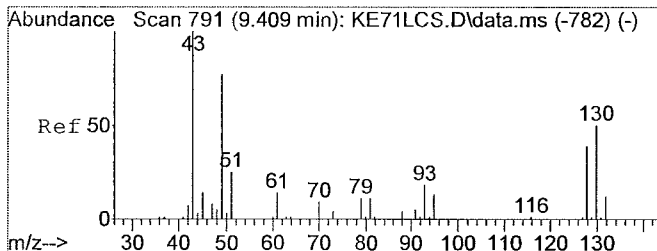
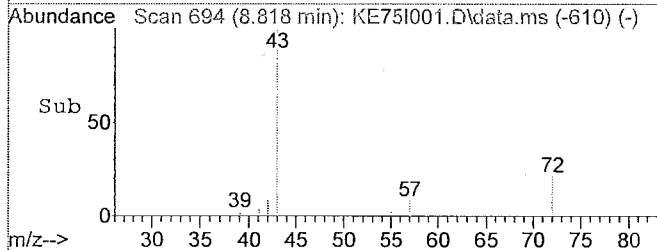
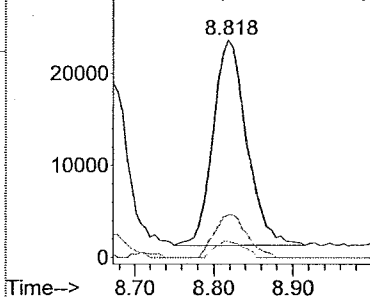
#19  
2-Butanone  
Concen: 0.70 ppb  
RT: 8.82 min Scan# 694  
Delta R.T. 0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

Tgt Ion: 43.1 Resp: 66243

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 72  | 20.3  | 17.9  | 26.9  |
| 57  | 6.9   | 6.4   | 9.6   |
| 0   | 0.0   | 0.0   | 0.0   |



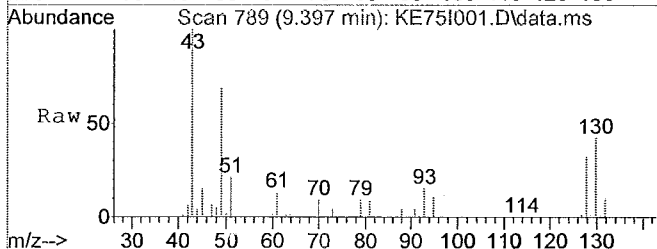
Abundance Ion 43.10 (42.80 to 43.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 57.00 (56.70 to 57.30):



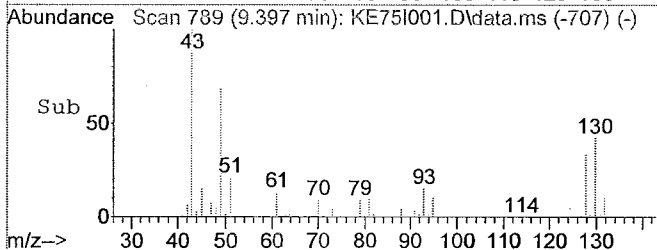
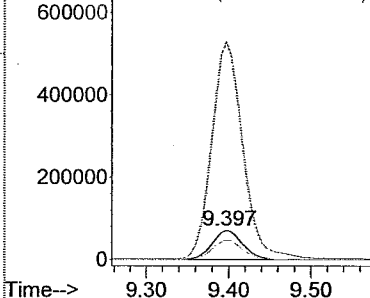
#22  
Ethyl Acetate  
Concen: 11.39 ppb  
RT: 9.40 min Scan# 789  
Delta R.T. 0.00 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

Tgt Ion: 61 Resp: 180073

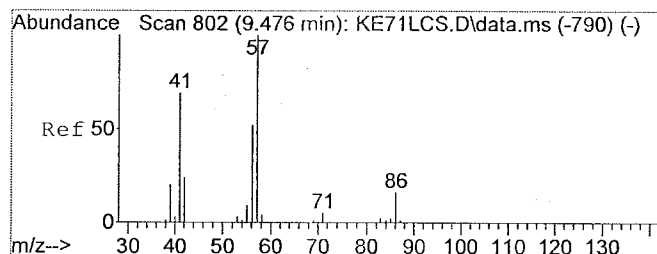
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 61  | 100   |       |       |
| 43  | 767.3 | 574.6 | 861.8 |
| 70  | 66.2  | 57.5  | 86.3  |
| 0   | 0.0   | 0.0   | 0.0   |



Abundance Ion 61.00 (60.70 to 61.30):  
Ion 43.00 (42.70 to 43.30):  
Ion 70.10 (69.80 to 70.40):



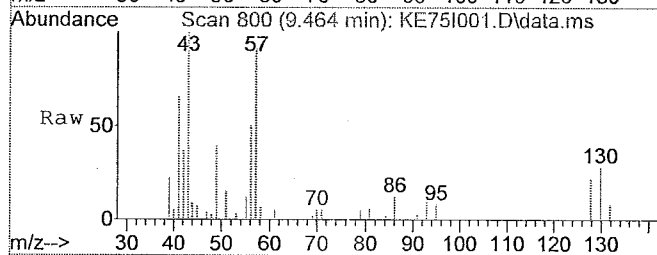




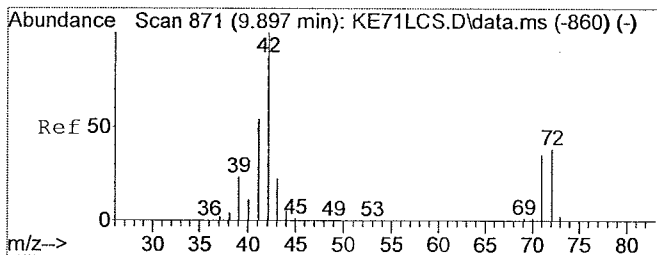
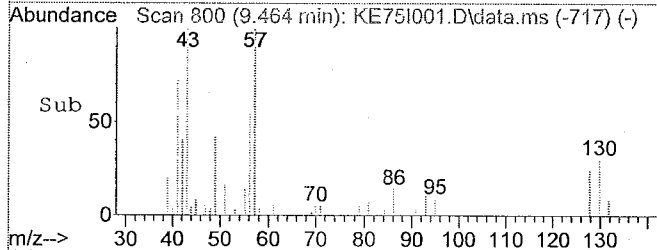
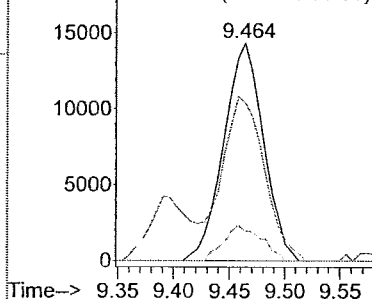
#23  
Hexane  
Concen: 0.47 ppb  
RT: 9.46 min Scan# 800  
Delta R.T. 0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

Tgt Ion: 57.1 Resp: 35452

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 57  | 100   |       |       |
| 41  | 81.7  | 58.6  | 88.0  |
| 86  | 15.2  | 14.2  | 21.4  |
| 0   | 0.0   | 0.0   | 0.0   |



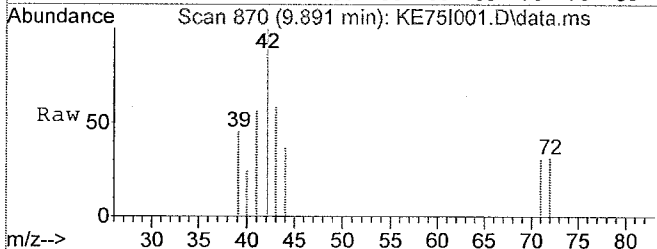
Abundance Ion 57.10 (56.80 to 57.40):  
Ion 41.00 (40.70 to 41.30):  
Ion 86.00 (85.70 to 86.30):



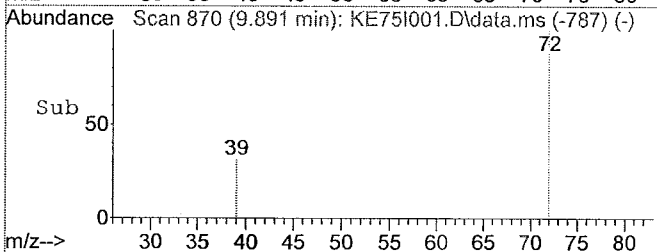
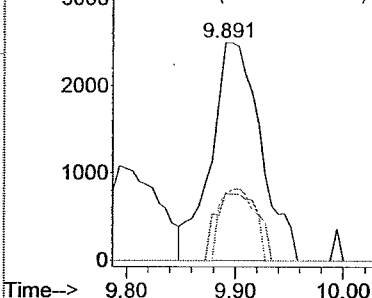
#25  
Tetrahydrofuran  
Concen: 0.16 ppb  
RT: 9.89 min Scan# 870  
Delta R.T. 0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

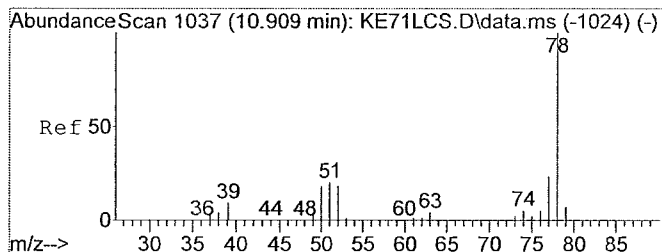
Tgt Ion: 42.1 Resp: 7876

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 42  | 100   |       |       |
| 72  | 26.4  | 29.7  | 44.5# |
| 71  | 22.7  | 28.1  | 42.1# |
| 0   | 0.0   | 0.0   | 0.0   |

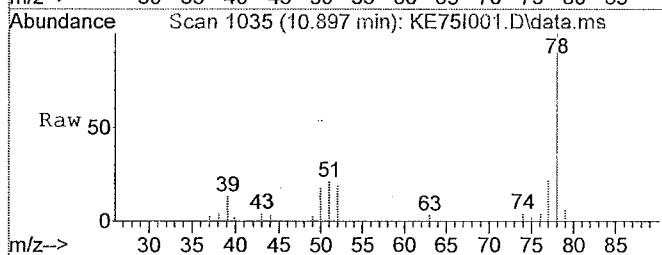


Abundance Ion 42.10 (41.80 to 42.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 71.10 (70.80 to 71.40):

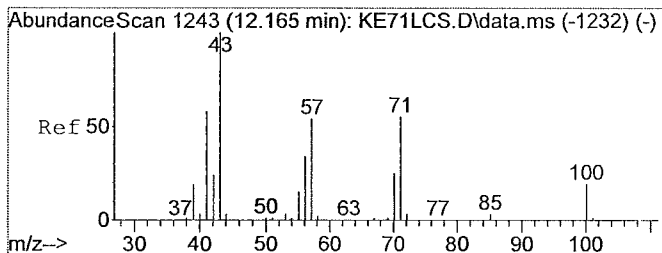
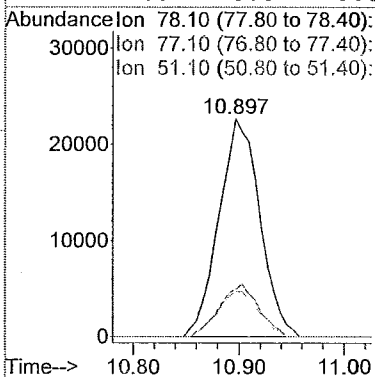
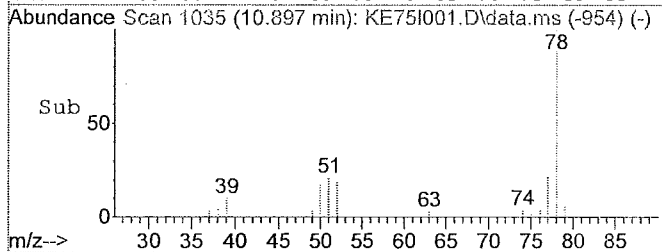




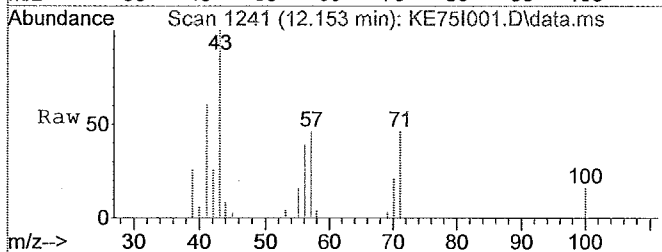
#28  
Benzene  
Concen: 0.48 ppb  
RT: 10.90 min Scan# 1035  
Delta R.T. -0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42



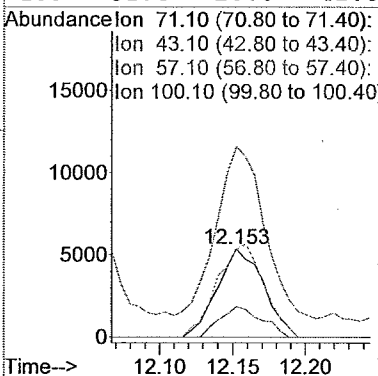
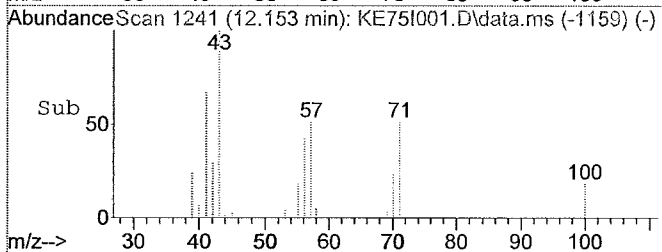
Tgt Ion: 78.1 Resp: 59956  
Ion Ratio Lower Upper  
78 100  
77 23.1 18.6 28.0  
51 20.8 15.7 23.5  
0 0.0 0.0 0.0

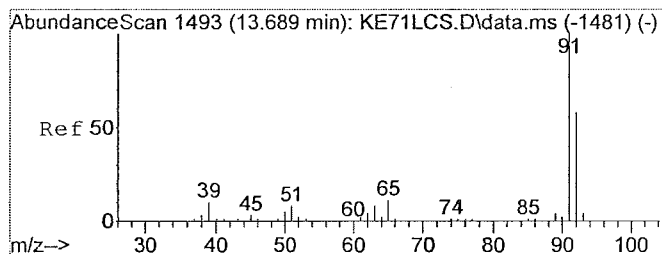


#34  
Heptane  
Concen: 0.24 ppb  
RT: 12.15 min Scan# 1241  
Delta R.T. 0.00 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

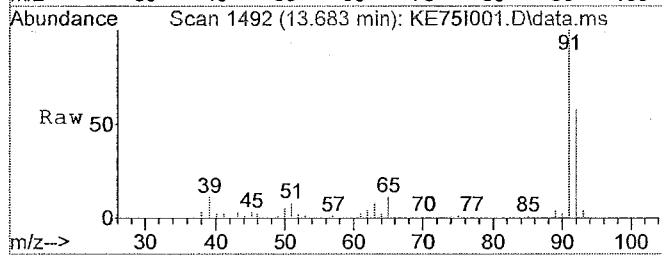


Tgt Ion: 71.1 Resp: 11769  
Ion Ratio Lower Upper  
71 100  
43 202.4 148.1 222.1  
57 106.8 79.4 119.0  
100 31.4 28.0 42.0

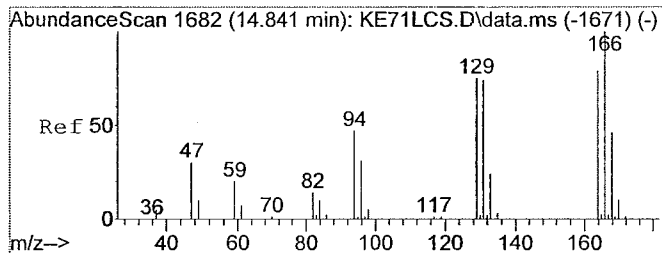
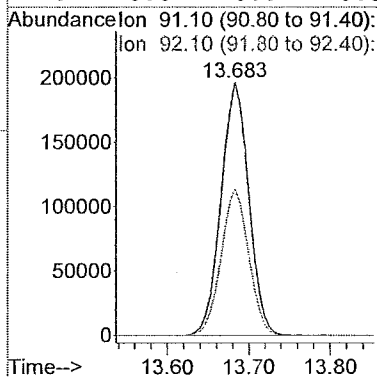
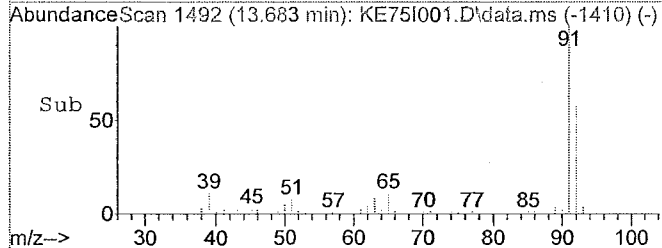




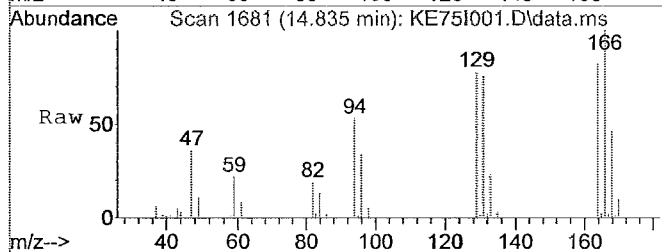
#39  
Toluene  
Concen: 3.11 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. 0.00 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42



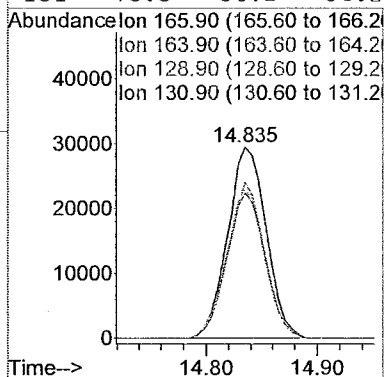
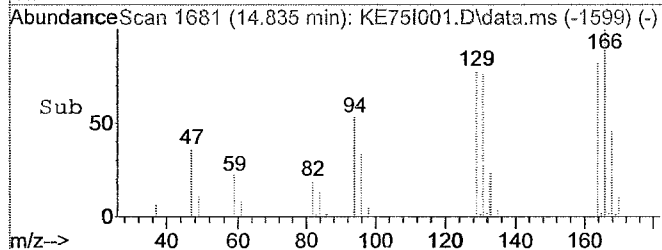
Tgt Ion: 91.1 Resp: 465419  
Ion Ratio Lower Upper  
91 100  
92 57.8 46.9 70.3  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

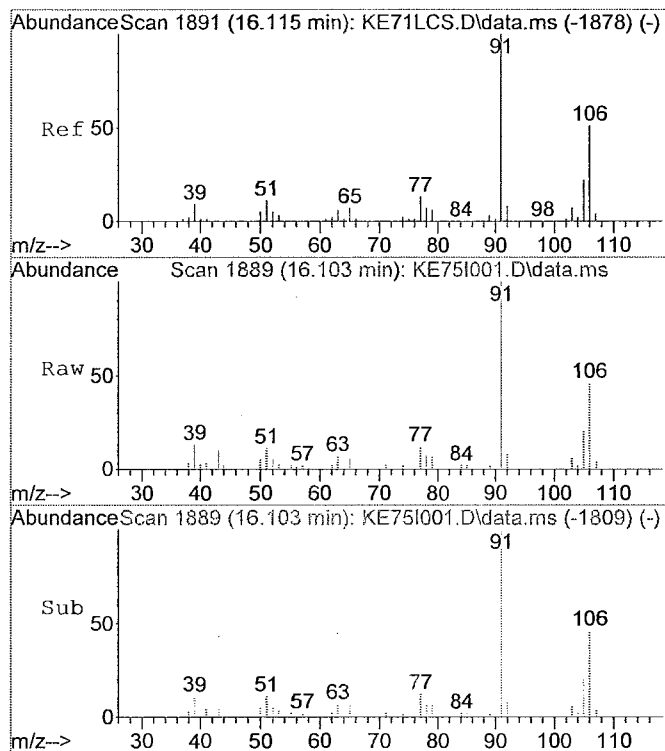


#43  
Tetrachloroethene  
Concen: 0.97 ppb  
RT: 14.83 min Scan# 1681  
Delta R.T. 0.00 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42



Tgt Ion: 165.9 Resp: 71656  
Ion Ratio Lower Upper  
166 100  
164 77.7 62.3 93.5  
129 77.4 58.4 87.6  
131 75.3 56.2 84.2

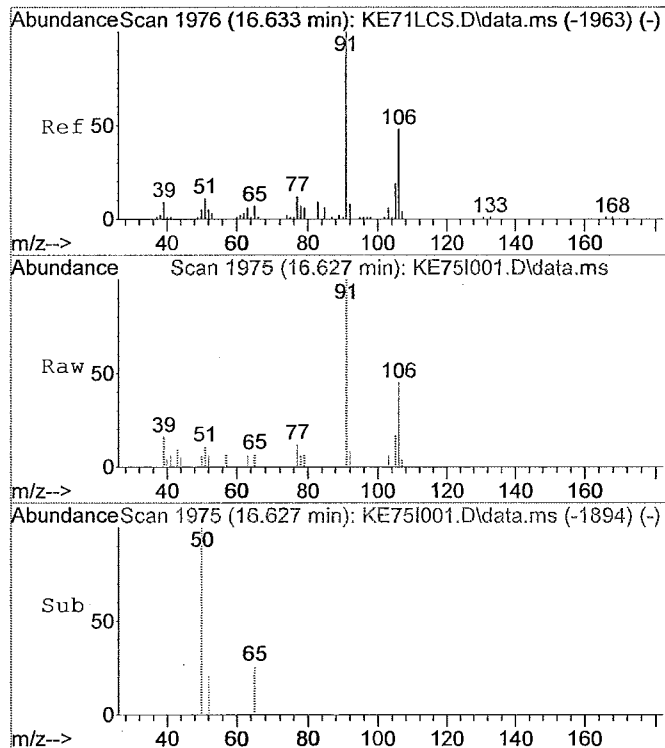
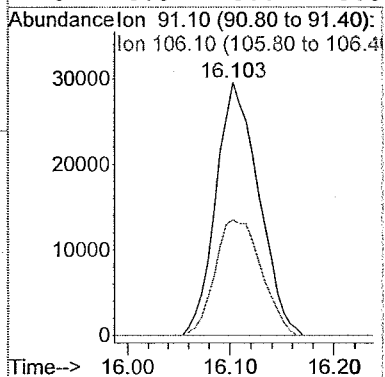




#47  
m,p-Xylene  
Concen: 0.53 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

Tgt Ion: 91.1 Resp: 83540

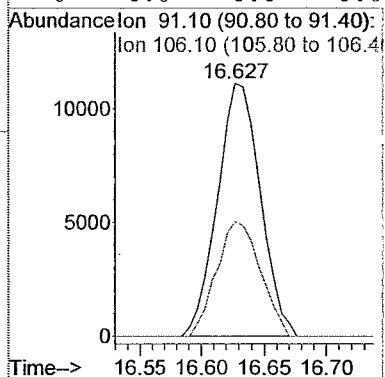
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 49.5  | 40.5  | 60.7  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



#51  
o-Xylene  
Concen: 0.17 ppb  
RT: 16.63 min Scan# 1975  
Delta R.T. -0.01 min  
Lab File: KE75I001.D  
Acq: 12/20/2018 08:42

Tgt Ion: 91.1 Resp: 26203

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 46.4  | 38.2  | 57.4  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



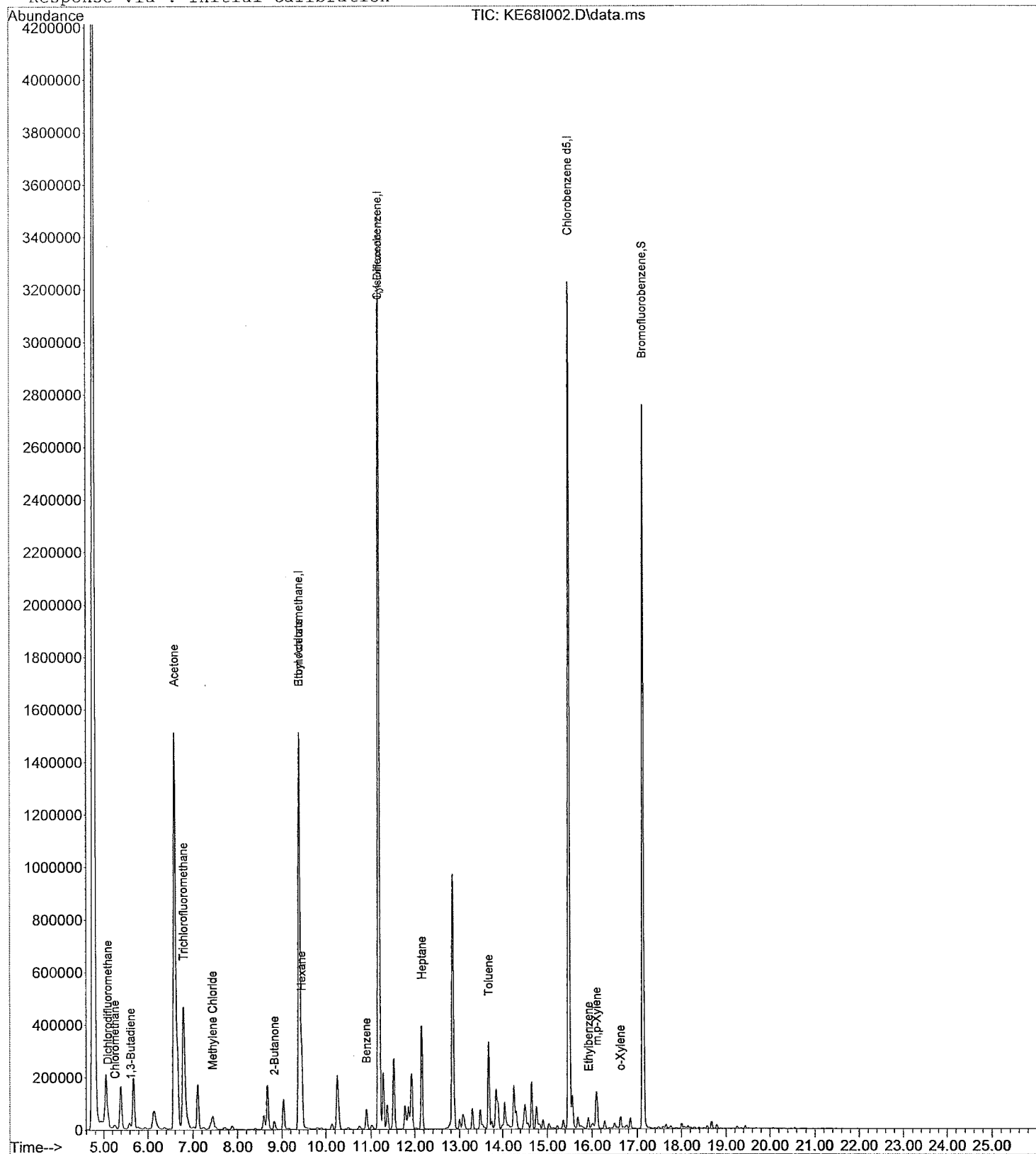
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE68I002.D Vial: 6  
Acq Time : 12/20/2018 01:02 Operator: BB  
Sample : 1835293002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:46:53 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE68I002.D Vial: 6  
 Acq Time : 12/20/2018 01:02 Operator: BB  
 Sample : 1835293002 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:46:53 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.40  | 130  | 247232   | 20.00 | ppb   | 81.93 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3355268  | 20.00 | ppb   | 89.14 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2534724  | 20.00 | ppb   | 90.27 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1361537  | 19.12 | ppb   | 95.58%    |

| Target Compounds              | R.T.  | QIon | Response | Conc         | Units | Qvalue |
|-------------------------------|-------|------|----------|--------------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 75107    | 0.5514       | ppb   | 99     |
| 3) Chloromethane              | 5.26  | 50   | 23345    | 0.6269       | ppb   | 100    |
| 4) Freon 114                  | 0.00  | 135  |          | Not Detected |       |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          | Not Detected |       |        |
| 6) 1,3-Butadiene              | 5.62  | 54   | 5100     | 0.1513       | ppb # | 17     |
| 7) Bromomethane               | 0.00  | 94   |          | Not Detected |       |        |
| 8) Chloroethane               | 0.00  | 64   |          | Not Detected |       |        |
| 9) Acetone                    | 6.59  | 43   | 3401791  | 44.2632      | ppb   | 97     |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 31207    | 0.2572       | ppb   | 100    |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          | Not Detected |       |        |
| 12) Methylene Chloride        | 7.45  | 84   | 32739    | 0.8030       | ppb   | 94     |
| 13) Freon 113                 | 0.00  | 151  |          | Not Detected |       |        |
| 14) Carbon Disulfide          | 0.00  | 76   |          | Not Detected |       |        |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          | Not Detected |       |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          | Not Detected |       |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          | Not Detected |       |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          | Not Detected |       |        |
| 19) 2-Butanone                | 8.82  | 43   | 67391    | 0.6870       | ppb   | 95     |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          | Not Detected |       |        |
| 22) Ethyl Acetate             | 9.40  | 61   | 10995    | 0.6276       | ppb   | 93     |
| 23) Hexane                    | 9.46  | 57   | 180367   | 2.1419       | ppb   | 97     |
| 24) Chloroform                | 0.00  | 83   |          | Not Detected |       |        |
| 25) Tetrahydrofuran           | 0.00  | 42   |          | Not Detected |       |        |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          | Not Detected |       |        |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 28) Benzene                   | 10.90 | 78   | 88926    | 0.6370       | ppb   | 99     |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          | Not Detected |       |        |
| 30) Cyclohexane               | 11.18 | 84   | 237853   | 3.3662       | ppb   | 84     |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          | Not Detected |       |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          | Not Detected |       |        |
| 33) Trichloroethene           | 0.00  | 130  |          | Not Detected |       |        |
| 34) Heptane                   | 12.16 | 71   | 109707   | 2.0405       | ppb   | 94     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          | Not Detected |       |        |
| 36) 4-Methyl-2-Pentanone      | 0.00  | 43   |          | Not Detected |       |        |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          | Not Detected |       |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 39) Toluene                   | 13.68 | 91   | 314871   | 1.8966       | ppb   | 98     |
| 40) 2-Hexanone                | 0.00  | 43   |          | Not Detected |       |        |
| 41) Dibromochloromethane      | 0.00  | 129  |          | Not Detected |       |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          | Not Detected |       |        |
| 43) Tetrachloroethene         | 0.00  | 166  |          | Not Detected |       |        |
| 45) Chlorobenzene             | 0.00  | 112  |          | Not Detected |       |        |
| 46) Ethylbenzene              | 15.93 | 91   | 38689    | 0.1919       | ppb   | 99     |
| 47) m,p-Xylene                | 16.10 | 91   | 121445   | 0.7594       | ppb   | 98     |
| 48) Bromoform                 | 0.00  | 173  |          | Not Detected |       |        |
| 49) Styrene                   | 0.00  | 104  |          | Not Detected |       |        |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          | Not Detected |       |        |

(# ) = qualifier out of range (m) = manual integration

KE68I002.D TO15KH18.m Thu Dec 20 14:52:50 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE68I002.D Vial: 6  
Acq Time : 12/20/2018 01:02 Operator: BB  
Sample : 1835293002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:46:53 2018

Results File: TO15KH18.RES

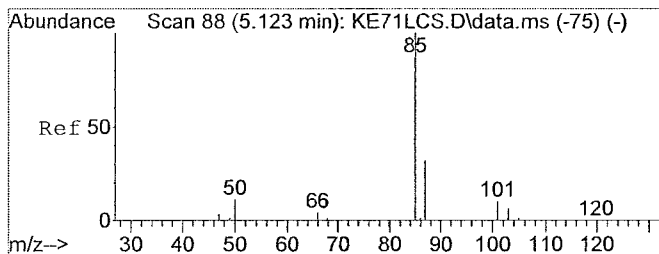
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc Unit    | Qvalue |
|------------------------------|-------|------|----------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 36403    | 0.2330 ppb   | 97     |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 55) 1,2,4-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |        |

-----  
(#) = qualifier out of range (m) = manual integration

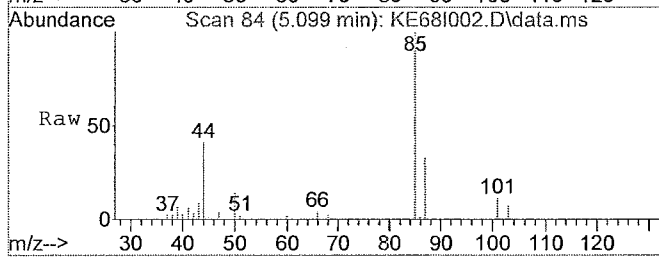
KE68I002.D TO15KH18.m Thu Dec 20 14:52:50 2018



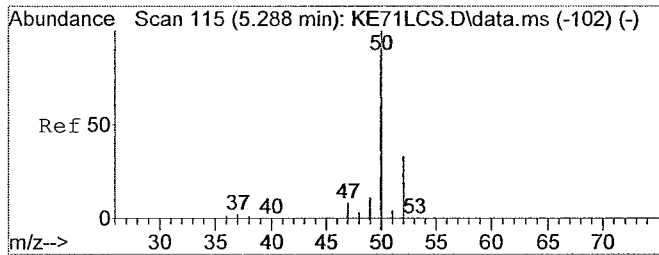
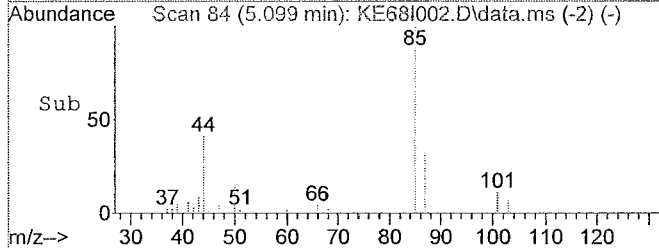
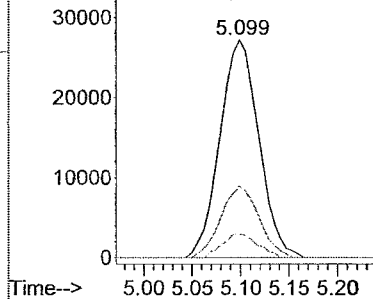


#2  
Dichlorodifluoromethane  
Concen: 0.55 ppb  
RT: 5.10 min Scan# 84  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

Tgt Ion: 85 Resp: 75107  
Ion Ratio Lower Upper  
85 100  
87 32.2 26.1 39.1  
101 9.9 8.1 12.1  
0 0.0 0.0 0.0

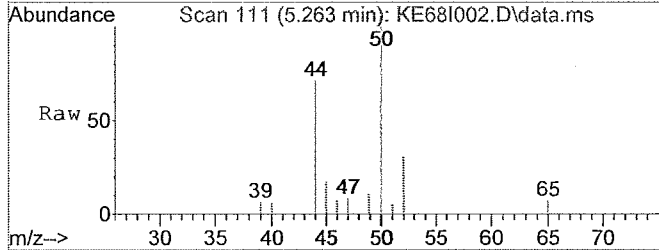


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30):

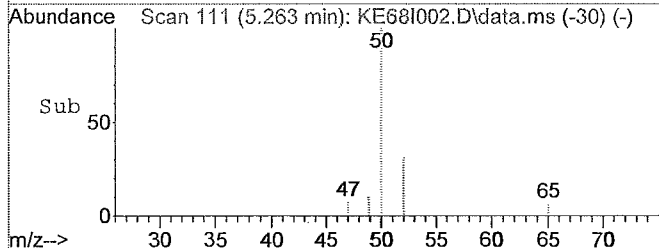
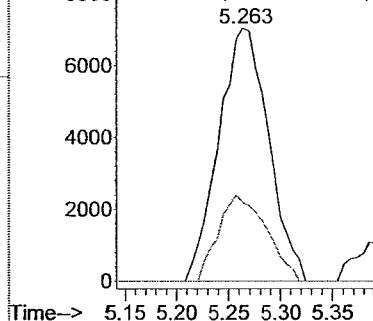


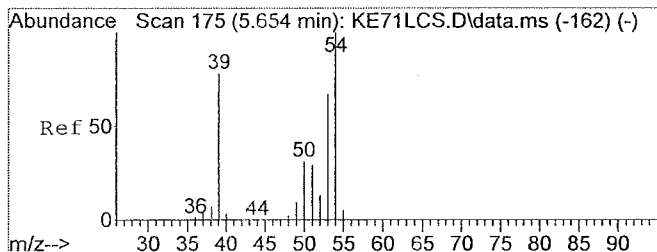
#3  
Chloromethane  
Concen: 0.63 ppb  
RT: 5.26 min Scan# 111  
Delta R.T. -0.01 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

Tgt Ion: 50 Resp: 23345  
Ion Ratio Lower Upper  
50 100  
52 32.8 26.3 39.5  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

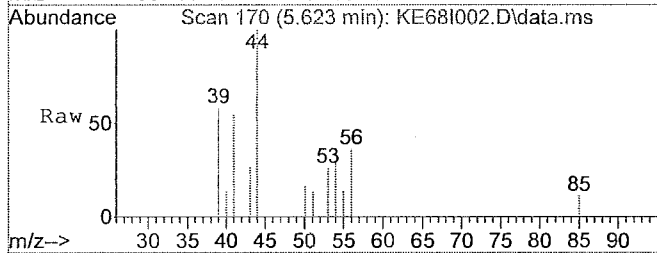


Abundance Ion 50.00 (49.70 to 50.30):  
Ion 52.00 (51.70 to 52.30):

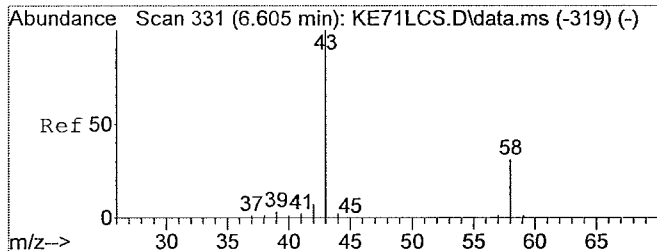
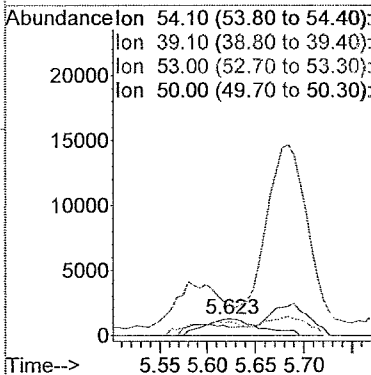
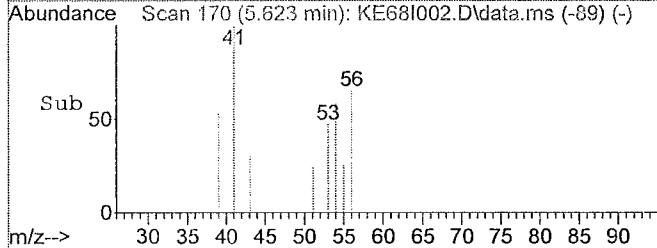




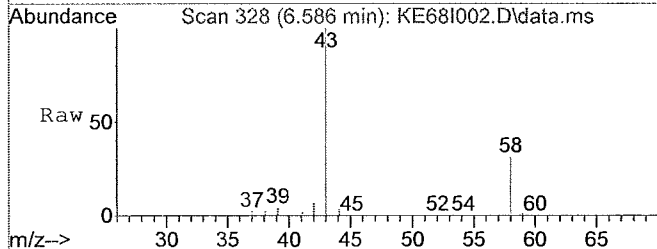
#6  
1,3-Butadiene  
Concen: 0.15 ppb  
RT: 5.62 min Scan# 170  
Delta R.T. -0.01 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02



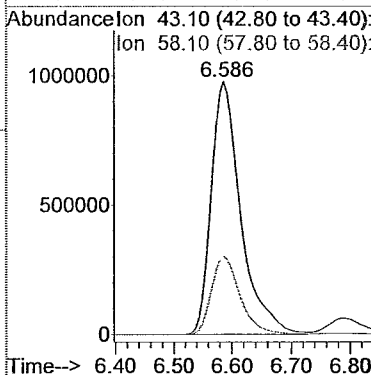
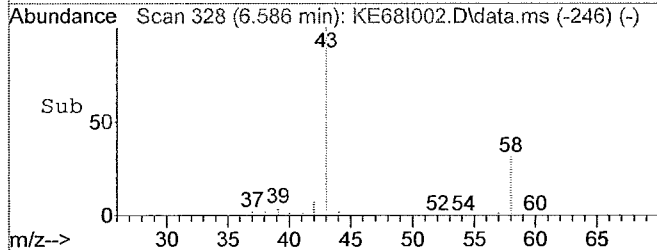
Tgt Ion: 54.1 Resp: 5100  
Ion Ratio Lower Upper  
54 100  
39 0.0 66.3 99.5#  
53 0.0 54.6 82.0#  
50 0.0 25.9 38.9#

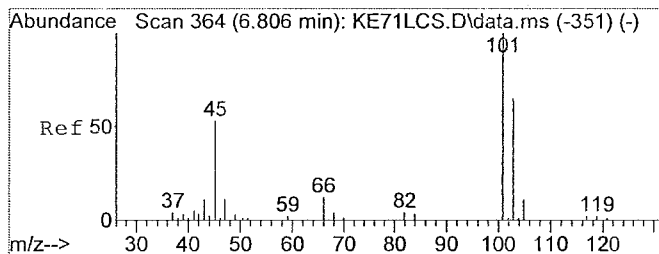


#9  
Acetone  
Concen: 44.26 ppb  
RT: 6.59 min Scan# 328  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02



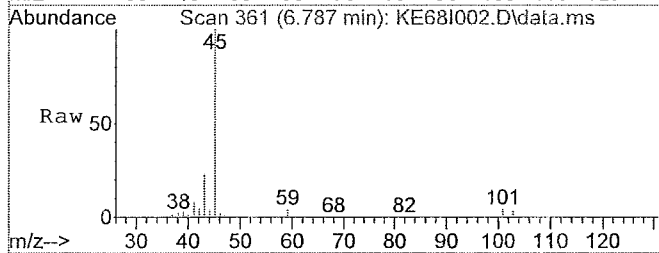
Tgt Ion: 43.1 Resp: 3401791  
Ion Ratio Lower Upper  
43 100  
58 30.0 25.1 37.7  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



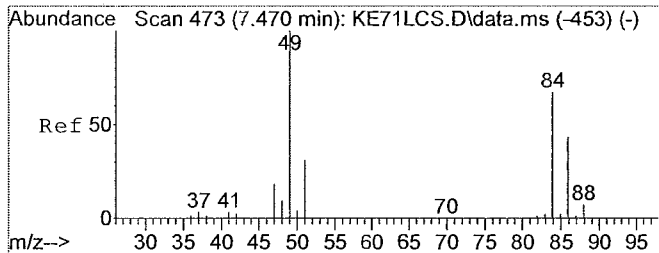
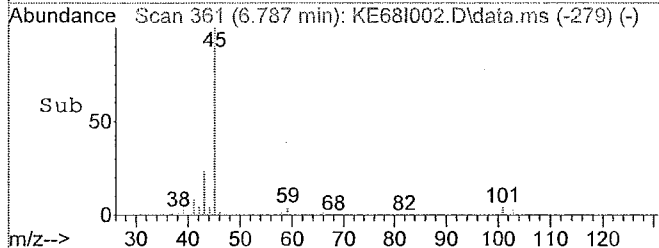
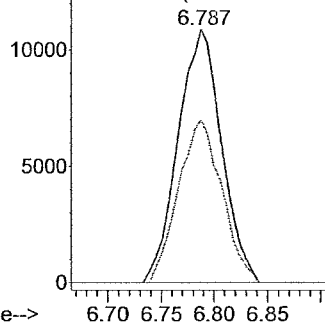


#10  
Trichlorofluoromethane  
Concen: 0.26 ppb  
RT: 6.79 min Scan# 361  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 101   | Resp: | 31207 |
| Ion Ratio | Lower | Upper |       |
| 101       | 100   |       |       |
| 103       | 64.2  | 51.6  | 77.4  |
| 0         | 0.0   | 0.0   | 0.0   |
| 0         | 0.0   | 0.0   | 0.0   |

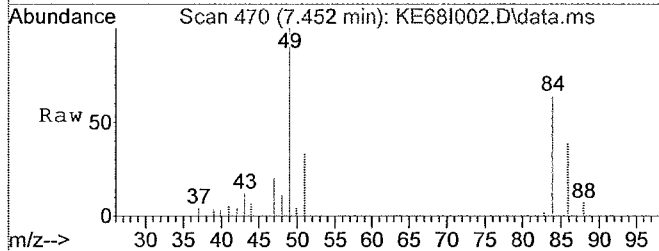


Abundance Ion 101.00 (100.70 to 101.30)  
Ion 103.00 (102.70 to 103.30)

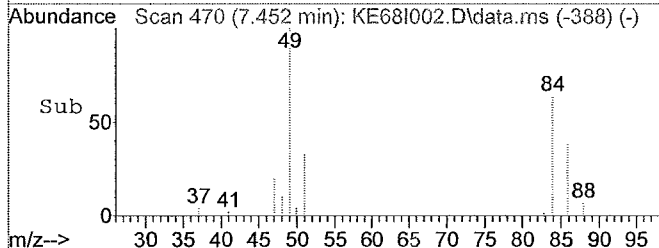
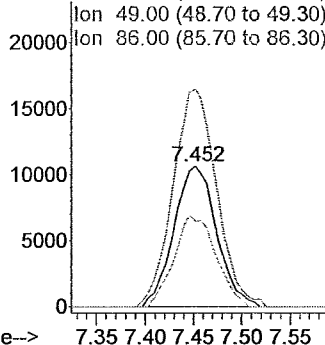


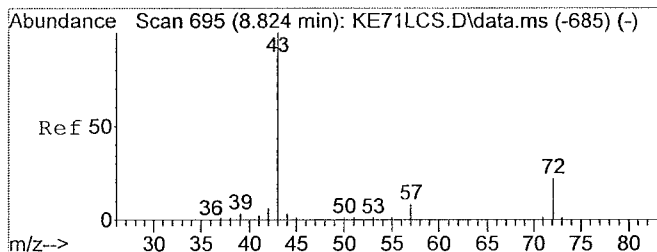
#12  
Methylene Chloride  
Concen: 0.80 ppb  
RT: 7.45 min Scan# 470  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 84    | Resp: | 32739 |
| Ion Ratio | Lower | Upper |       |
| 84        | 100   |       |       |
| 49        | 158.2 | 119.1 | 178.7 |
| 86        | 63.5  | 52.0  | 78.0  |
| 0         | 0.0   | 0.0   | 0.0   |



Abundance Ion 84.00 (83.70 to 84.30):

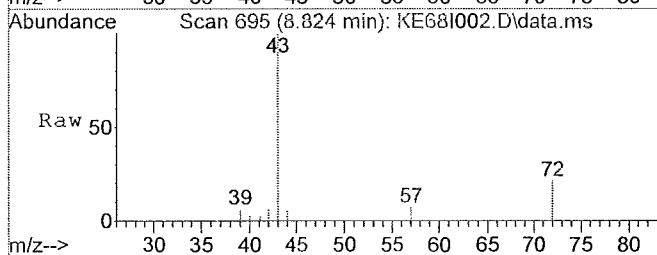




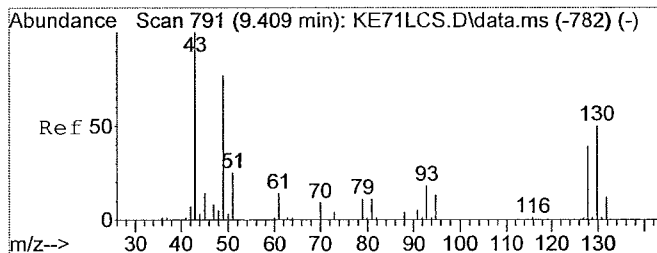
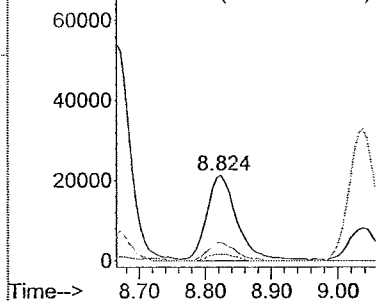
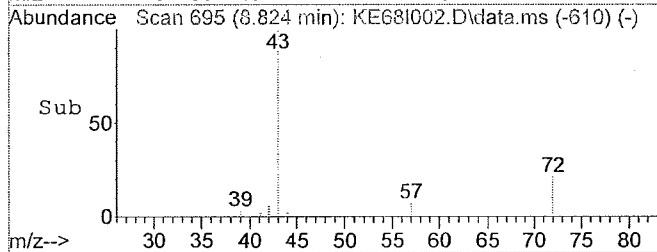
#19  
2-Butanone  
Concen: 0.69 ppb  
RT: 8.82 min Scan# 695  
Delta R.T. 0.02 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

Tgt Ion: 43.1 Resp: 67391

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 72  | 19.5  | 17.9  | 26.9  |
| 57  | 6.8   | 6.4   | 9.6   |
| 0   | 0.0   | 0.0   | 0.0   |



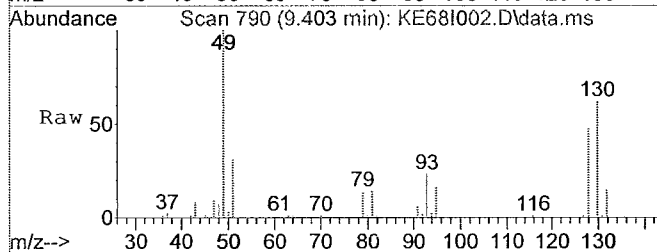
Abundance Ion 43.10 (42.80 to 43.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 57.00 (56.70 to 57.30):



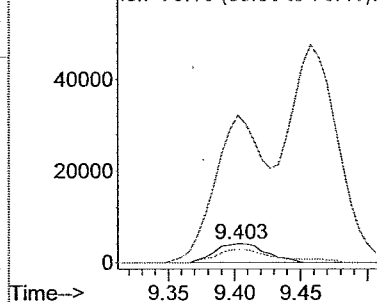
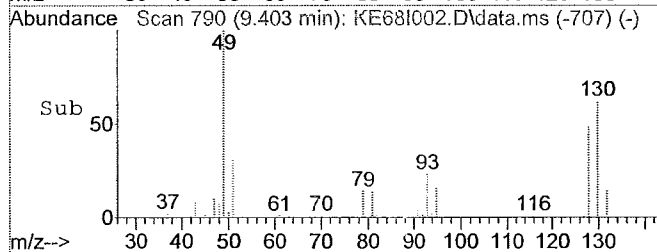
#22  
Ethyl Acetate  
Concen: 0.63 ppb  
RT: 9.40 min Scan# 790  
Delta R.T. 0.01 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

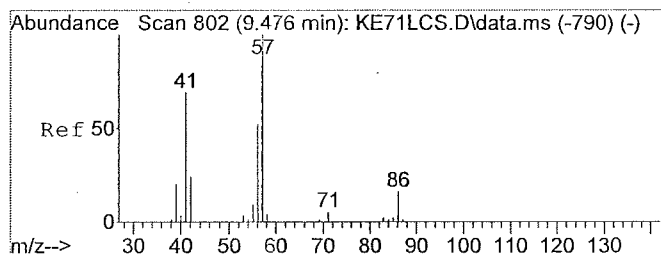
Tgt Ion: 61 Resp: 10995

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 61  | 100   |       |       |
| 43  | 742.4 | 574.6 | 861.8 |
| 70  | 81.8  | 57.5  | 86.3  |
| 0   | 0.0   | 0.0   | 0.0   |

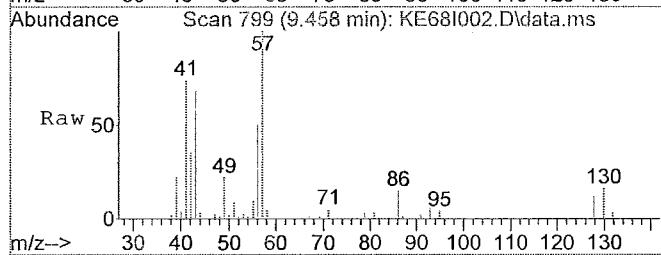


Abundance Ion 61.00 (60.70 to 61.30):  
Ion 43.00 (42.70 to 43.30):  
Ion 70.10 (69.80 to 70.40):

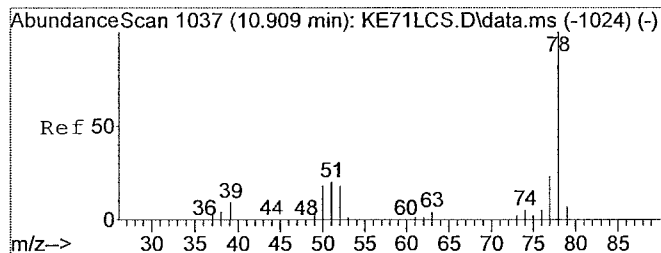
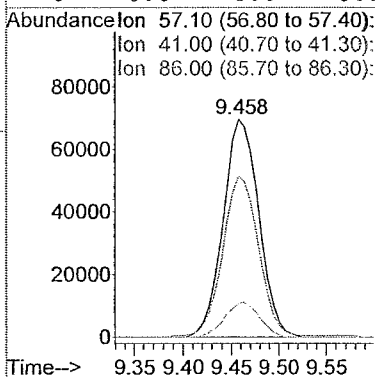
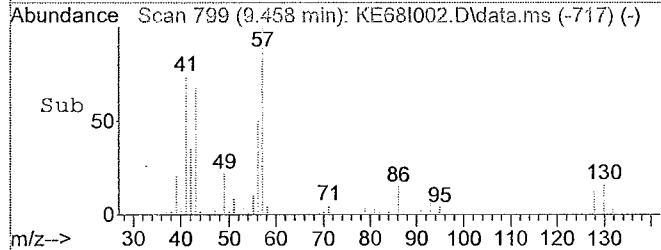




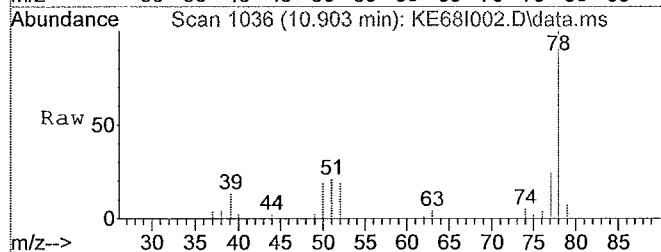
#23  
Hexane  
Concen: 2.14 ppb  
RT: 9.46 min Scan# 799  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02



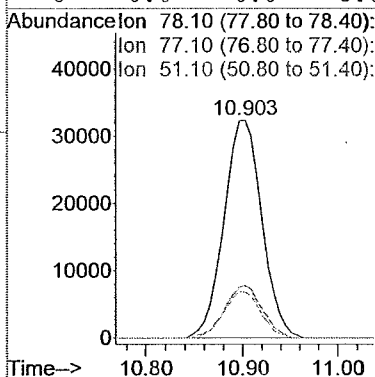
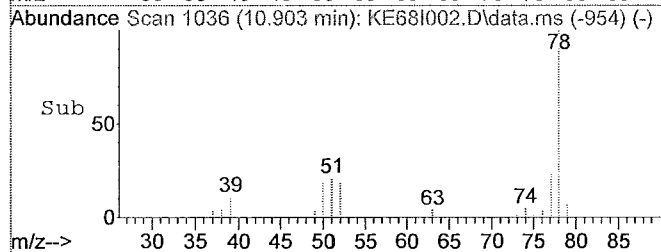
Tgt Ion: 57.1 Resp: 180367  
Ion Ratio Lower Upper  
57 100  
41 74.9 58.6 88.0  
86 15.5 14.2 21.4  
0 0.0 0.0 0.0

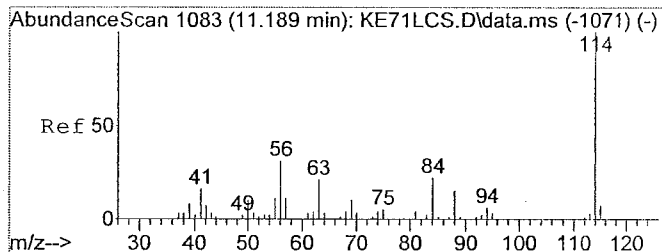


#28  
Benzene  
Concen: 0.64 ppb  
RT: 10.90 min Scan# 1036  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02



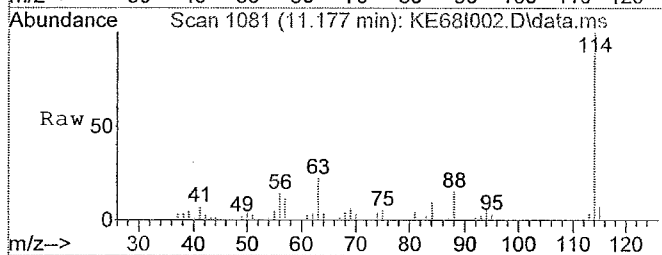
Tgt Ion: 78.1 Resp: 88926  
Ion Ratio Lower Upper  
78 100  
77 23.4 18.6 28.0  
51 20.8 15.7 23.5  
0 0.0 0.0 0.0



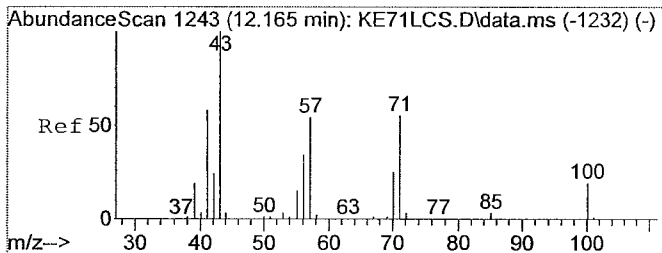
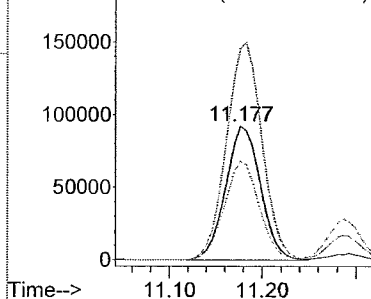
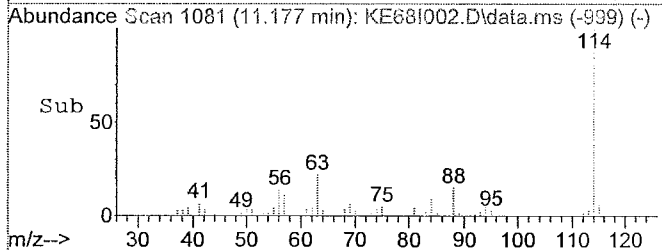


#30  
Cyclohexane  
Concen: 3.37 ppb  
RT: 11.18 min Scan# 1081  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

Tgt Ion:84.1 Resp: 237853  
Ion Ratio Lower Upper  
84 100  
56 165.8 111.8 167.8  
41 74.3 55.8 83.8  
0 0.0 0.0 0.0

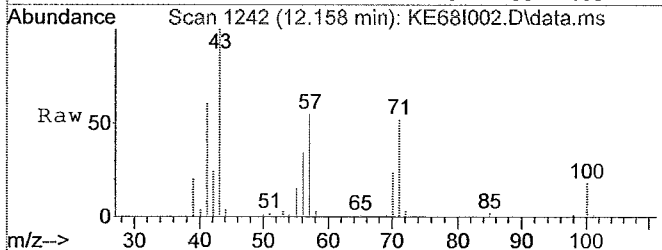


AbundanceIon 84.10 (83.80 to 84.40):  
200000  
Ion 56.10 (55.80 to 56.40):  
Ion 41.10 (40.80 to 41.40):

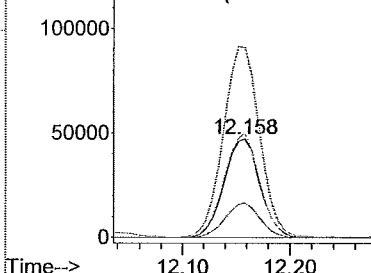
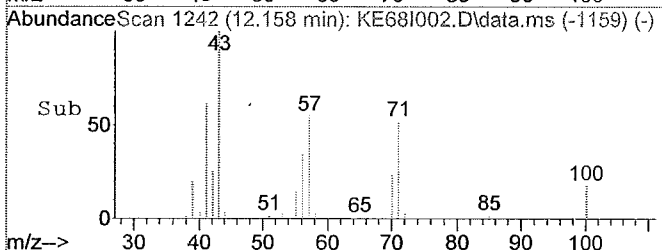


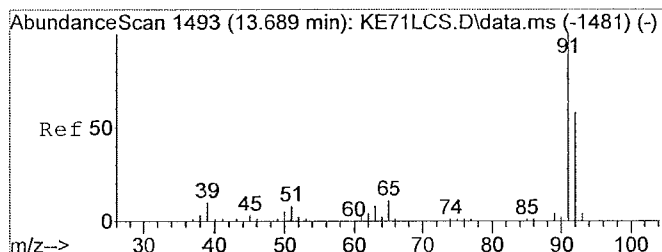
#34  
Heptane  
Concen: 2.04 ppb  
RT: 12.16 min Scan# 1242  
Delta R.T. 0.01 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

Tgt Ion:71.1 Resp: 109707  
Ion Ratio Lower Upper  
71 100  
43 195.4 148.1 222.1  
57 102.9 79.4 119.0  
100 33.8 28.0 42.0

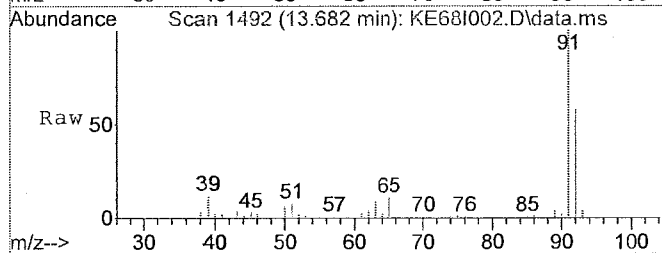


AbundanceIon 71.10 (70.80 to 71.40):  
100000  
Ion 43.10 (42.80 to 43.40):  
Ion 57.10 (56.80 to 57.40):  
Ion 100.10 (99.80 to 100.40):

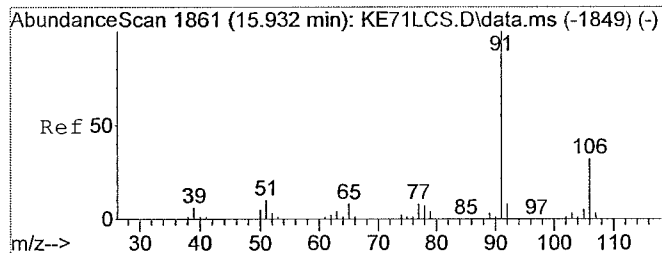
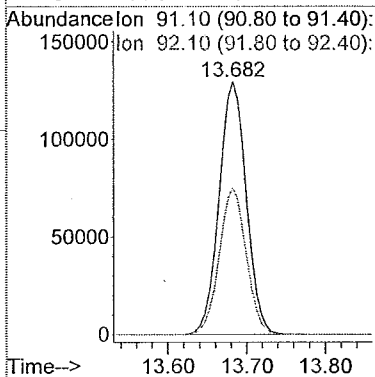
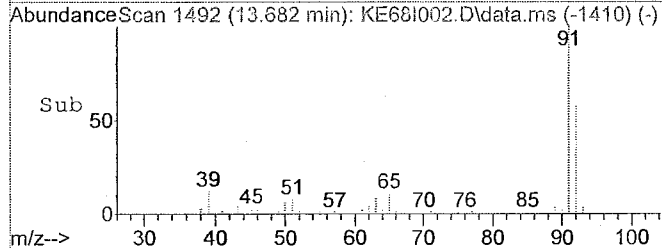




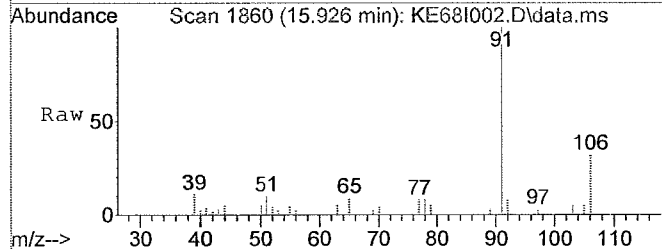
#39  
Toluene  
Concen: 1.90 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02



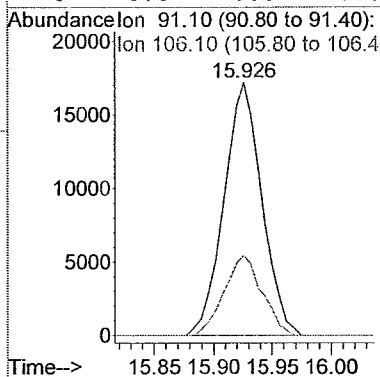
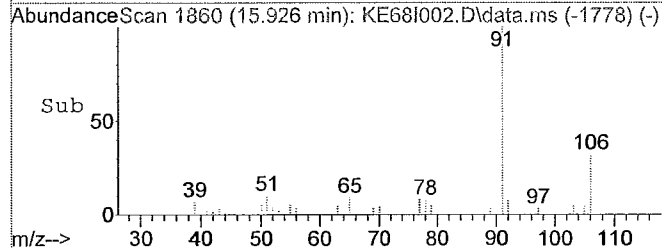
Tgt Ion: 91.1 Resp: 314871  
Ion Ratio Lower Upper  
91 100  
92 57.5 46.9 70.3  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



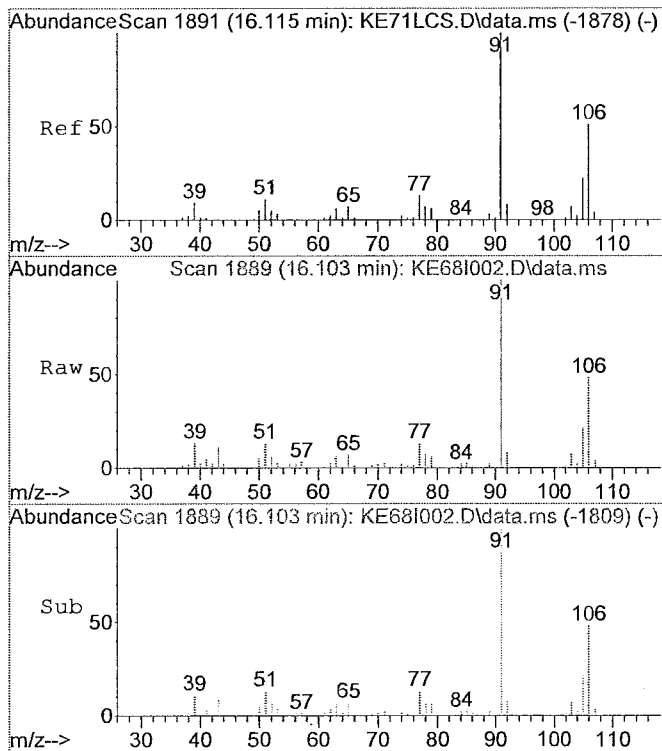
#46  
Ethylbenzene  
Concen: 0.19 ppb  
RT: 15.93 min Scan# 1860  
Delta R.T. -0.00 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02



Tgt Ion: 91.1 Resp: 38689  
Ion Ratio Lower Upper  
91 100  
106 31.7 25.8 38.8  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

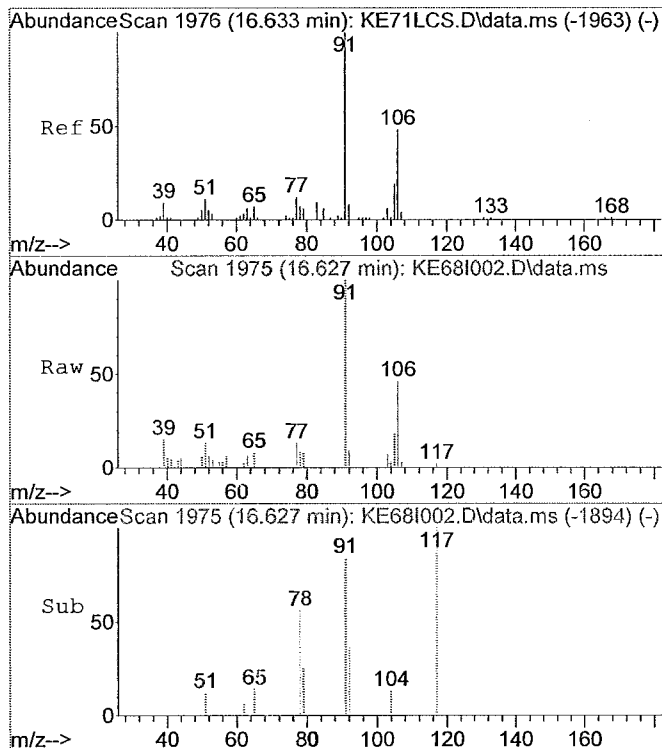
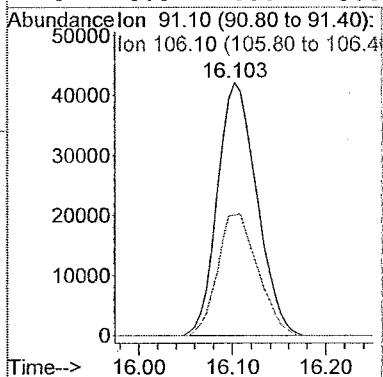






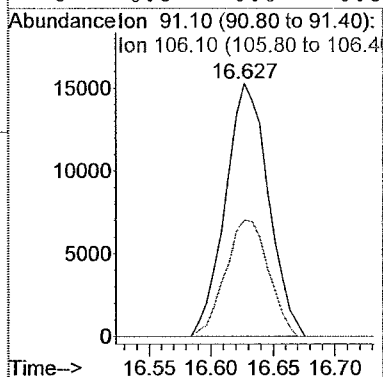
#47  
m,p-Xylene  
Concen: 0.76 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

Tgt Ion:91.1 Resp: 121445  
Ion Ratio Lower Upper  
91 100  
106 49.2 40.5 60.7  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



#51  
o-Xylene  
Concen: 0.23 ppb  
RT: 16.63 min Scan# 1975  
Delta R.T. -0.01 min  
Lab File: KE68I002.D  
Acq: 12/20/2018 01:02

Tgt Ion:91.1 Resp: 36403  
Ion Ratio Lower Upper  
91 100  
106 46.0 38.2 57.4  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



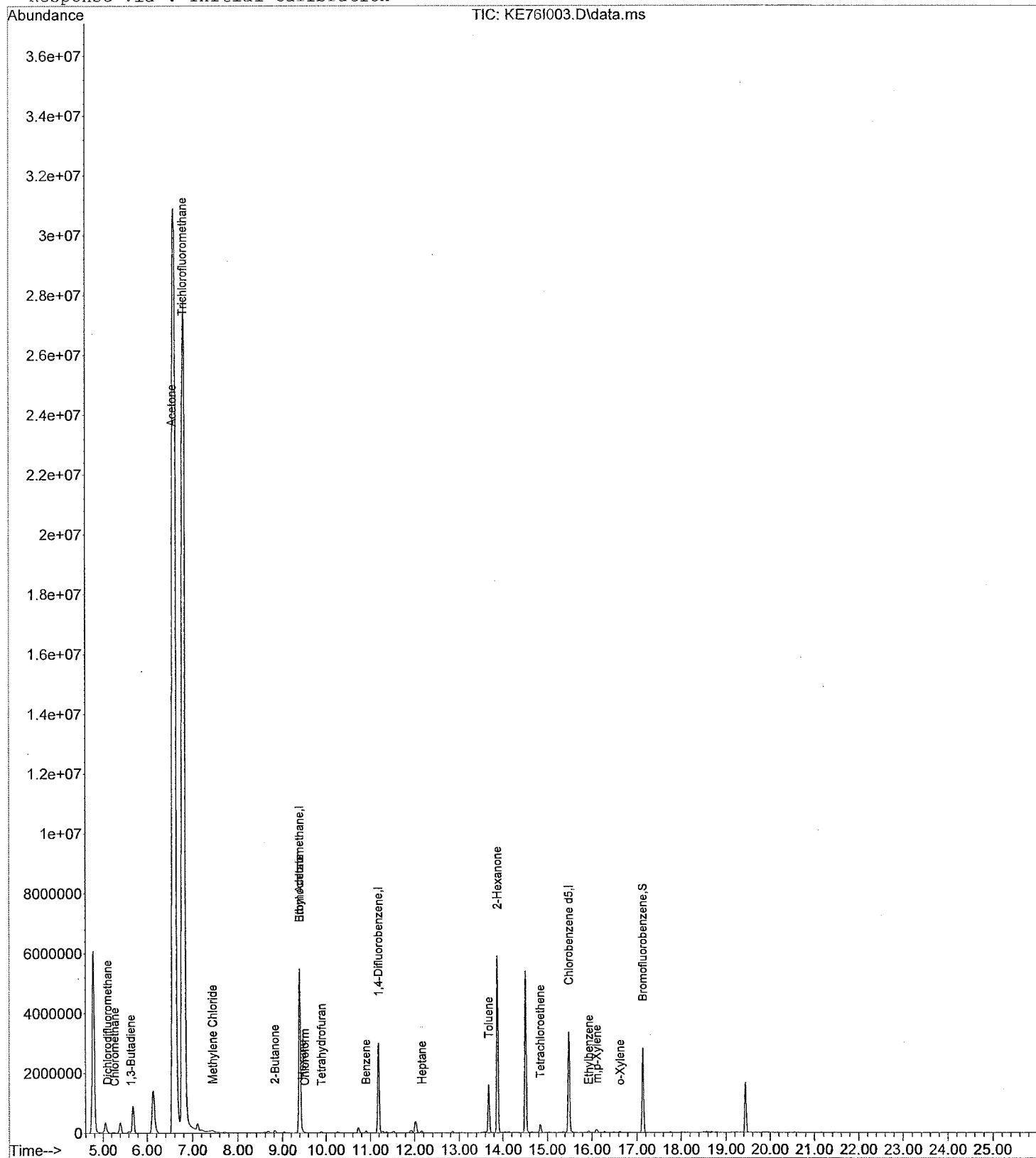
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE76I003.D Vial: 7  
Acq Time : 12/20/2018 09:19 Operator: BB  
Sample : 1835293003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:51:49 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE76I003.D Vial: 7  
 Acq Time : 12/20/2018 09:19 Operator: BB  
 Sample : 1835293003 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:51:49 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.40  | 130  | 279808   | 20.00 | ppb   | 92.73 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3231665  | 20.00 | ppb   | 85.86 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2661733  | 20.00 | ppb   | 94.80 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1356992  | 18.14 | ppb   | 90.72%    |

| Target Compounds              | R.T.  | QIon | Response | Conc     | Units        | Qvalue |
|-------------------------------|-------|------|----------|----------|--------------|--------|
| 2) Dichlorodifluoromethane    | 5.11  | 85   | 66589    | 0.4320   | ppb          | 99     |
| 3) Chloromethane              | 5.28  | 50   | 27027    | 0.6413   | ppb          | 97     |
| 4) Freon 114                  | 0.00  | 135  |          |          | Not Detected |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          |          | Not Detected |        |
| 6) 1,3-Butadiene              | 5.64  | 54   | 8491     | 0.2226   | ppb #        | 17     |
| 7) Bromomethane               | 0.00  | 94   |          |          | Not Detected |        |
| 8) Chloroethane               | 0.00  | 64   |          |          | Not Detected |        |
| 9) Acetone                    | 6.54  | 43   | 58968402 | 677.9515 | ppb m        |        |
| 10) Trichlorofluoromethane    | 6.78  | 101  | 33875    | 0.2466   | ppb          | 100    |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          |          | Not Detected |        |
| 12) Methylene Chloride        | 7.46  | 84   | 32020    | 0.6939   | ppb          | 92     |
| 13) Freon 113                 | 0.00  | 151  |          |          | Not Detected |        |
| 14) Carbon Disulfide          | 0.00  | 76   |          |          | Not Detected |        |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          |          | Not Detected |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          |          | Not Detected |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          |          | Not Detected |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          |          | Not Detected |        |
| 19) 2-Butanone                | 8.82  | 43   | 160063   | 1.4419   | ppb          | 98     |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          |          | Not Detected |        |
| 22) Ethyl Acetate             | 9.40  | 61   | 848967   | 50.3099  | ppb          | 91     |
| 23) Hexane                    | 9.46  | 57   | 38177    | 0.4707   | ppb          | 99     |
| 24) Chloroform                | 9.52  | 83   | 17720    | 0.1827   | ppb          | 100    |
| 25) Tetrahydrofuran           | 9.90  | 42   | 36455    | 0.6794   | ppb          | 93     |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          |          | Not Detected |        |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          |          | Not Detected |        |
| 28) Benzene                   | 10.90 | 78   | 70624    | 0.5253   | ppb          | 99     |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          |          | Not Detected |        |
| 30) Cyclohexane               | 0.00  | 84   |          |          | Not Detected |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          |          | Not Detected |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          |          | Not Detected |        |
| 33) Trichloroethene           | 0.00  | 130  |          |          | Not Detected |        |
| 34) Heptane                   | 12.16 | 71   | 16692    | 0.3223   | ppb          | 84     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          |          | Not Detected |        |
| 36) 4-Methyl-2-Pentanone      | 0.00  | 43   |          |          | Not Detected |        |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          |          | Not Detected |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          |          | Not Detected |        |
| 39) Toluene                   | 13.68 | 91   | 1544333  | 9.6578   | ppb          | 100    |
| 40) 2-Hexanone                | 13.88 | 43   | 200276   | 1.7909   | ppb #        | 71     |
| 41) Dibromochloromethane      | 0.00  | 129  |          |          | Not Detected |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          |          | Not Detected |        |
| 43) Tetrachloroethene         | 14.83 | 166  | 105372   | 1.3301   | ppb          | 97     |
| 45) Chlorobenzene             | 0.00  | 112  |          |          | Not Detected |        |
| 46) Ethylbenzene              | 15.93 | 91   | 31844    | 0.1504   | ppb          | 95     |
| 47) m,p-Xylene                | 16.10 | 91   | 94545    | 0.5630   | ppb          | 100    |
| 48) Bromoform                 | 0.00  | 173  |          |          | Not Detected |        |
| 49) Styrene                   | 0.00  | 104  |          |          | Not Detected |        |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          |          | Not Detected |        |

(#)= qualifier out of range (m)= manual integration

KE76I003.D TO15KH18.m Thu Dec 20 14:53:25 2018

Page 1

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE76I003.D Vial: 7  
Acq Time : 12/20/2018 09:19 Operator: BB  
Sample : 1835293003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:51:49 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc Unit    | Qvalue |
|------------------------------|-------|------|----------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 30068    | 0.1833 ppb   | 97     |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 55) 1,2,4-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |        |

-----  
(#) = qualifier out of range (m) = manual integration

KE76I003.D TO15KH18.m

Thu Dec 20 14:53:25 2018

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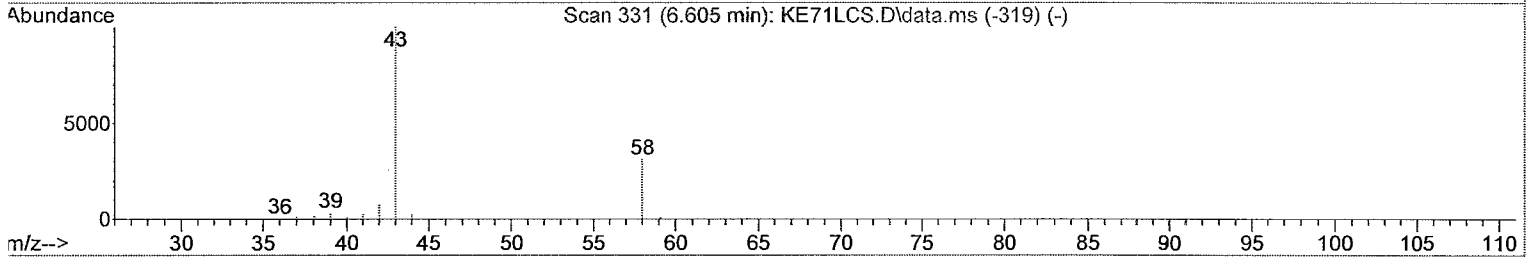
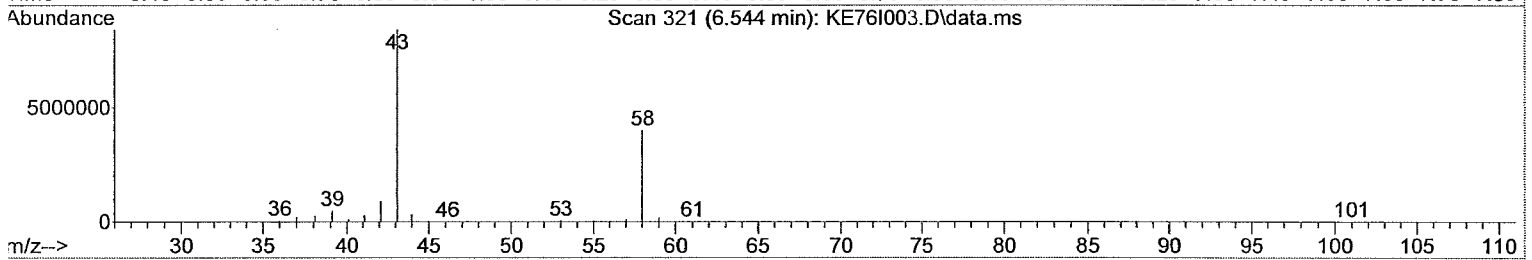
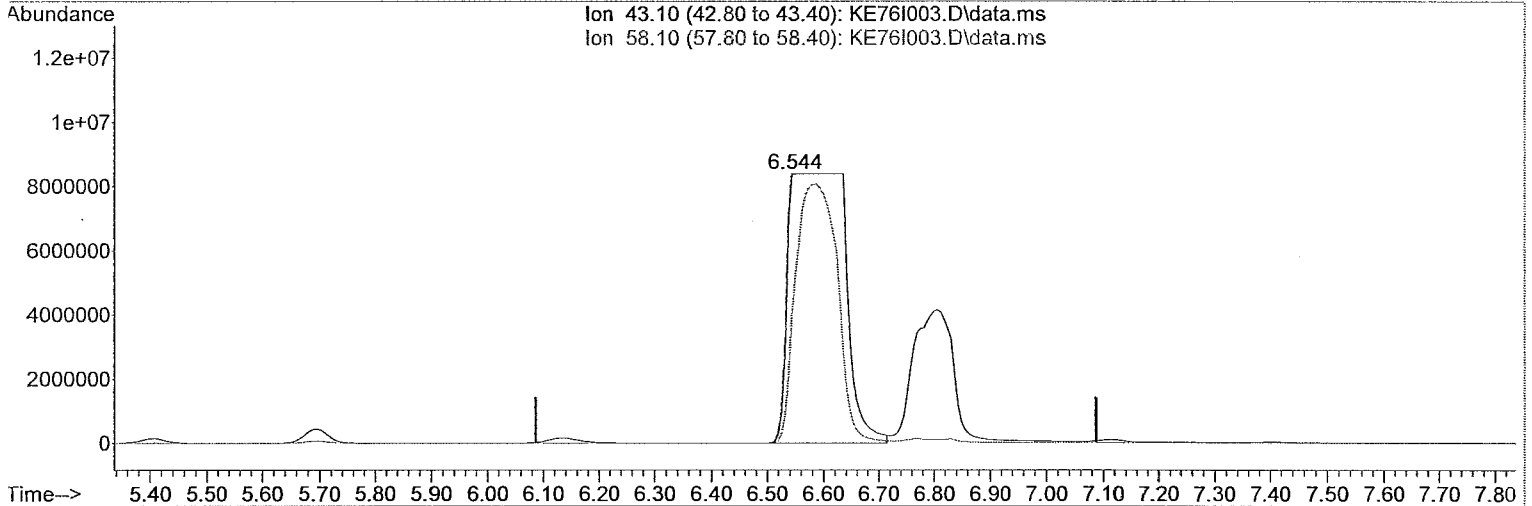
Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE76I003.D  
Acq On : 12/20/2018 09:19  
Operator : BB  
Sample : 1835293003  
Inst : 5975-K  
Misc :  
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Dec 20 09:46:54 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration

## MANUAL RE-INTEGRATION

- ☒ missed peak assignment  
☐ assigned incorrect name to peak  
☐ over-integrated peak's area  
☐ under-integrated peak's area  
☐ other

initials TSB date 12/20/18



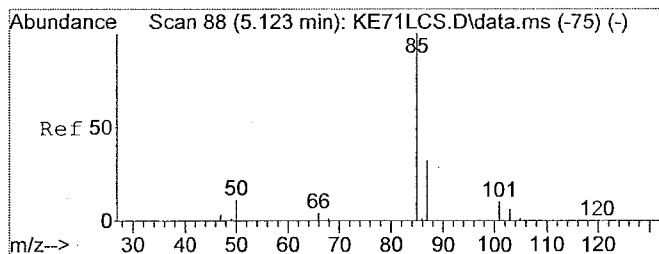
TIC: KE76I003.D\data.ms

(9) Acetone

6.544min (-0.043) 677.95 ppb m

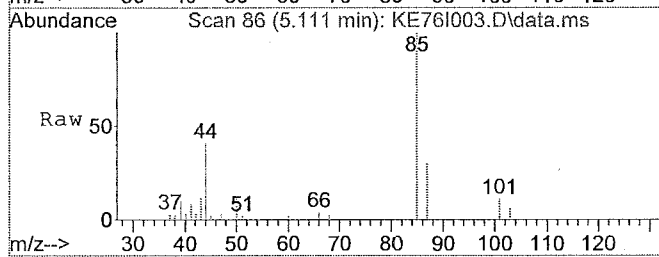
response 58968402

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 43.10 | 100.00 | 100.00 |
| 58.10 | 31.40  | 0.00#  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

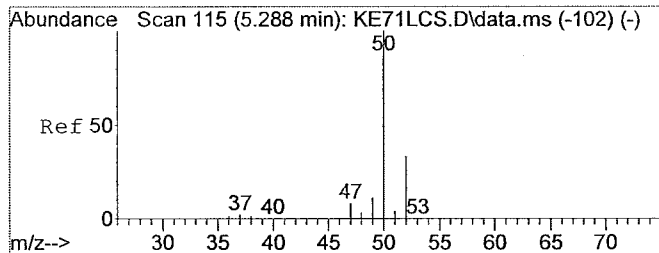
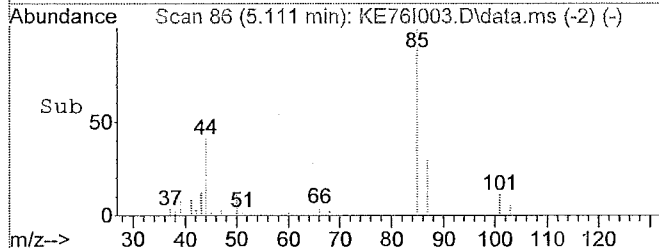
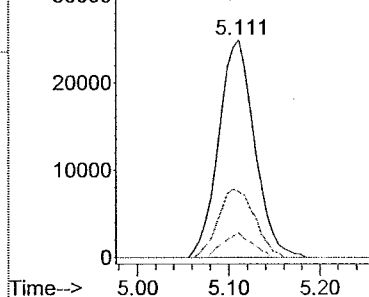


#2  
Dichlorodifluoromethane  
Concen: 0.43 ppb  
RT: 5.11 min Scan# 86  
Delta R.T. 0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

Tgt Ion: 85 Resp: 66589  
Ion Ratio Lower Upper  
85 100  
87 32.1 26.1 39.1  
101 9.3 8.1 12.1  
0 0.0 0.0 0.0

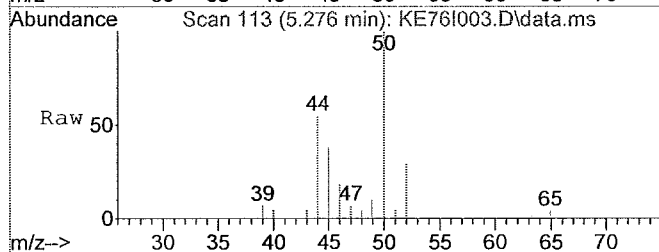


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30):

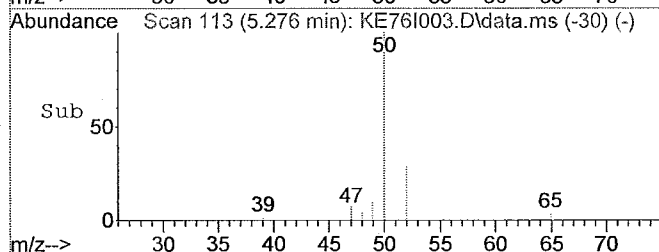
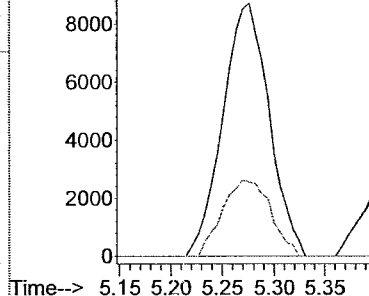


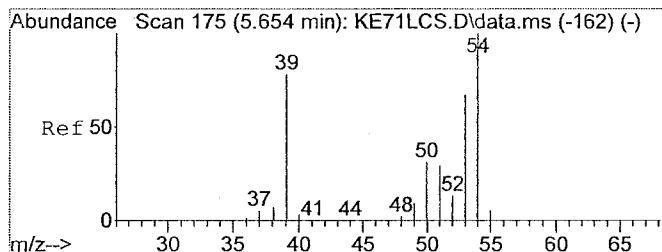
#3  
Chloromethane  
Concen: 0.64 ppb  
RT: 5.28 min Scan# 113  
Delta R.T. 0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

Tgt Ion: 50 Resp: 27027  
Ion Ratio Lower Upper  
50 100  
52 31.4 26.3 39.5  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

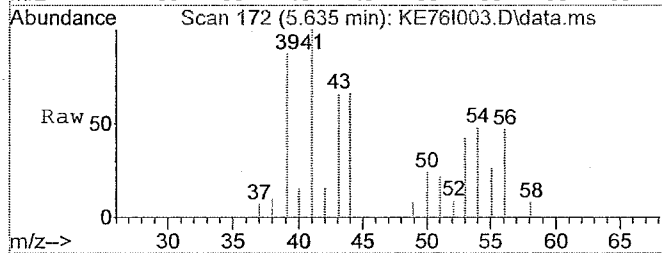


Abundance Ion 50.00 (49.70 to 50.30):  
Ion 52.00 (51.70 to 52.30):

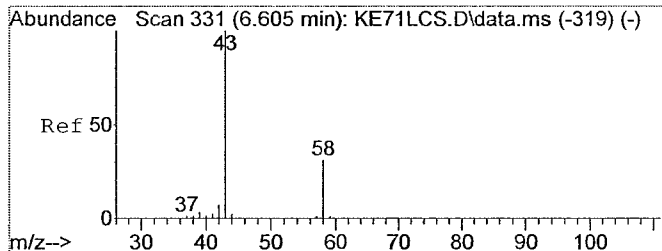
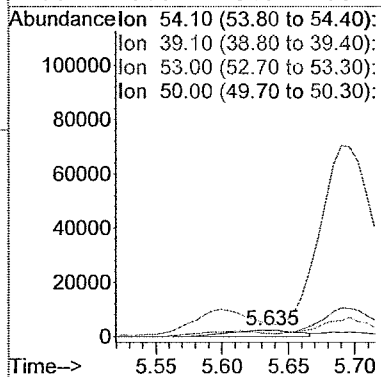
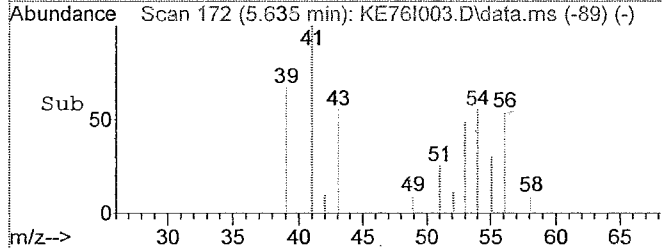




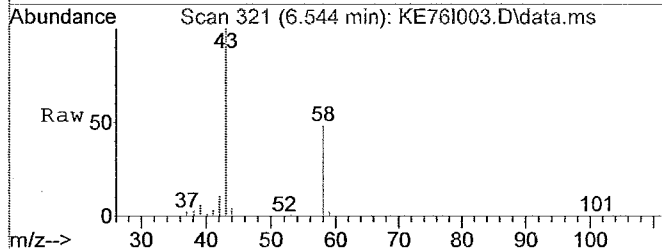
#6  
1,3-Butadiene  
Concen: 0.22 ppb  
RT: 5.64 min Scan# 172  
Delta R.T. 0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19



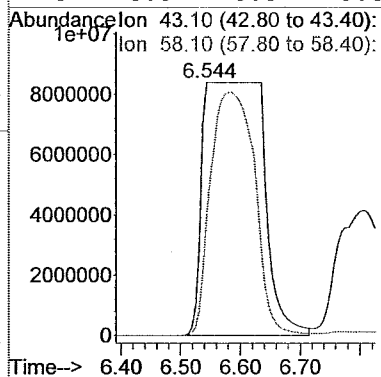
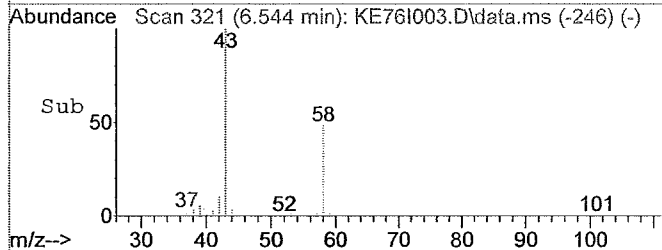
Tgt Ion: 54.1 Resp: 8491  
Ion Ratio Lower Upper  
54 100  
39 0.0 66.3 99.5#  
53 0.0 54.6 82.0#  
50 0.0 25.9 38.9#



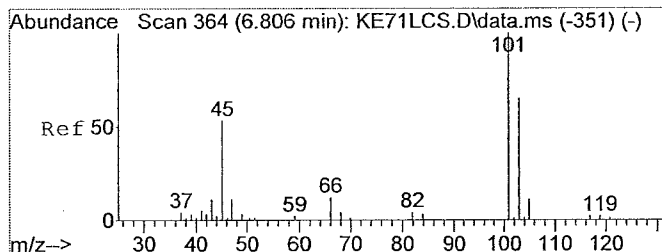
#9  
Acetone  
Concen: 677.95 ppb m  
RT: 6.54 min Scan# 321  
Delta R.T. -0.04 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19



Tgt Ion: 43.1 Resp: 58968402  
Ion Ratio Lower Upper  
43 100  
58 0.0 25.1 37.7#  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

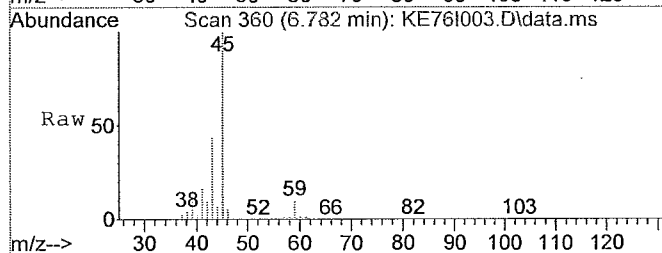




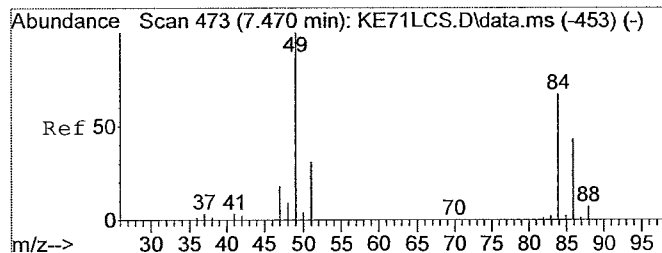
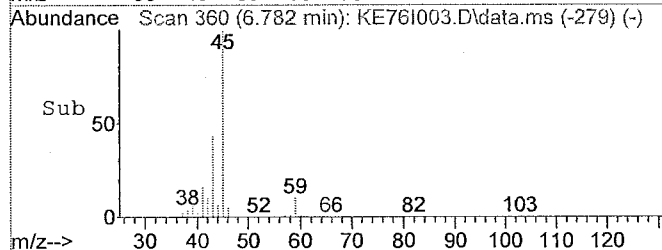
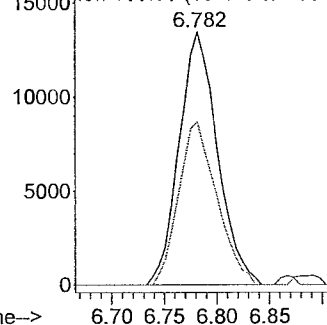


#10  
Trichlorofluoromethane  
Concen: 0.25 ppb  
RT: 6.78 min Scan# 360  
Delta R.T. -0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

|             |       |           |
|-------------|-------|-----------|
| Tgt Ion:101 | Resp: | 33875     |
| Ion Ratio   | Lower | Upper     |
| 101         | 100   |           |
| 103         | 64.3  | 51.6 77.4 |
| 0           | 0.0   | 0.0 0.0   |
| 0           | 0.0   | 0.0 0.0   |

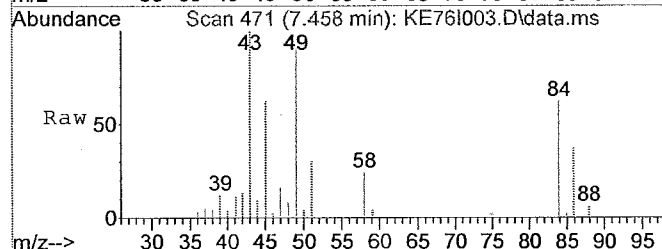


Abundance Ion 101.00 (100.70 to 101.30)  
Ion 103.00 (102.70 to 103.30)

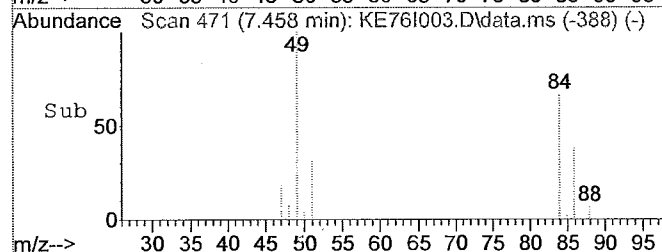
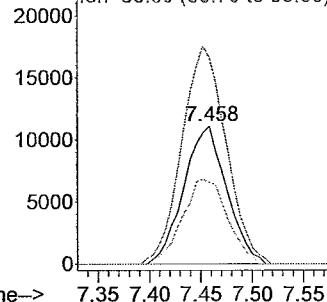


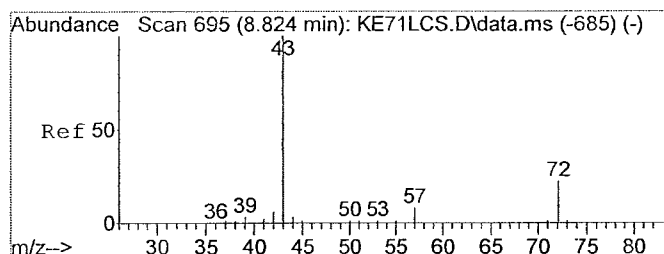
#12  
Methylene Chloride  
Concen: 0.69 ppb  
RT: 7.46 min Scan# 471  
Delta R.T. 0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

|            |       |             |
|------------|-------|-------------|
| Tgt Ion:84 | Resp: | 32020       |
| Ion Ratio  | Lower | Upper       |
| 84         | 100   |             |
| 49         | 162.8 | 119.1 178.7 |
| 86         | 63.7  | 52.0 78.0   |
| 0          | 0.0   | 0.0 0.0     |

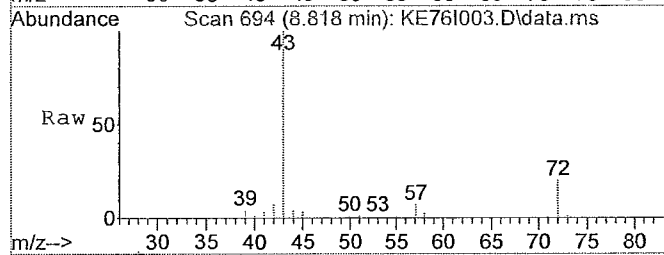


Abundance Ion 84.00 (83.70 to 84.30):  
Ion 49.00 (48.70 to 49.30):  
Ion 86.00 (85.70 to 86.30):

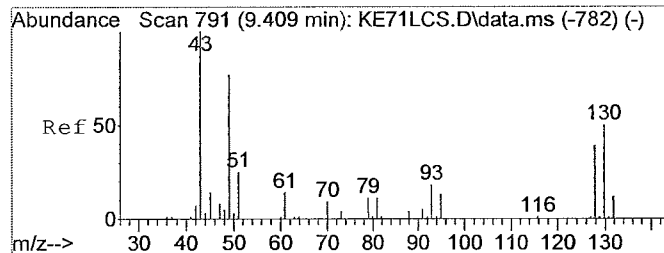
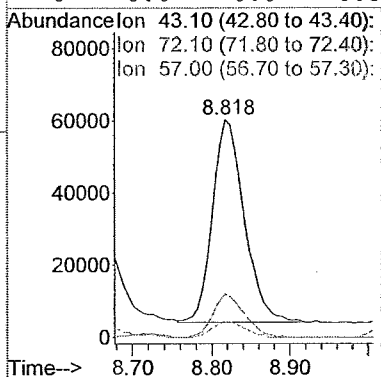
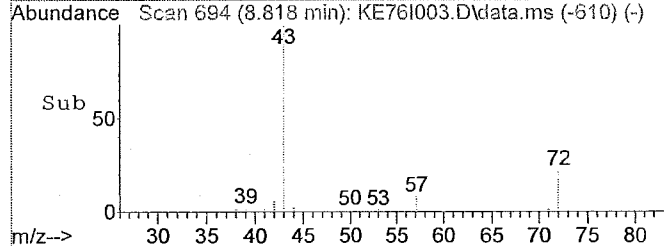




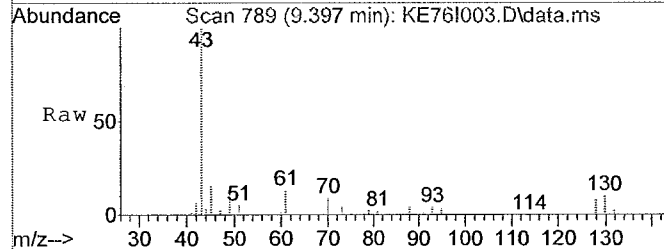
#19  
2-Butanone  
Concen: 1.44 ppb  
RT: 8.82 min Scan# 694  
Delta R.T. 0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19



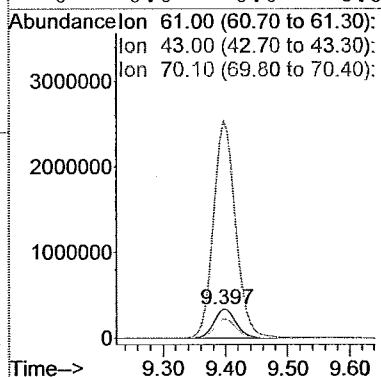
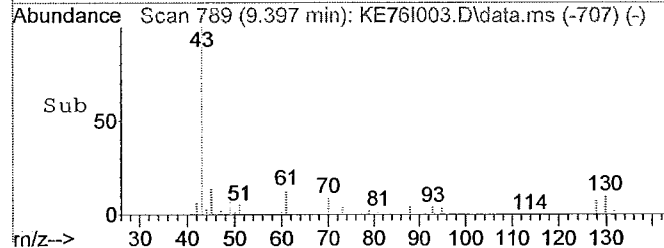
Tgt Ion: 43.1 Resp: 160063  
Ion Ratio Lower Upper  
43 100  
72 20.9 17.9 26.9  
57 7.8 6.4 9.6  
0 0.0 0.0 0.0

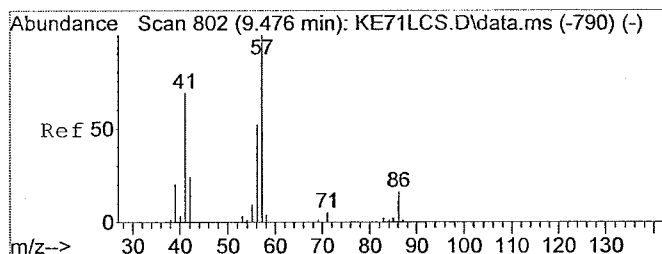


#22  
Ethyl Acetate  
Concen: 50.31 ppb  
RT: 9.40 min Scan# 789  
Delta R.T. 0.00 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19



Tgt Ion: 61 Resp: 848967  
Ion Ratio Lower Upper  
61 100  
43 751.9 574.6 861.8  
70 66.0 57.5 86.3  
0 0.0 0.0 0.0





#23

Hexane

Concen: 0.47 ppb

RT: 9.46 min Scan# 799

Delta R.T. 0.00 min

Lab File: KE76I003.D

Acq: 12/20/2018 09:19

Tgt Ion: 57.1 Resp: 38177

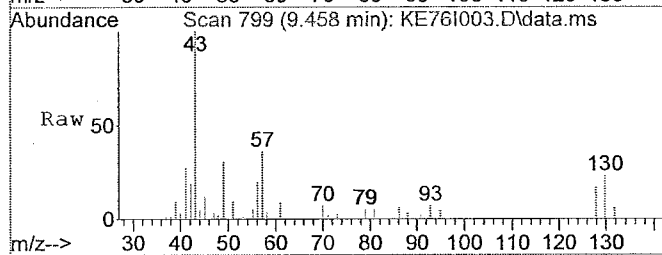
Ion Ratio Lower Upper

57 100

41 73.5 58.6 88.0

86 14.9 14.2 21.4

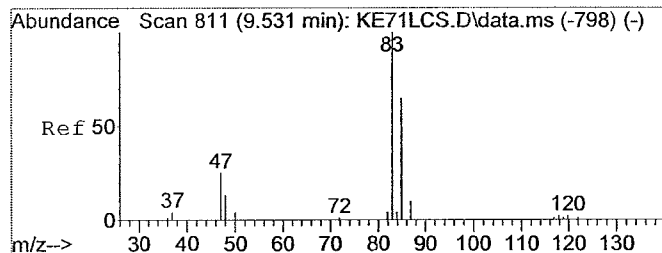
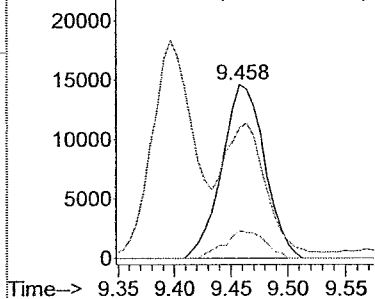
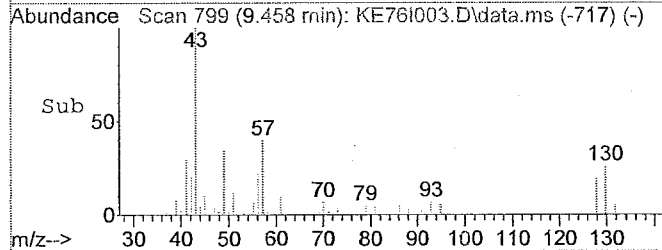
0 0.0 0.0 0.0



Abundance Ion 57.10 (56.80 to 57.40):

25000 Ion 41.00 (40.70 to 41.30):

Ion 86.00 (85.70 to 86.30):



#24

Chloroform

Concen: 0.18 ppb

RT: 9.52 min Scan# 809

Delta R.T. 0.01 min

Lab File: KE76I003.D

Acq: 12/20/2018 09:19

Tgt Ion: 83 Resp: 17720

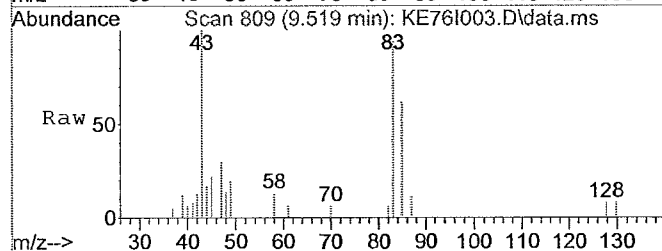
Ion Ratio Lower Upper

83 100

85 65.2 52.2 78.4

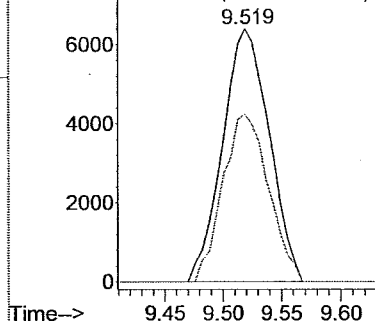
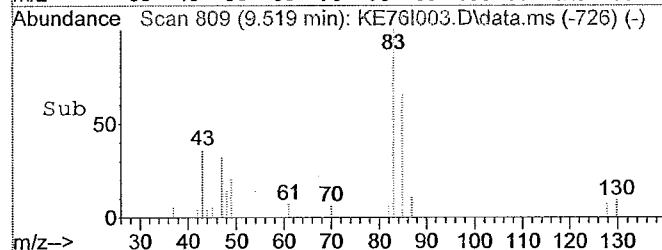
0 0.0 0.0 0.0

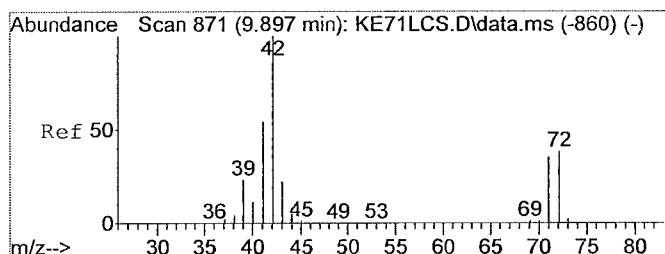
0 0.0 0.0 0.0



Abundance Ion 83.00 (82.70 to 83.30):

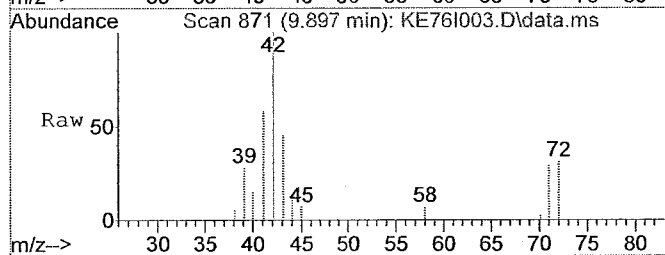
Ion 85.00 (84.70 to 85.30):



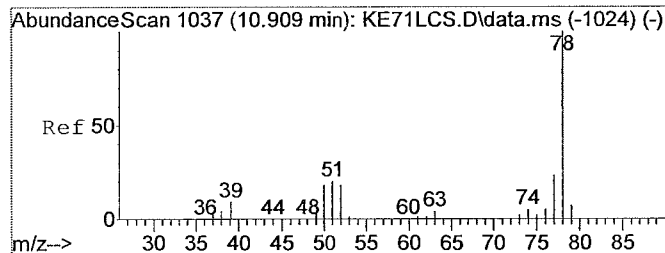
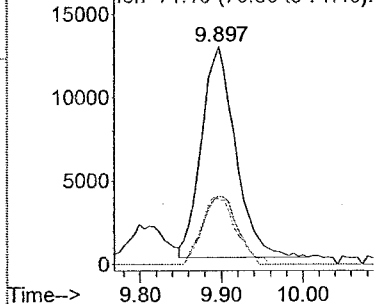
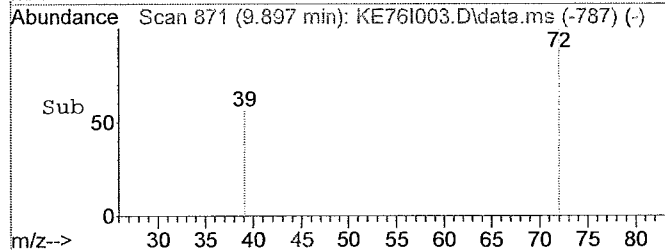


#25  
Tetrahydrofuran  
Concen: 0.68 ppb  
RT: 9.90 min Scan# 871  
Delta R.T. 0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

Tgt Ion: 42.1 Resp: 36455  
Ion Ratio Lower Upper  
42 100  
72 33.5 29.7 44.5  
71 30.9 28.1 42.1  
0 0.0 0.0 0.0

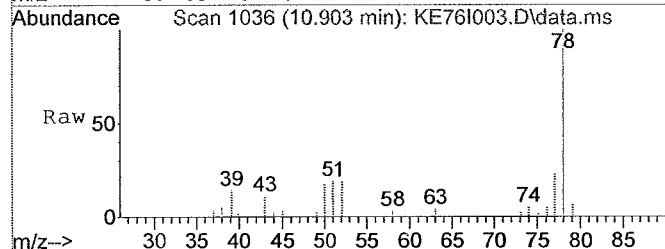


Abundance Ion 42.10 (41.80 to 42.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 71.10 (70.80 to 71.40):

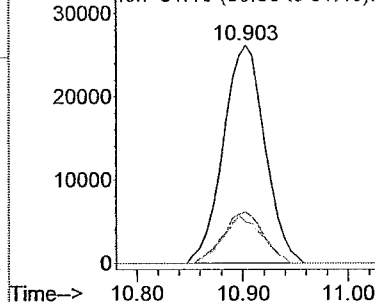
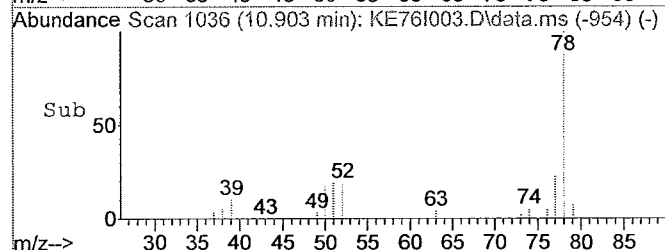


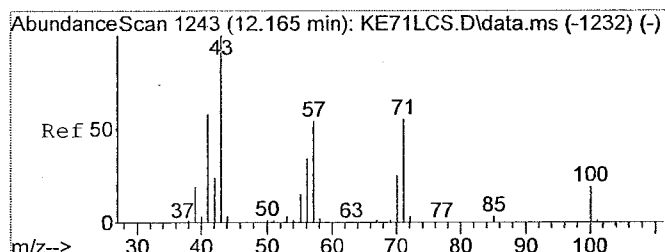
#28  
Benzene  
Concen: 0.53 ppb  
RT: 10.90 min Scan# 1036  
Delta R.T. 0.00 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

Tgt Ion: 78.1 Resp: 70624  
Ion Ratio Lower Upper  
78 100  
77 22.8 18.6 28.0  
51 20.3 15.7 23.5  
0 0.0 0.0 0.0



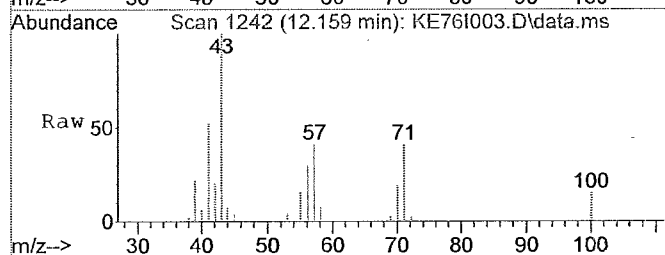
Abundance Ion 78.10 (77.80 to 78.40):  
Ion 77.10 (76.80 to 77.40):  
Ion 51.10 (50.80 to 51.40):



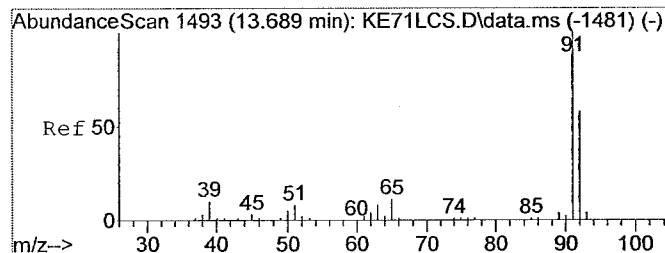
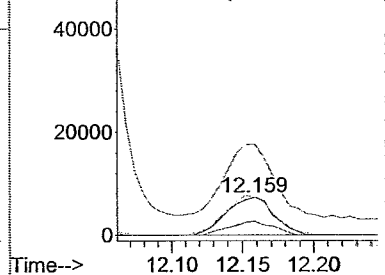
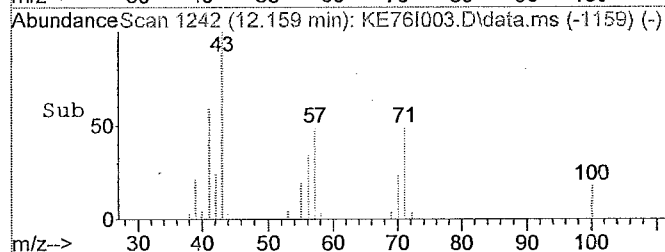


#34  
Heptane  
Concen: 0.32 ppb  
RT: 12.16 min Scan# 1242  
Delta R.T. 0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

Tgt Ion: 71.1 Resp: 16692  
Ion Ratio Lower Upper  
71 100  
43 219.3 148.1 222.1  
57 106.5 79.4 119.0  
100 33.8 28.0 42.0

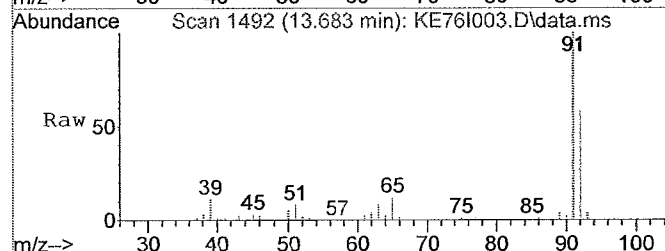


AbundanceIon 71.10 (70.80 to 71.40):  
Ion 43.10 (42.80 to 43.40):  
Ion 57.10 (56.80 to 57.40):  
Ion 100.10 (99.80 to 100.40):

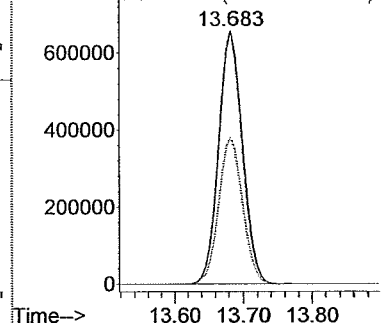
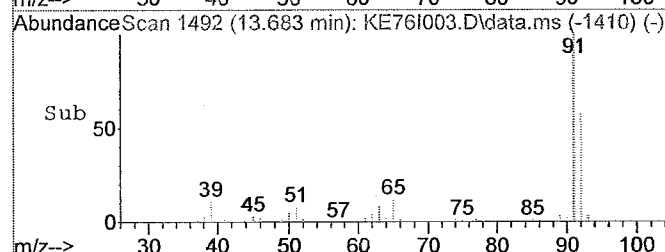


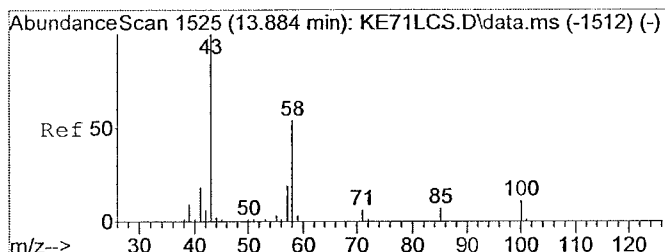
#39  
Toluene  
Concen: 9.66 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. 0.00 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

Tgt Ion: 91.1 Resp: 1544333  
Ion Ratio Lower Upper  
91 100  
92 58.3 46.9 70.3  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

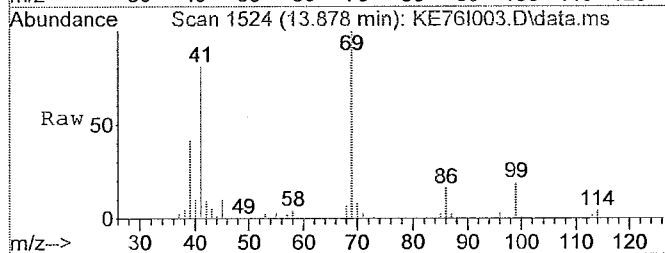


AbundanceIon 91.10 (90.80 to 91.40):  
Ion 92.10 (91.80 to 92.40):

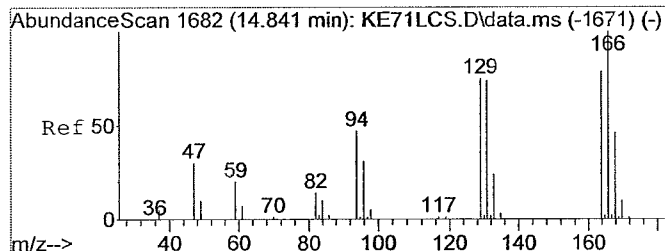
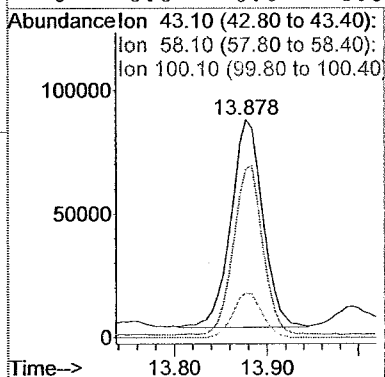
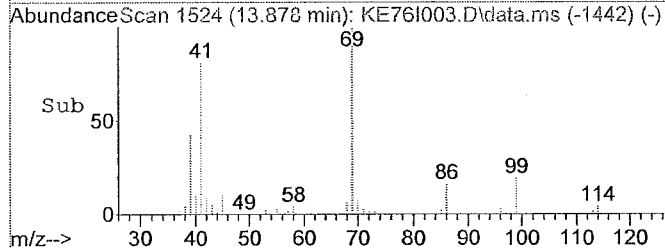




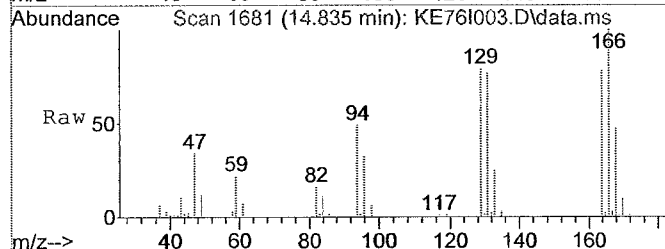
#40  
2-Hexanone  
Concen: 1.79 ppb  
RT: 13.88 min Scan# 1524  
Delta R.T. 0.00 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19



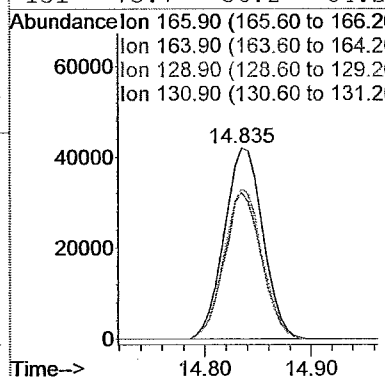
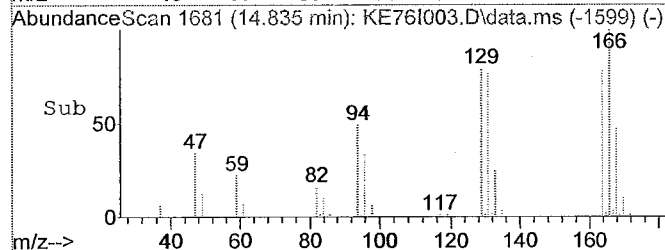
Tgt Ion: 43.1 Resp: 200276  
Ion Ratio Lower Upper  
43 100  
58 74.7 42.5 63.7#  
100 19.5 8.6 13.0#  
0 0.0 0.0 0.0

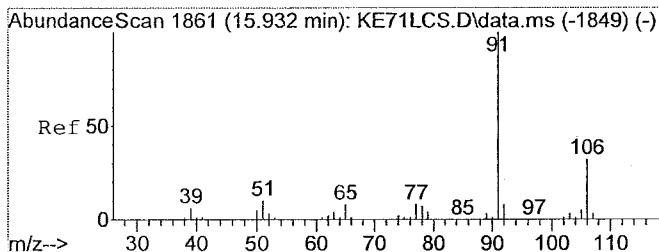


#43  
Tetrachloroethene  
Concen: 1.33 ppb  
RT: 14.83 min Scan# 1681  
Delta R.T. 0.00 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

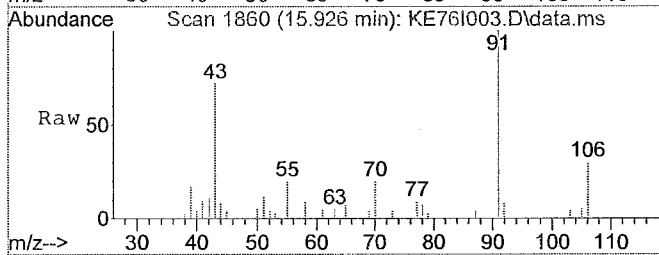


Tgt Ion: 165.9 Resp: 105372  
Ion Ratio Lower Upper  
166 100  
164 77.5 62.3 93.5  
129 76.9 58.4 87.6  
131 73.7 56.2 84.2

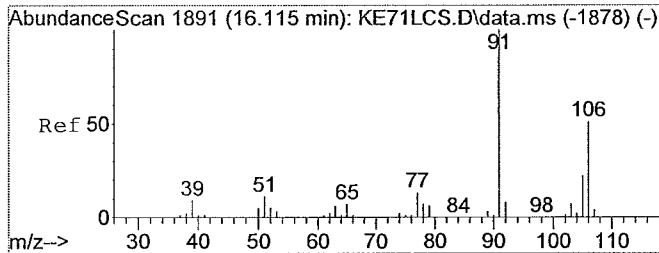
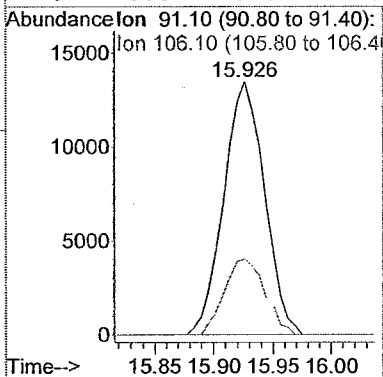
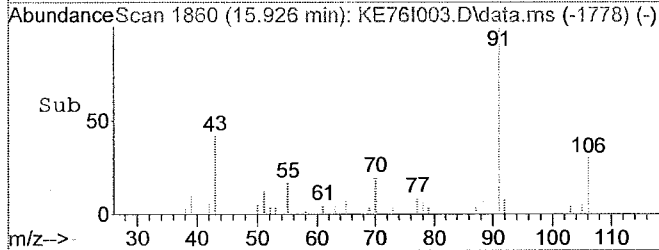




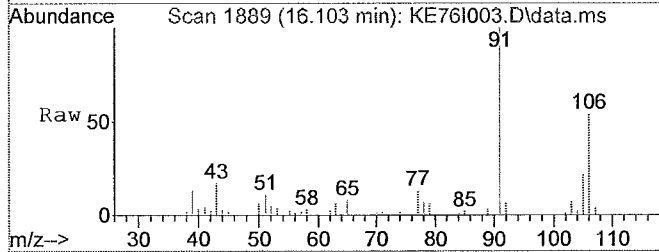
#46  
Ethylbenzene  
Concen: 0.15 ppb  
RT: 15.93 min Scan# 1860  
Delta R.T. 0.00 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19



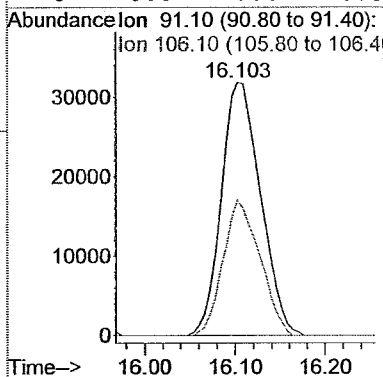
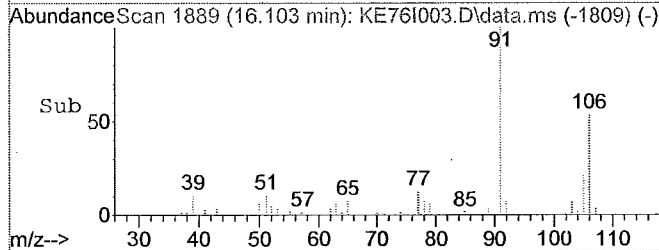
Tgt Ion:91.1 Resp: 31844  
Ion Ratio Lower Upper  
91 100  
106 29.8 25.8 38.8  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



#47  
m,p-Xylene  
Concen: 0.56 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE76I003.D  
Acq: 12/20/2018 09:19

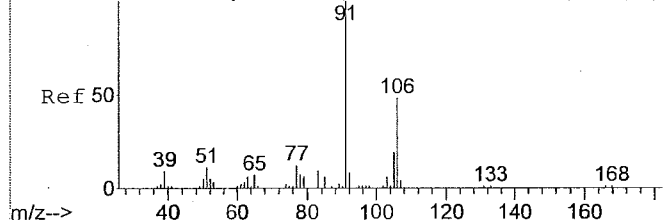


Tgt Ion:91.1 Resp: 94545  
Ion Ratio Lower Upper  
91 100  
106 50.4 40.5 60.7  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

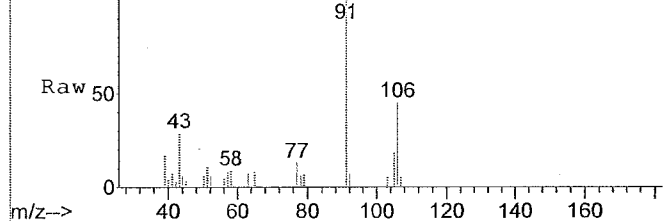




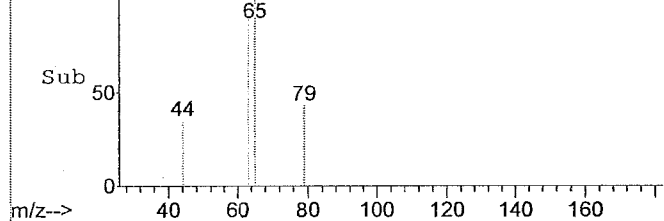
AbundanceScan 1976 (16.633 min): KE71LCS.D\data.ms (-1963) (-)



Abundance Scan 1975 (16.627 min): KE76I003.D\data.ms



AbundanceScan 1975 (16.627 min): KE76I003.D\data.ms (-1894) (-)



#51

o-Xylene

Concen: 0.18 ppb

RT: 16.63 min Scan# 1975

Delta R.T. -0.01 min

Lab File: KE76I003.D

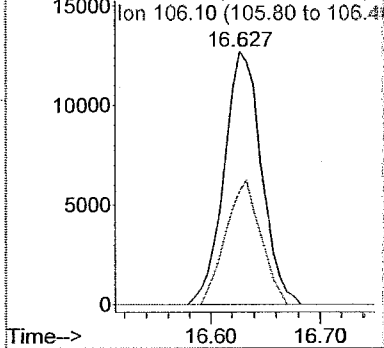
Acq: 12/20/2018 09:19

Tgt Ion: 91.1 Resp: 30068

Ion Ratio Lower Upper

|     |      |      |      |
|-----|------|------|------|
| 91  | 100  |      |      |
| 106 | 46.1 | 38.2 | 57.4 |
| 0   | 0.0  | 0.0  | 0.0  |
| 0   | 0.0  | 0.0  | 0.0  |

Abundance Ion 91.10 (90.80 to 91.40)



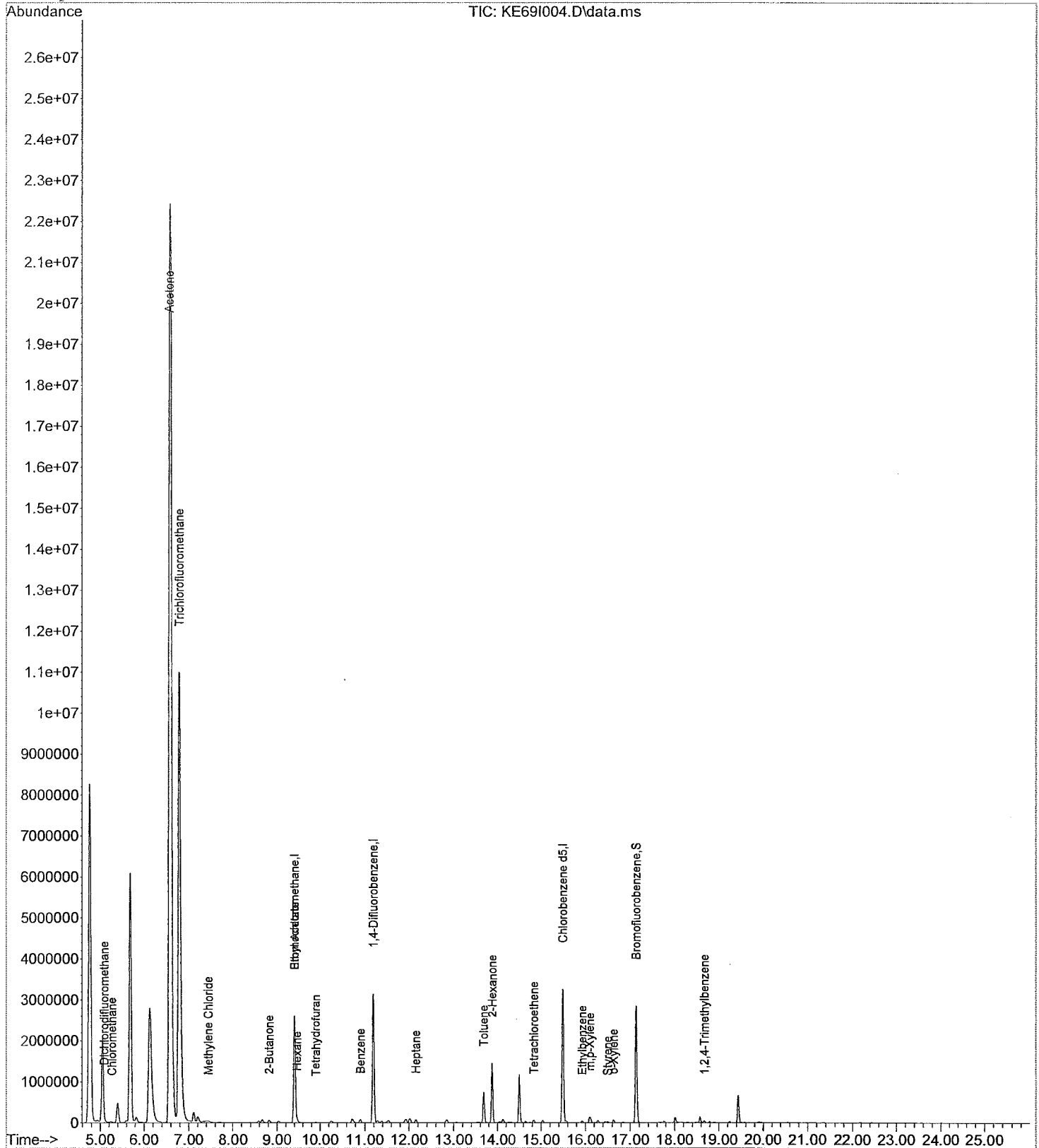
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE69I004.D Vial: 8  
Acq Time : 12/20/2018 01:42 Operator: BB  
Sample : 1835293004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:47:35 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE69I004.D Vial: 8  
 Acq Time : 12/20/2018 01:42 Operator: BB  
 Sample : 1835293004 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:47:35 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.40  | 130  | 277184   | 20.00 | ppb   | 91.86 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3371825  | 20.00 | ppb   | 89.58 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2595226  | 20.00 | ppb   | 92.43 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1391020  | 19.08 | ppb   | 95.38%    |

| Target Compounds              | R.T.  | QIon | Response | Conc         | Units | Qvalue |
|-------------------------------|-------|------|----------|--------------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 72764    | 0.4765       | ppb   | 99     |
| 3) Chloromethane              | 5.27  | 50   | 27079    | 0.6486       | ppb   | 99     |
| 4) Freon 114                  | 0.00  | 135  |          | Not Detected |       |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          | Not Detected |       |        |
| 6) 1,3-Butadiene              | 0.00  | 54   |          | Not Detected |       |        |
| 7) Bromomethane               | 0.00  | 94   |          | Not Detected |       |        |
| 8) Chloroethane               | 0.00  | 64   |          | Not Detected |       |        |
| 9) Acetone                    | 6.56  | 43   | 43724339 | 507.4515     | ppb m | 0      |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 35699    | 0.2624       | ppb   | 100    |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          | Not Detected |       |        |
| 12) Methylene Chloride        | 7.45  | 84   | 18455    | 0.4037       | ppb   | 95     |
| 13) Freon 113                 | 0.00  | 151  |          | Not Detected |       |        |
| 14) Carbon Disulfide          | 0.00  | 76   |          | Not Detected |       |        |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          | Not Detected |       |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          | Not Detected |       |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          | Not Detected |       |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          | Not Detected |       |        |
| 19) 2-Butanone                | 8.82  | 43   | 118815   | 1.0804       | ppb   | 98     |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          | Not Detected |       |        |
| 22) Ethyl Acetate             | 9.40  | 61   | 235790   | 13.3921      | ppb   | 88     |
| 23) Hexane                    | 9.46  | 57   | 45974    | 0.5433       | ppb   | 93     |
| 24) Chloroform                | 0.00  | 83   |          | Not Detected |       |        |
| 25) Tetrahydrofuran           | 9.90  | 42   | 14262    | 0.2548       | ppb # | 85     |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          | Not Detected |       |        |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 28) Benzene                   | 10.90 | 78   | 83503    | 0.5952       | ppb   | 99     |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          | Not Detected |       |        |
| 30) Cyclohexane               | 0.00  | 84   |          | Not Detected |       |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          | Not Detected |       |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          | Not Detected |       |        |
| 33) Trichloroethene           | 0.00  | 130  |          | Not Detected |       |        |
| 34) Heptane                   | 12.16 | 71   | 20334    | 0.3763       | ppb   | 90     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          | Not Detected |       |        |
| 36) 4-Methyl-2-Pentanone      | 0.00  | 43   |          | Not Detected |       |        |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          | Not Detected |       |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 39) Toluene                   | 13.68 | 91   | 723290   | 4.3352       | ppb   | 100    |
| 40) 2-Hexanone                | 13.88 | 43   | 70047    | 0.6003       | ppb # | 91     |
| 41) Dibromochloromethane      | 0.00  | 129  |          | Not Detected |       |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          | Not Detected |       |        |
| 43) Tetrachloroethene         | 14.83 | 166  | 23412    | 0.2832       | ppb   | 95     |
| 45) Chlorobenzene             | 0.00  | 112  |          | Not Detected |       |        |
| 46) Ethylbenzene              | 15.93 | 91   | 39570    | 0.1917       | ppb   | 100    |
| 47) m,p-Xylene                | 16.10 | 91   | 132679   | 0.8103       | ppb   | 97     |
| 48) Bromoform                 | 0.00  | 173  |          | Not Detected |       |        |
| 49) Styrene                   | 16.51 | 104  | 16952    | 0.1538       | ppb   | 98     |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          | Not Detected |       |        |

(#)= qualifier out of range (m) = manual integration

KE69I004.D TO15KH18.m

Thu Dec 20 14:53:02 2018

Page 1

## Quantitation Report

Data File : E:\K-5975-K\2018\DEC18\19DEC18\KE69I004.D Vial: 8  
Acq Time : 12/20/2018 01:42 Operator: BB  
Sample : 1835293004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:47:35 2018

Results File: T015KH18.RES

Quant Method : I:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )

Title : T0-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : T0-15.M

| Compound                     | R.T.  | QIon | Response | Conc Unit    | Qvalue |
|------------------------------|-------|------|----------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 50315    | 0.3145 ppb   | 99     |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 31621    | 0.1836 ppb   | 96     |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |        |

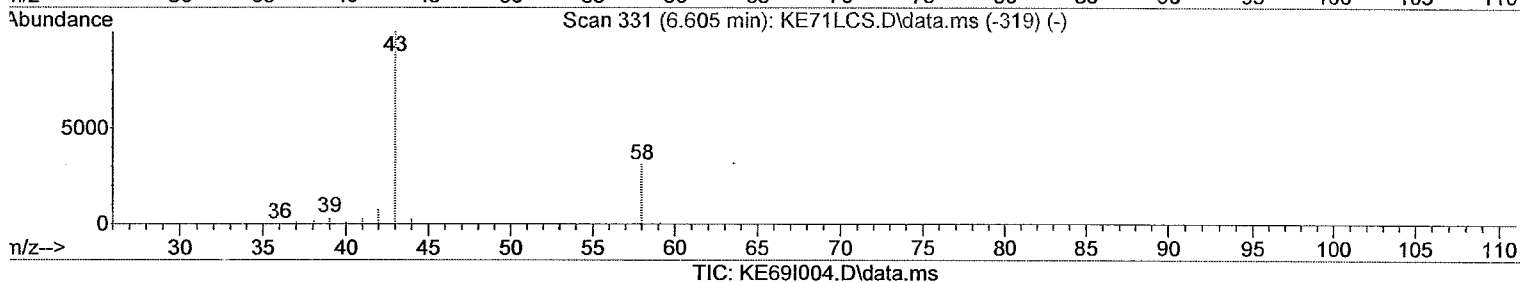
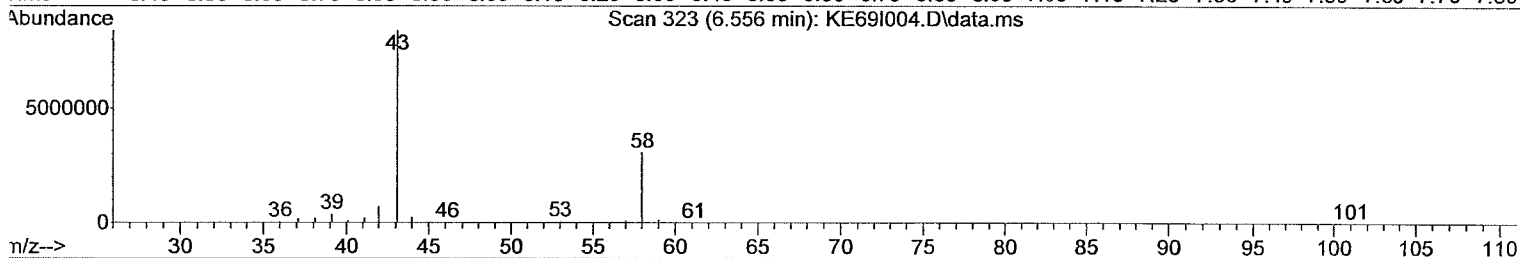
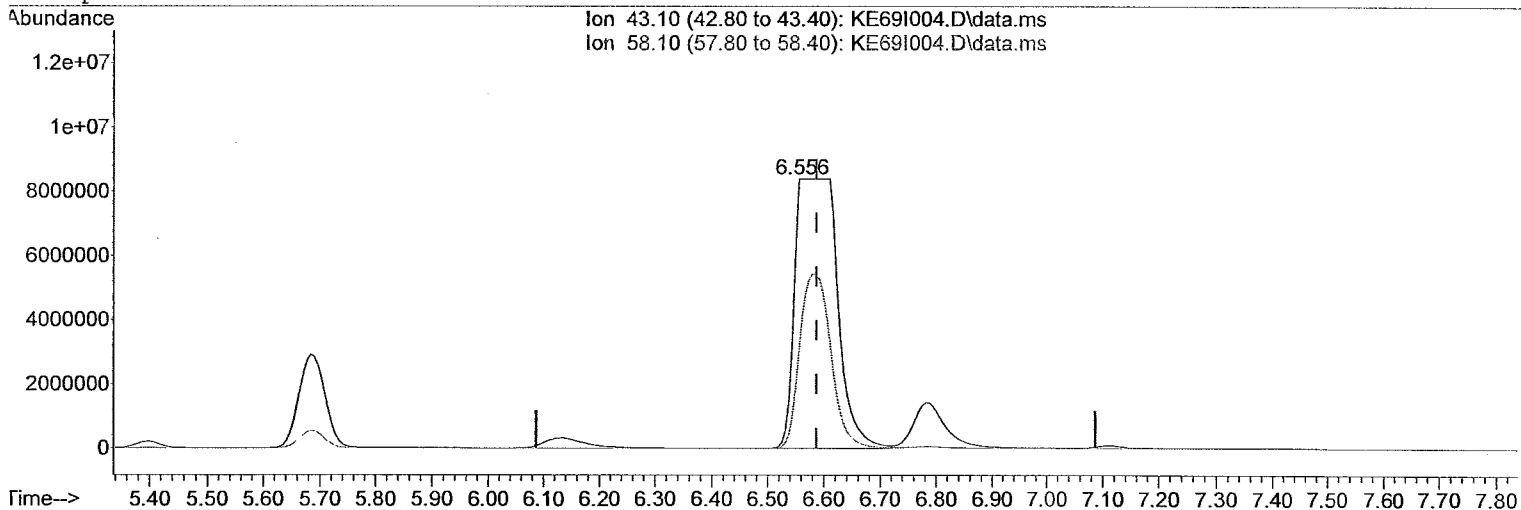
Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE69I004.D  
Acq On : 12/20/2018 01:42  
Operator : BB  
Sample : 1835293004  
Inst : 5975-K  
Misc :  
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Dec 20 07:35:14 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration

## MANUAL RE-INTEGRATION

- ☒ missed peak assignment  
☐ assigned incorrect name to peak  
☐ over-integrated peak's area  
☐ under-integrated peak's area  
☐ other \_\_\_\_\_

initials BB date 12/20/18

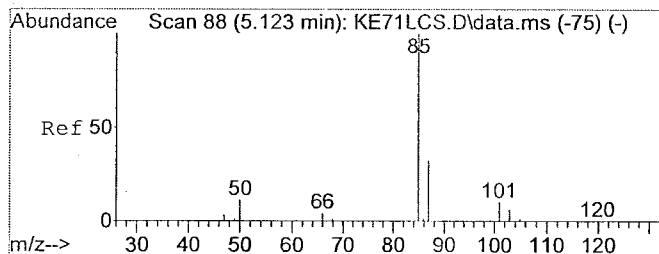


## (9) Acetone

6.556min (-0.030) 507.45 ppb m

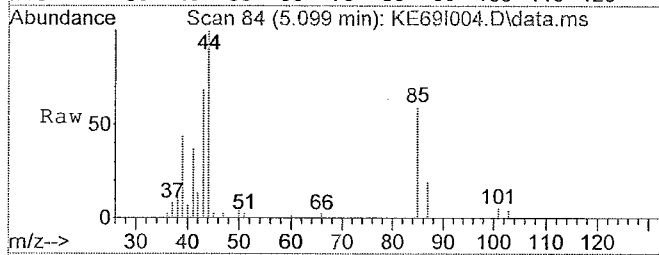
response 43724339

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 43.10 | 100.00 | 100.00 |
| 58.10 | 31.40  | 0.00#  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

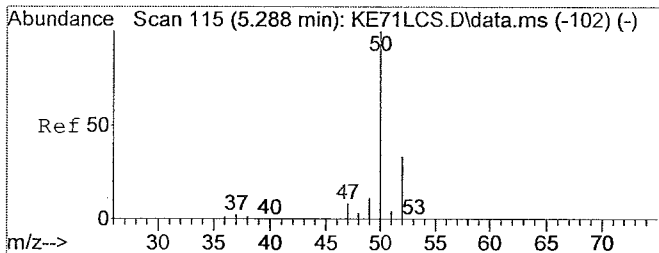
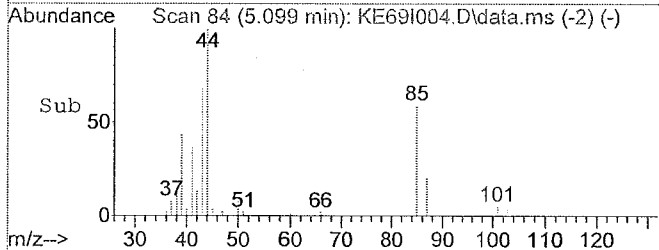
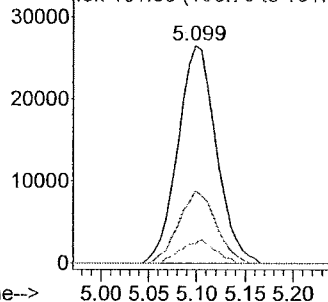


#2  
Dichlorodifluoromethane  
Concen: 0.48 ppb  
RT: 5.10 min Scan# 84  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion:85 Resp: 72764  
Ion Ratio Lower Upper  
85 100  
87 32.2 26.1 39.1  
101 9.5 8.1 12.1  
0 0.0 0.0 0.0

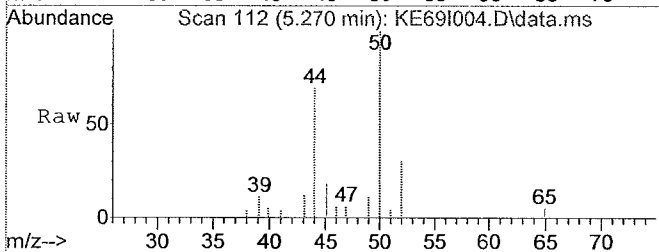


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30)

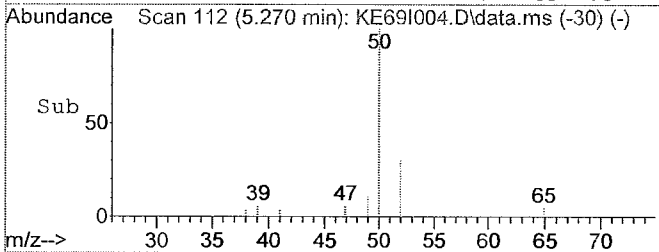
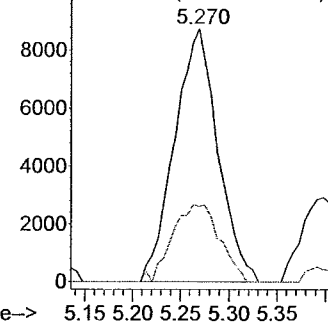


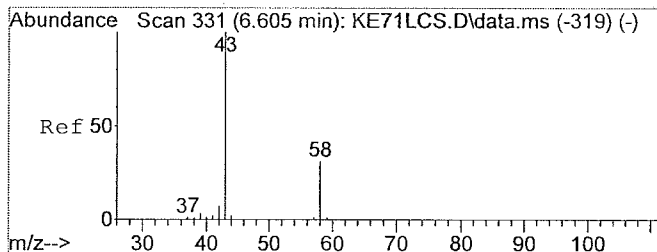
#3  
Chloromethane  
Concen: 0.65 ppb  
RT: 5.27 min Scan# 112  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion:50 Resp: 27079  
Ion Ratio Lower Upper  
50 100  
52 33.4 26.3 39.5  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



Abundance Ion 50.00 (49.70 to 50.30):  
Ion 52.00 (51.70 to 52.30):





#9

Acetone

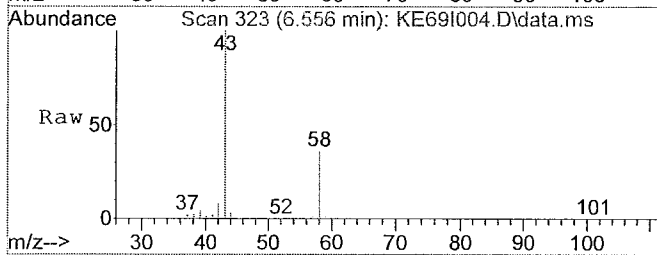
Concen: 507.45 ppb m

RT: 6.56 min Scan# 323

Delta R.T. -0.03 min

Lab File: KE69I004.D

Acq: 12/20/2018 01:42



Tgt Ion: 43.1 Resp: 43724339

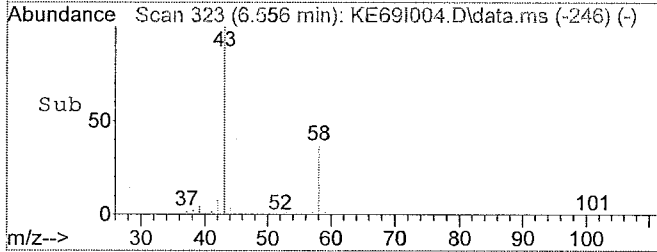
Ion Ratio Lower Upper

43 100

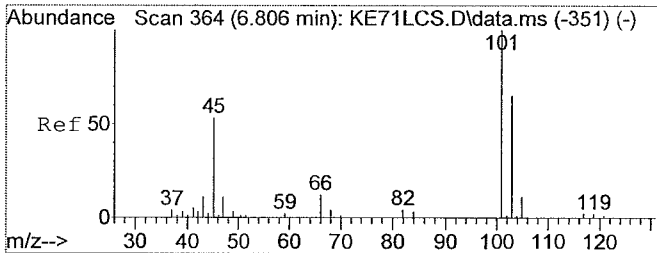
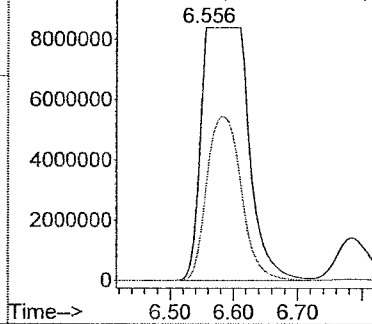
58 0.0 25.1 37.7#

0 0.0 0.0 0.0

0 0.0 0.0 0.0



Abundance Ion 43.10 (42.80 to 43.40):  
Ion 58.10 (57.80 to 58.40):



#10

Trichlorofluoromethane

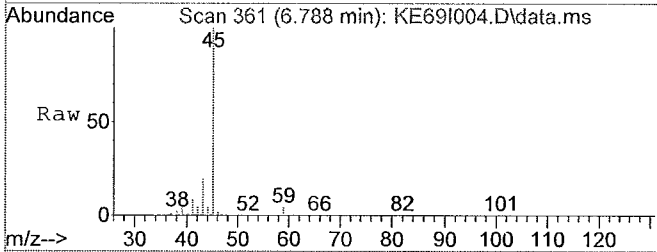
Concen: 0.26 ppb

RT: 6.79 min Scan# 361

Delta R.T. -0.00 min

Lab File: KE69I004.D

Acq: 12/20/2018 01:42



Tgt Ion: 101 Resp: 35699

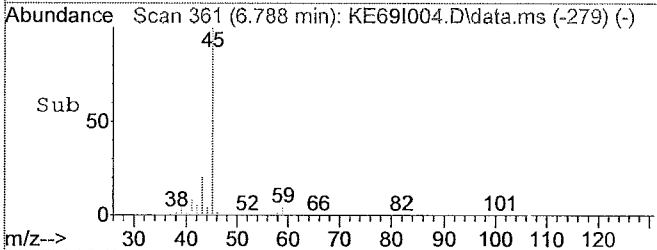
Ion Ratio Lower Upper

101 100

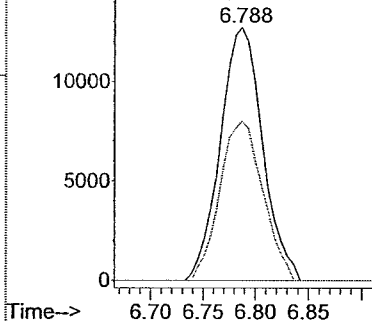
103 64.2 51.6 77.4

0 0.0 0.0 0.0

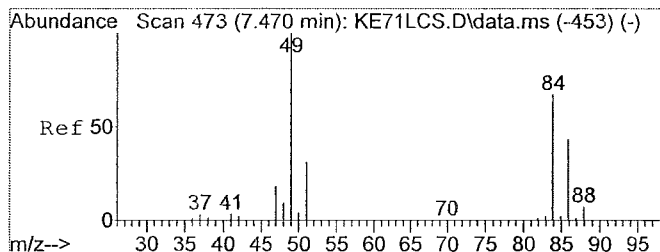
0 0.0 0.0 0.0



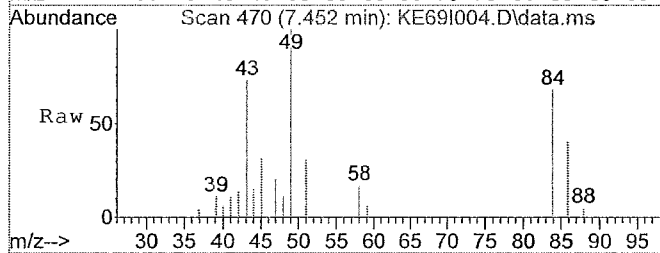
Abundance Ion 101.00 (100.70 to 101.30):  
Ion 103.00 (102.70 to 103.30):



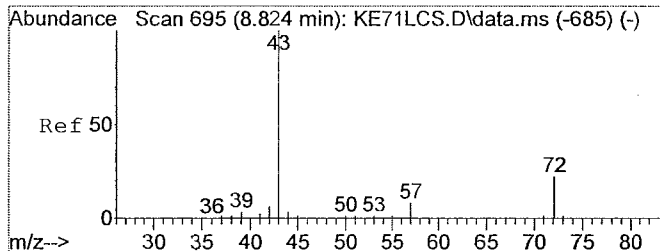
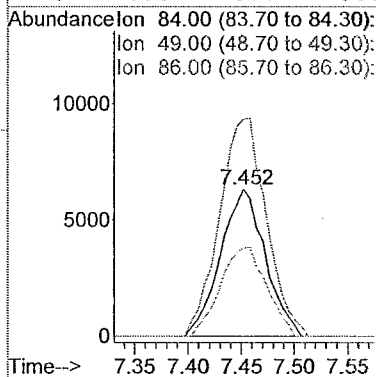
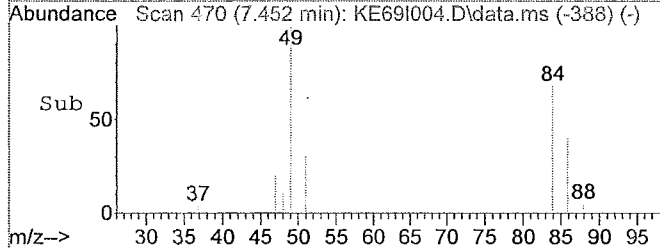




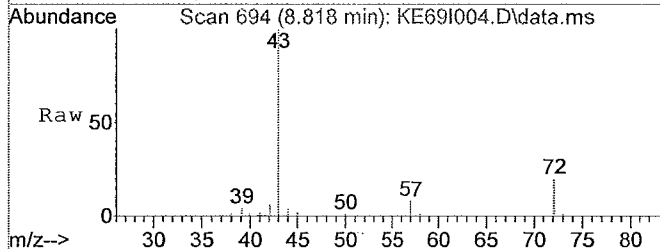
#12  
Methylene Chloride  
Concen: 0.40 ppb  
RT: 7.45 min Scan# 470  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42



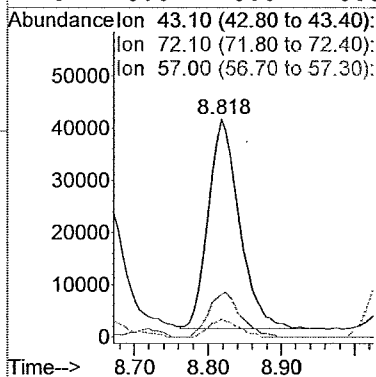
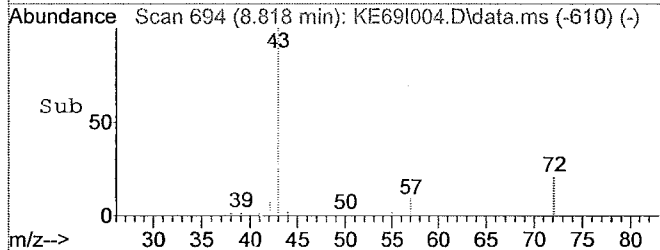
Tgt Ion:84 Resp: 18455  
Ion Ratio Lower Upper  
84 100  
49 155.7 119.1 178.7  
86 62.6 52.0 78.0  
0 0.0 0.0 0.0

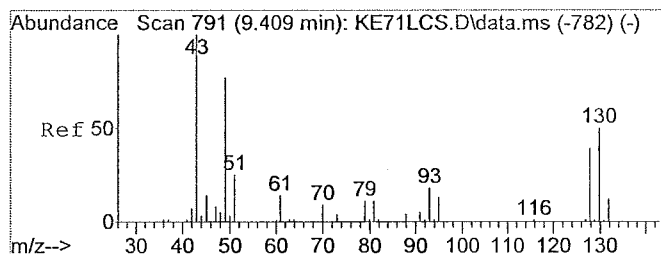


#19  
2-Butanone  
Concen: 1.08 ppb  
RT: 8.82 min Scan# 694  
Delta R.T. 0.01 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42



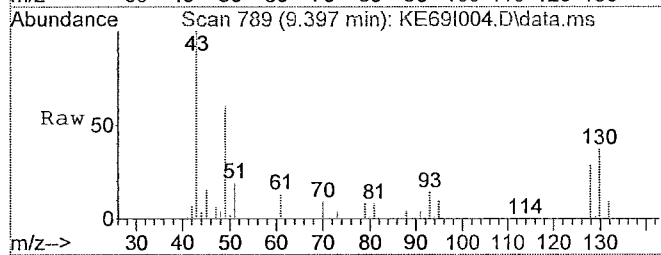
Tgt Ion:43.1 Resp: 118815  
Ion Ratio Lower Upper  
43 100  
72 21.4 17.9 26.9  
57 7.8 6.4 9.6  
0 0.0 0.0 0.0



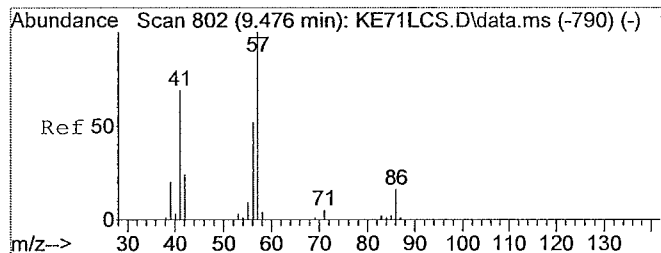
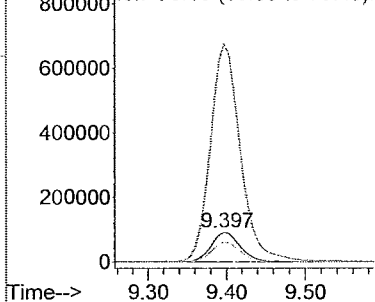
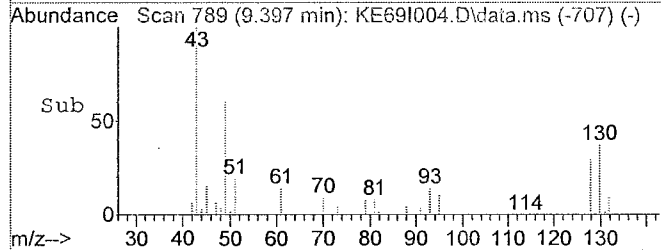


#22  
Ethyl Acetate  
Concen: 13.39 ppb  
RT: 9.40 min Scan# 789  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion: 61 Resp: 235790  
Ion Ratio Lower Upper  
61 100  
43 762.1 574.6 861.8  
70 66.9 57.5 86.3  
0 0.0 0.0 0.0

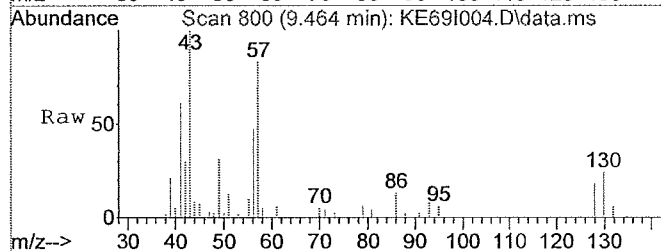


Abundance Ion 61.00 (60.70 to 61.30):  
Ion 43.00 (42.70 to 43.30):  
Ion 70.10 (69.80 to 70.40):

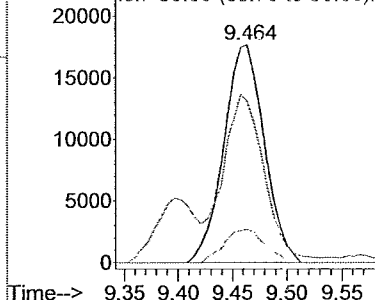
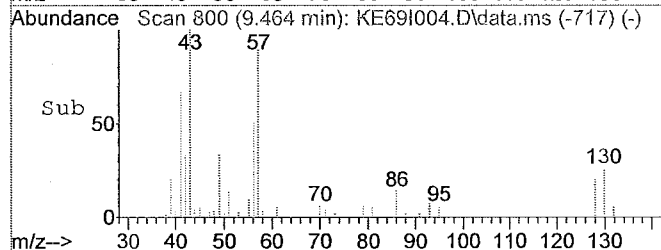


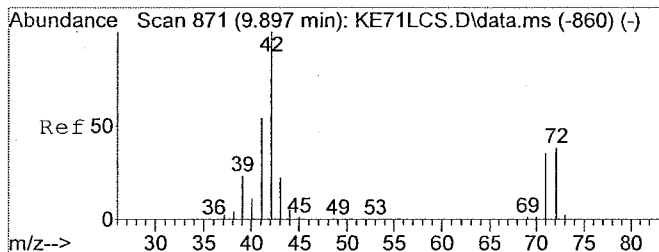
#23  
Hexane  
Concen: 0.54 ppb  
RT: 9.46 min Scan# 800  
Delta R.T. 0.01 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion: 57.1 Resp: 45974  
Ion Ratio Lower Upper  
57 100  
41 79.5 58.6 88.0  
86 15.3 14.2 21.4  
0 0.0 0.0 0.0

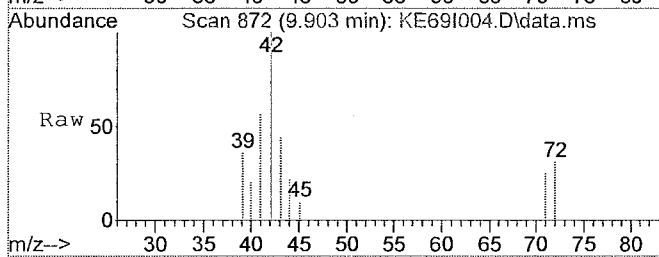


Abundance Ion 57.10 (56.80 to 57.40):  
Ion 41.00 (40.70 to 41.30):  
Ion 86.00 (85.70 to 86.30):

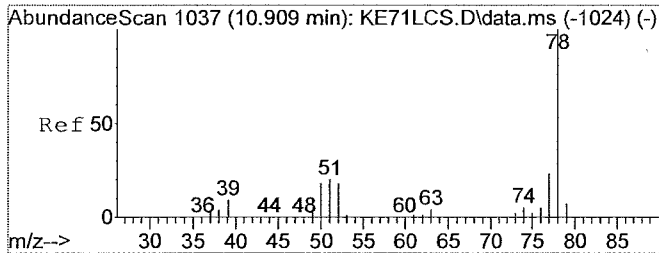
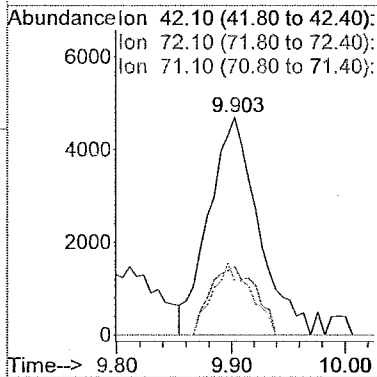
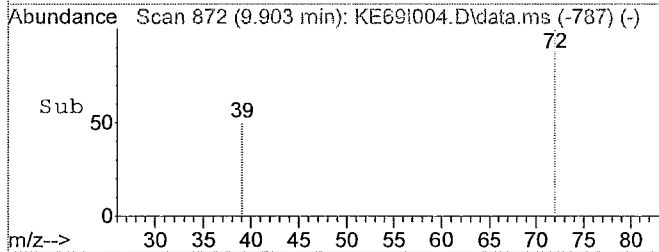




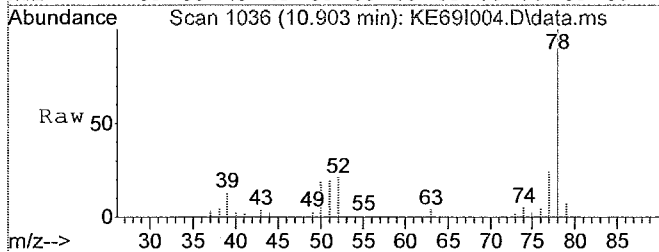
#25  
Tetrahydrofuran  
Concen: 0.25 ppb  
RT: 9.90 min Scan# 872  
Delta R.T. 0.02 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42



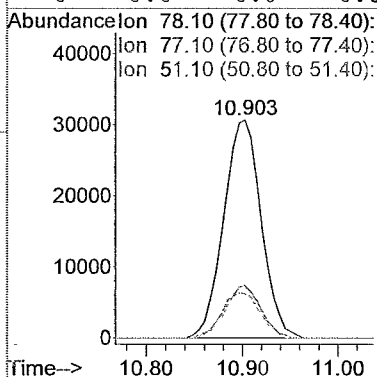
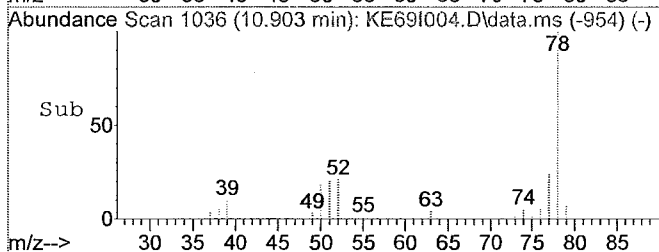
Tgt Ion: 42.1 Resp: 14262  
Ion Ratio Lower Upper  
42 100  
72 29.0 29.7 44.5#  
71 25.4 28.1 42.1#  
0 0.0 0.0 0.0

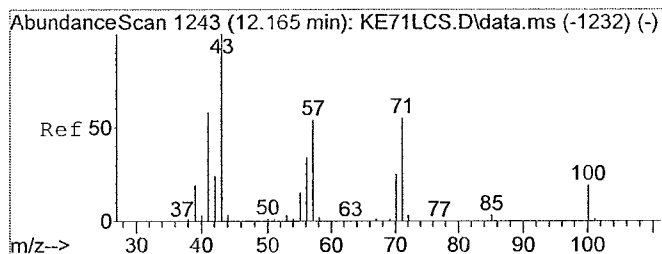


#28  
Benzene  
Concen: 0.60 ppb  
RT: 10.90 min Scan# 1036  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42



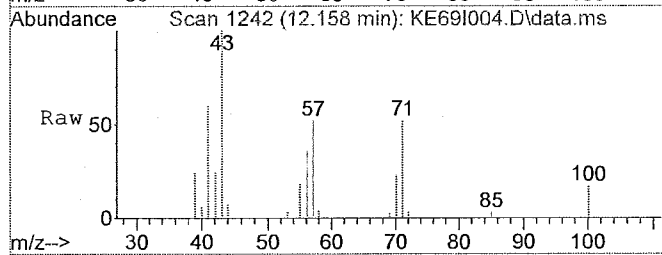
Tgt Ion: 78.1 Resp: 83503  
Ion Ratio Lower Upper  
78 100  
77 23.3 18.6 28.0  
51 20.5 15.7 23.5  
0 0.0 0.0 0.0



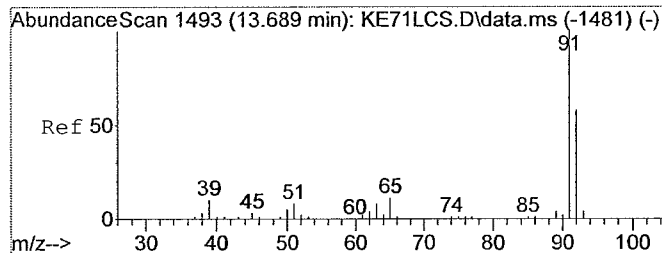
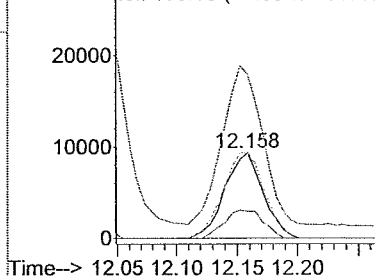
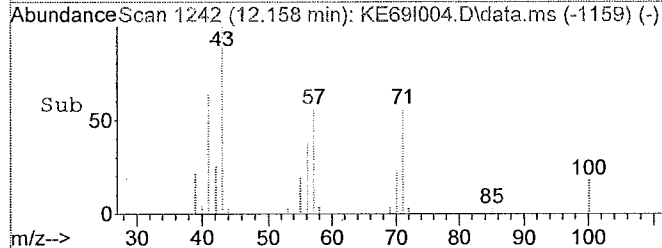


#34  
Heptane  
Concen: 0.38 ppb  
RT: 12.16 min Scan# 1242  
Delta R.T. 0.01 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion: 71.1 Resp: 20334  
Ion Ratio Lower Upper  
71 100  
43 202.2 148.1 222.1  
57 107.5 79.4 119.0  
100 33.8 28.0 42.0

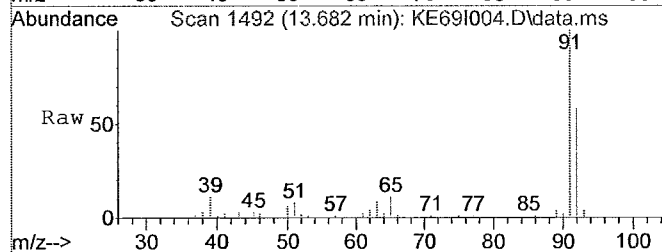


AbundanceIon 71.10 (70.80 to 71.40):  
Ion 43.10 (42.80 to 43.40):  
Ion 57.10 (56.80 to 57.40):  
Ion 100.10 (99.80 to 100.40):

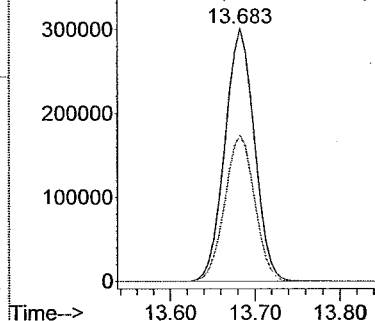
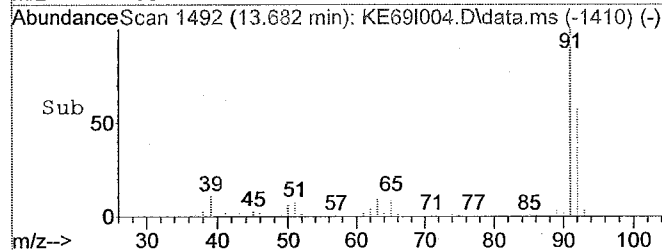


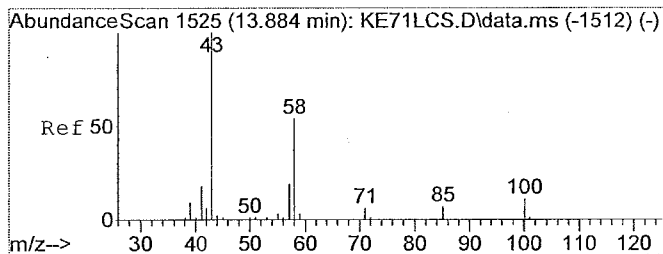
#39  
Toluene  
Concen: 4.34 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion: 91.1 Resp: 723290  
Ion Ratio Lower Upper  
91 100  
92 58.4 46.9 70.3  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

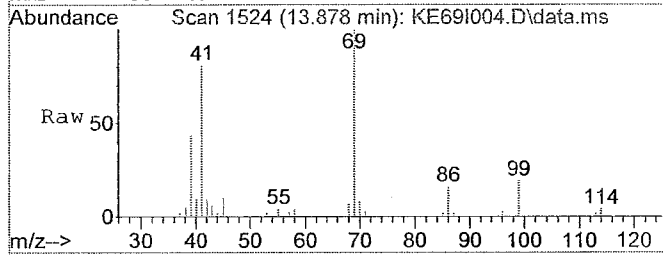


AbundanceIon 91.10 (90.80 to 91.40):  
Ion 92.10 (91.80 to 92.40):

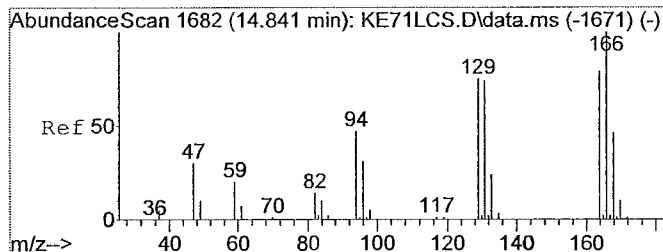
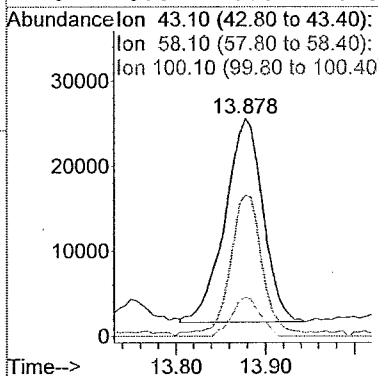
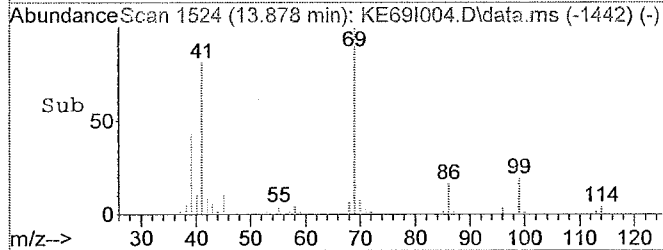




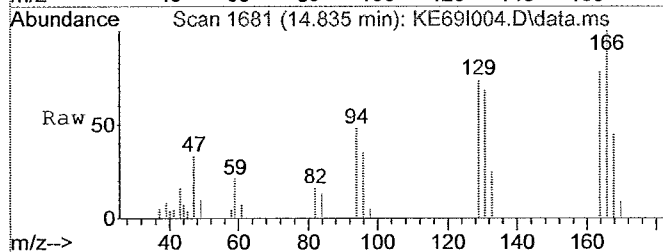
#40  
2-Hexanone  
Concen: 0.60 ppb  
RT: 13.88 min Scan# 1524  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42



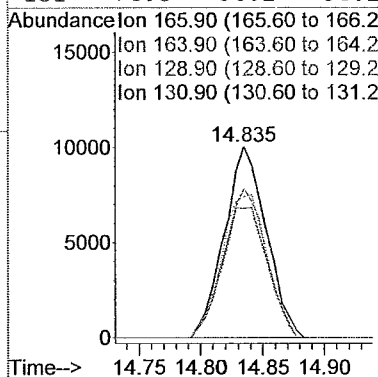
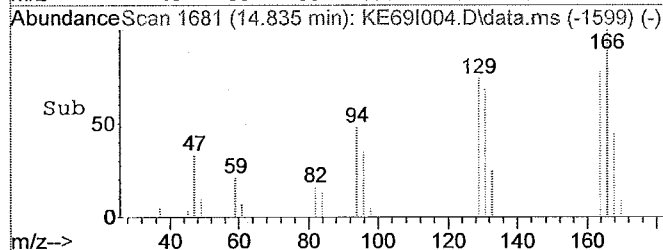
Tgt Ion:43.1 Resp: 70047  
Ion Ratio Lower Upper  
43 100  
58 59.6 42.5 63.7  
100 14.2 8.6 13.0#  
0 0.0 0.0 0.0

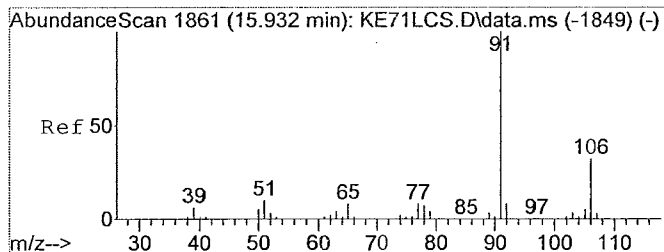


#43  
Tetrachloroethene  
Concen: 0.28 ppb  
RT: 14.83 min Scan# 1681  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42



Tgt Ion:165.9 Resp: 23412  
Ion Ratio Lower Upper  
166 100  
164 78.2 62.3 93.5  
129 80.6 58.4 87.6  
131 74.5 56.2 84.2

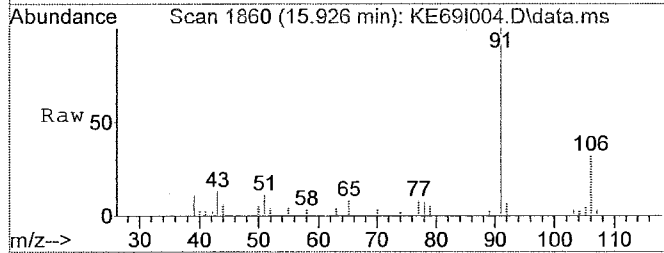




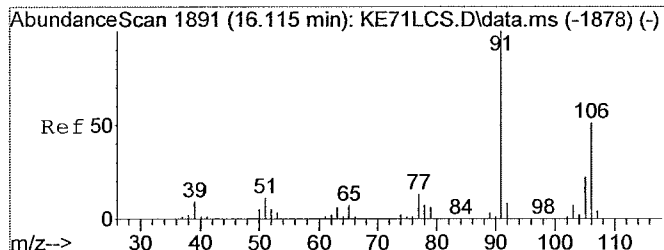
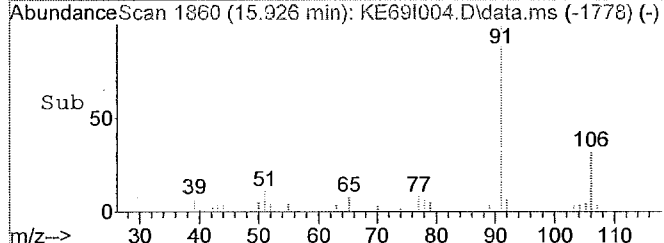
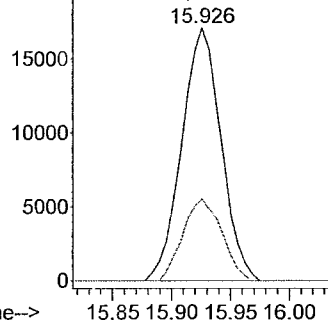
#46  
Ethylbenzene  
Concen: 0.19 ppb  
RT: 15.93 min Scan# 1860  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion: 91.1 Resp: 39570

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 32.1  | 25.8  | 38.8  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



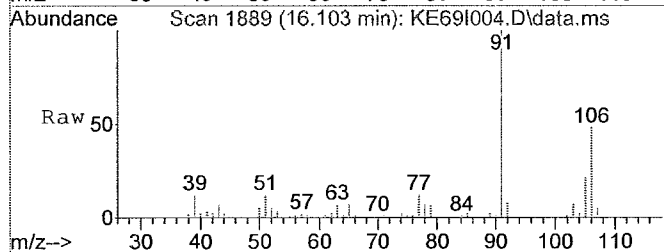
AbundanceIon 91.10 (90.80 to 91.40):  
20000  
Ion 106.10 (105.80 to 106.4)



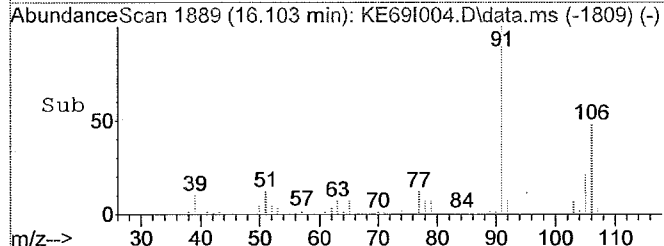
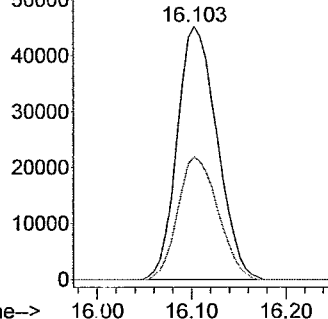
#47  
m,p-Xylene  
Concen: 0.81 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

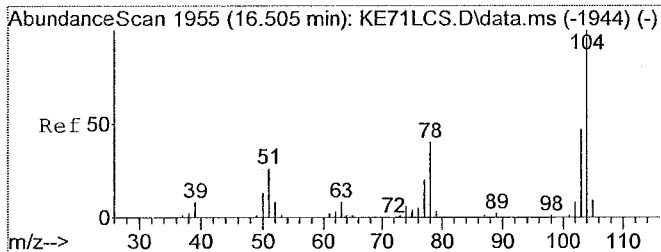
Tgt Ion: 91.1 Resp: 132679

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 48.7  | 40.5  | 60.7  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



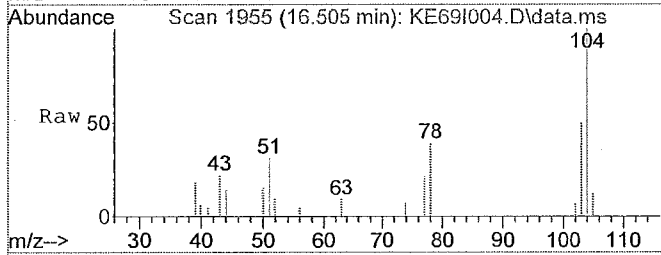
AbundanceIon 91.10 (90.80 to 91.40):  
50000  
Ion 106.10 (105.80 to 106.4)



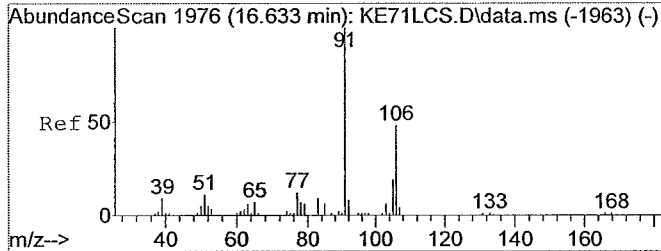
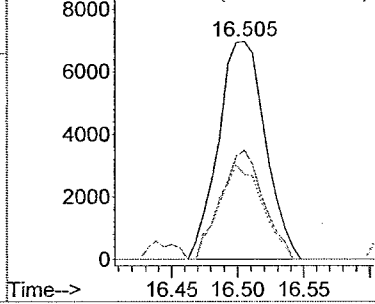
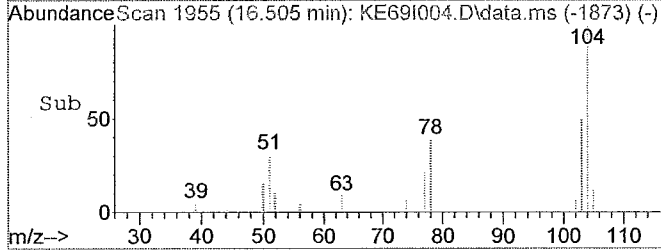


#49  
Styrene  
Concen: 0.15 ppb  
RT: 16.51 min Scan# 1955  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion:104.1 Resp: 16952  
Ion Ratio Lower Upper  
104 100  
103 45.3 37.6 56.4  
78 40.8 32.3 48.5  
0 0.0 0.0 0.0

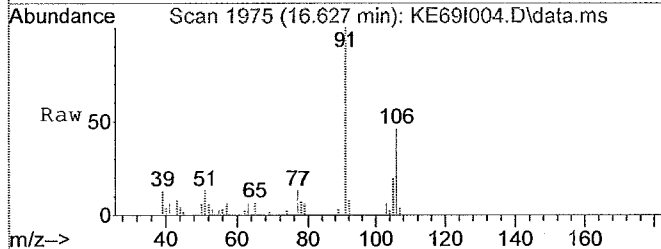


AbundanceIon 104.10 (103.80 to 104.4)  
Ion 103.10 (102.80 to 103.4)  
Ion 78.10 (77.80 to 78.40):

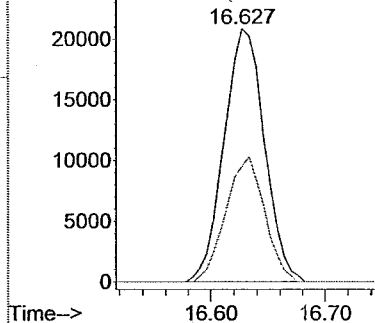
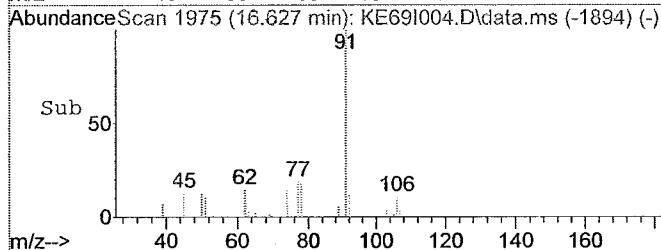


#51  
o-Xylene  
Concen: 0.31 ppb  
RT: 16.63 min Scan# 1975  
Delta R.T. -0.01 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion:91.1 Resp: 50315  
Ion Ratio Lower Upper  
91 100  
106 47.3 38.2 57.4  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

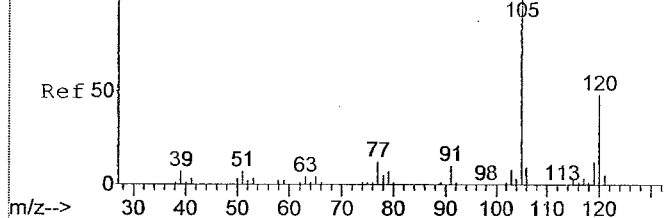


AbundanceIon 91.10 (90.80 to 91.40):  
Ion 106.10 (105.80 to 106.40):





AbundanceScan 2312 (18.682 min): KE71LCS.D\data.ms (-2300) (-)



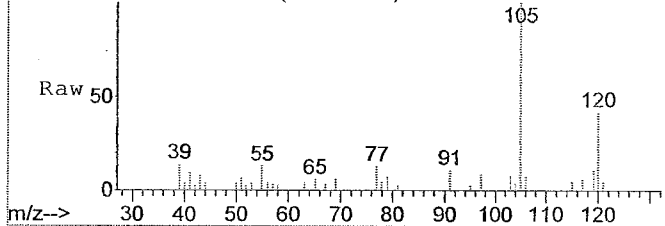
#55  
1,2,4-Trimethylbenzene  
Concen: 0.18 ppb  
RT: 18.68 min Scan# 2312  
Delta R.T. -0.00 min  
Lab File: KE69I004.D  
Acq: 12/20/2018 01:42

Tgt Ion:105.1 Resp: 31621

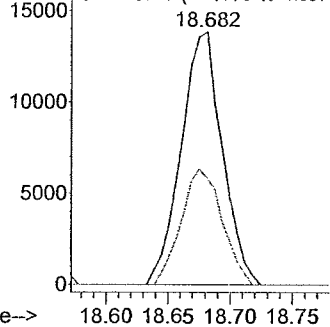
Ion Ratio Lower Upper

|     |      |      |      |
|-----|------|------|------|
| 105 | 100  |      |      |
| 120 | 45.8 | 38.7 | 58.1 |
| 0   | 0.0  | 0.0  | 0.0  |
| 0   | 0.0  | 0.0  | 0.0  |

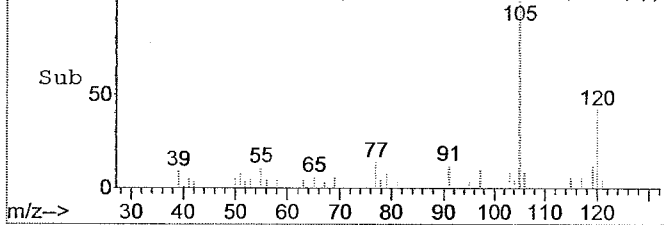
Abundance Scan 2312 (18.682 min): KE69I004.D\data.ms



Abundance Ion 105.10 (104.80 to 105.4)



AbundanceScan 2312 (18.682 min): KE69I004.D\data.ms (-2230) (-)



|          |                             |    |          | seqnce |       |   |       |            |         |
|----------|-----------------------------|----|----------|--------|-------|---|-------|------------|---------|
| KD73S20  | 11/12/2018 17:26            | BB | TO15KH18 | 4      | 25.99 | 1 | WATER | 20         | PPB     |
|          | 297152                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (400ml) 44730     |    |          |        |       |   |       |            |         |
| KD74S10  | 11/12/2018 18:05            | BB | TO15KH18 | 4      | 25.99 | 1 | WATER | 10         | PPB     |
|          | 301760                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (200ml) 44730     |    |          |        |       |   |       |            |         |
| KD75S5   | 11/12/2018 18:44            | BB | TO15KH18 | 4      | 25.99 | 1 | WATER | 5          | PPB     |
|          | 299584                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (100ml) 44730     |    |          |        |       |   |       |            |         |
| KD76S2   | 11/12/2018 19:22            | BB | TO15KH18 | 4      | 25.99 | 1 | WATER | 2          | PPB     |
|          | 288320                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (40ml) 44730      |    |          |        |       |   |       |            |         |
| KD77S1   | 11/12/2018 20:00            | BB | TO15KH18 | 4      | 25.99 | 1 | WATER | 1          | PPB     |
|          | 281216                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (20ml) 44730      |    |          |        |       |   |       |            |         |
| KD78S05  | 11/12/2018 20:38            | BB | TO15KH18 | 4      | 25.99 | 1 | WATER | 05         | PPB     |
|          | 274304                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (10ml) 44730      |    |          |        |       |   |       |            |         |
| KD79SICV | 11/12/2018 21:17            | BB | TO15KH18 | 6      | 25.99 | 1 | WATER | 10         | ppb ICV |
|          | 287232                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (200ml) 44731     |    |          |        |       |   |       |            |         |
| KD80QD   | 11/12/2018 21:57            | BB | TO15KH18 | 6      | 25.99 | 1 | WATER | 10         | ppb QD  |
|          | 292864                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: (200ml) 44731     |    |          |        |       |   |       |            |         |
| KD81BLAN | 11/12/2018 22:37            | BB | TO15KH18 | 3      | 25.99 | 1 | WATER | BLANK      |         |
|          | 268288                      |    |          |        |       |   |       |            |         |
|          | COMMENTS:                   |    |          |        |       |   |       |            |         |
| KD82I001 | 11/13/2018 06:24            | BB | TO15KH18 | 10     | 25.99 | 1 | WATER | 1831002001 |         |
|          | 256960                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: hds 1:10 dil 20ml |    |          |        |       |   |       |            |         |
| KD83I001 | 11/13/2018 07:03            | BB | TO15KH18 | 11     | 25.99 | 1 | WATER | 1831002002 |         |
|          | 266880                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: hds 1:10 dil 20ml |    |          |        |       |   |       |            |         |
| KD84I002 | 11/13/2018 07:42            | BB | TO15KH18 | 12     | 25.99 | 1 | WATER | 1831002003 |         |
|          | 282752                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: hds 1:10 dil 20ml |    |          |        |       |   |       |            |         |
| KD85I004 | 11/13/2018 08:22            | BB | TO15KH18 | 13     | 25.99 | 1 | WATER | 1831002004 |         |
|          | 287296                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: hds 1:10 dil 20ml |    |          |        |       |   |       |            |         |
| KD86I005 | 11/13/2018 09:01            | BB | TO15KH18 | 14     | 25.99 | 1 | WATER | 1831002005 |         |
|          | 287488                      |    |          |        |       |   |       |            |         |
|          | COMMENTS: hds 1:10 dil 20ml |    |          |        |       |   |       |            |         |
| KD88S50  | 11/13/2018 10:59            | BB | TO15KH18 | 4      | 25.99 | 1 | 50    | PPB        |         |
|          | 00ml) 44734                 |    |          |        |       |   |       |            |         |
|          | 44116                       |    |          |        |       |   |       |            |         |
| KD89SICV | 11/13/2018 14:13            | BB | TO15KH18 | 6      | 25.99 | 1 | 10    | ppb ICV    |         |
|          | 00ml) 44731                 |    |          |        |       |   |       |            |         |
|          | 44116                       |    |          |        |       |   |       |            |         |

## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\KD73S20.D Vial: 4  
 Acq Time : 11/12/2018 17:26 Operator: BB  
 Sample : 20 PPB Inst : 5975-K  
 Misc : (400ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:52:44 2018

Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )

Title : TO-15

Last Update : Tue Nov 13 05:59:36 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc    | Units | Area%     |
|-------------------------------|-------|------|----------|---------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 297152   | 20.00   | ppb   | 98.47     |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 3649987  | 20.00   | ppb   | 96.97     |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2732575  | 20.00   | ppb   | 97.32     |
| System Monitoring Compounds   |       |      |          |         |       | %Recovery |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1487620  | 19.36   | ppb   | 96.80%    |
| Target Compounds              |       |      |          |         |       | Qvalue    |
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 2921803  | 17.6751 | ppb   | 100       |
| 3) Chloromethane              | 5.26  | 50   | 820074   | 18.0488 | ppb   | 100       |
| 4) Freon 114                  | 5.37  | 135  | 2163733  | 18.7064 | ppb   | 99        |
| 5) Vinyl Chloride             | 5.49  | 62   | 1001450  | 19.2614 | ppb   | 100       |
| 6) 1,3-Butadiene              | 5.62  | 54   | 787778   | 19.3847 | ppb   | 100       |
| 7) Bromomethane               | 5.89  | 94   | 938079   | 19.0717 | ppb   | 100       |
| 8) Chloroethane               | 6.06  | 64   | 604111   | 18.3142 | ppb   | 99        |
| 9) Acetone                    | 6.58  | 43   | 1660469  | 17.9419 | ppb   | 100       |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 2708799  | 19.0128 | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 1689805  | 19.2648 | ppb   | 100       |
| 12) Methylene Chloride        | 7.45  | 84   | 867695   | 17.6023 | ppb   | 99        |
| 13) Freon 113                 | 7.71  | 151  | 1687974  | 19.0709 | ppb   | 99        |
| 14) Carbon Disulfide          | 7.79  | 76   | 2478352  | 21.1003 | ppb   | 100       |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 1019242  | 19.2920 | ppb   | 99        |
| 16) 1,1-Dichloroethane        | 8.49  | 63   | 1885378  | 19.2834 | ppb   | 99        |
| 17) methyl t-butyl ether      | 8.53  | 73   | 2842286  | 19.4722 | ppb   | 100       |
| 18) Vinyl Acetate             | 8.58  | 86   | 271037   | 20.4574 | ppb   | 99        |
| 19) 2-Butanone                | 8.81  | 43   | 2209757  | 18.8717 | ppb   | 100       |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 1070000  | 19.4141 | ppb   | 100       |
| 22) Ethyl Acetate             | 9.40  | 61   | 371131   | 19.8738 | ppb   | 98        |
| 23) Hexane                    | 9.46  | 57   | 1789100  | 20.1269 | ppb   | 99        |
| 24) Chloroform                | 9.51  | 83   | 2087098  | 19.3806 | ppb   | 100       |
| 25) Tetrahydrofuran           | 9.88  | 42   | 1181139  | 19.7135 | ppb   | 100       |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 1410493  | 19.4159 | ppb   | 100       |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 2214432  | 19.8259 | ppb   | 100       |
| 28) Benzene                   | 10.90 | 78   | 2898809  | 19.3959 | ppb   | 100       |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 2299121  | 20.7548 | ppb   | 100       |
| 30) Cyclohexane               | 11.18 | 84   | 1427863  | 18.8053 | ppb   | 98        |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 1135565  | 19.5506 | ppb   | 99        |
| 32) Bromodichloromethane      | 11.83 | 83   | 2135418  | 21.1756 | ppb   | 100       |
| 33) Trichloroethene           | 11.88 | 130  | 1486448  | 19.7807 | ppb   | 100       |
| 34) Heptane                   | 12.16 | 71   | 1158709  | 20.5116 | ppb   | 99        |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 1737062  | 21.9785 | ppb   | 100       |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 2906827  | 20.6066 | ppb   | 100       |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 1479700  | 22.6314 | ppb   | 100       |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 1159095  | 19.1512 | ppb   | 100       |
| 39) Toluene                   | 13.68 | 91   | 3495299  | 19.8687 | ppb   | 100       |
| 40) 2-Hexanone                | 13.88 | 43   | 2608275  | 21.1962 | ppb   | 99        |
| 41) Dibromochloromethane      | 14.10 | 129  | 1978148  | 22.1581 | ppb   | 100       |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 1717533  | 20.2695 | ppb   | 100       |
| 43) Tetrachloroethene         | 14.83 | 166  | 1739730  | 20.0834 | ppb   | 99        |
| 45) Chlorobenzene             | 15.54 | 112  | 2460079  | 19.0922 | ppb   | 99        |
| 46) Ethylbenzene              | 15.93 | 91   | 4026576  | 19.2713 | ppb   | 99        |
| 47) m,p-Xylene                | 16.12 | 91   | 6381900  | 38.7821 | ppb   | 100       |
| 48) Bromoform                 | 16.21 | 173  | 1318877  | 21.6085 | ppb   | 100       |
| 49) Styrene                   | 16.51 | 104  | 2156218  | 19.2427 | ppb   | 100       |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 1925641  | 16.7061 | ppb   | 100       |

(#)= qualifier out of range (m)= manual integration

KD73S20.D T015KH18.m Tue Nov 20 10:28:30 2018

Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD73S20.D Vial: 4  
 Acq Time : 11/12/2018 17:26 Operator: BB  
 Sample : 20 PPB Inst : 5975-K  
 Misc : (400ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:52:44 2018 Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
 Title : T0-15  
 Last Update : Tue Nov 13 05:59:36 2018  
 Response via : Initial Calibration  
 DataAcq Meth : T0-15.M

| Compound                     | R.T.  | QIon | Response | Conc    | Unit | Qvalue |
|------------------------------|-------|------|----------|---------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 2987576  | 18.3011 | ppb  | 100    |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 3808088  | 17.9236 | ppb  | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 3271069  | 16.6022 | ppb  | 99     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 3132769  | 17.0769 | ppb  | 100    |
| 56) Benzyl Chloride          | 18.85 | 91   | 2263914  | 30.7810 | ppb  | 100    |
| 57) m-Dichlorobenzene        | 18.89 | 146  | 1845978  | 20.4087 | ppb  | 100    |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 1704197  | 22.4004 | ppb  | 100    |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 1658727  | 18.8463 | ppb  | 100    |
| 60) 1,2,4-Trichlorobenzene   | 21.96 | 180  | 252915   | 41.0628 | ppb  | 100    |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 743204   | 25.0689 | ppb  | 99     |

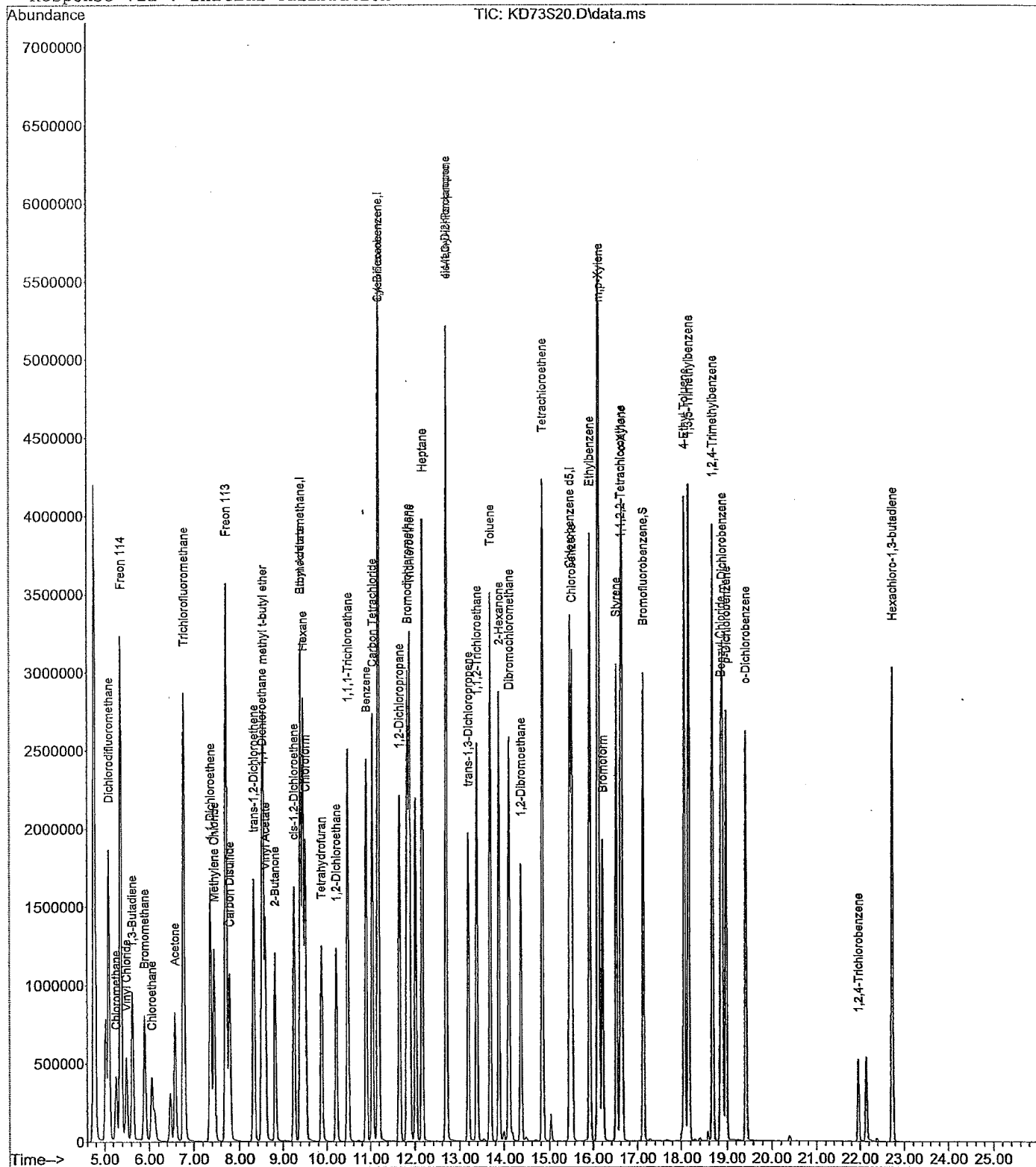
## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD73S20.D Vial: 4  
Acq Time : 11/12/2018 17:26 Operator: BB  
Sample : 20 PPB Inst : 5975-K  
Misc : (400ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:52:44 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD74S10.D Vial: 4  
 Acq Time : 11/12/2018 18:05 Operator: BB  
 Sample : 10 PPB Inst : 5975-K  
 Misc : (200ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:52:52 2018

Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )

Title : TO-15

Last Update : Tue Nov 13 05:59:36 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc    | Units | Area%     |
|-------------------------------|-------|------|----------|---------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 301760   | 20.00   | ppb   | 100.00    |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 3764084  | 20.00   | ppb   | 100.00    |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2807860  | 20.00   | ppb   | 100.00    |
| System Monitoring Compounds   |       |      |          |         |       | %Recovery |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1545744  | 19.58   | ppb   | 97.88%    |
| Target Compounds              |       |      |          |         |       | Qvalue    |
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 1607442  | 9.5756  | ppb   | 100       |
| 3) Chloromethane              | 5.27  | 50   | 461619   | 10.0045 | ppb   | 100       |
| 4) Freon 114                  | 5.37  | 135  | 1150941  | 9.7985  | ppb   | 100       |
| 5) Vinyl Chloride             | 5.50  | 62   | 540428   | 10.2356 | ppb   | 100       |
| 6) 1,3-Butadiene              | 5.63  | 54   | 423436   | 10.2603 | ppb   | 100       |
| 7) Bromomethane               | 5.90  | 94   | 499702   | 10.0041 | ppb   | 100       |
| 8) Chloroethane               | 6.06  | 64   | 328442   | 9.8050  | ppb   | 100       |
| 9) Acetone                    | 6.59  | 43   | 875076   | 9.3111  | ppb   | 100       |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 1409155  | 9.7397  | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 869873   | 9.7656  | ppb   | 100       |
| 12) Methylene Chloride        | 7.45  | 84   | 442743   | 8.8444  | ppb   | 100       |
| 13) Freon 113                 | 7.71  | 151  | 870913   | 9.6894  | ppb   | 100       |
| 14) Carbon Disulfide          | 7.79  | 76   | 1252114  | 10.4975 | ppb   | 100       |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 524867   | 9.7828  | ppb   | 100       |
| 16) 1,1-Dichloroethane        | 8.49  | 63   | 959456   | 9.6633  | ppb   | 100       |
| 17) methyl t-butyl ether      | 8.53  | 73   | 1455815  | 9.8213  | ppb   | 100       |
| 18) Vinyl Acetate             | 8.58  | 86   | 138841   | 10.3194 | ppb   | 100       |
| 19) 2-Butanone                | 8.81  | 43   | 1129587  | 9.4995  | ppb   | 100       |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 549892   | 9.8249  | ppb   | 100       |
| 22) Ethyl Acetate             | 9.40  | 61   | 190717   | 9.9032  | ppb   | 100       |
| 23) Hexane                    | 9.46  | 57   | 906257   | 9.8861  | ppb   | 100       |
| 24) Chloroform                | 9.51  | 83   | 1077302  | 9.7005  | ppb   | 100       |
| 25) Tetrahydrofuran           | 9.88  | 42   | 609816   | 9.8695  | ppb   | 100       |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 731034   | 9.7579  | ppb   | 100       |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 1138058  | 9.8802  | ppb   | 100       |
| 28) Benzene                   | 10.90 | 78   | 1496613  | 9.7103  | ppb   | 100       |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 1169259  | 10.2353 | ppb   | 100       |
| 30) Cyclohexane               | 11.18 | 84   | 746644   | 9.5354  | ppb   | 100       |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 585958   | 9.7824  | ppb   | 100       |
| 32) Bromodichloromethane      | 11.83 | 83   | 1065599  | 10.2466 | ppb   | 100       |
| 33) Trichloroethene           | 11.88 | 130  | 761724   | 9.8293  | ppb   | 100       |
| 34) Heptane                   | 12.15 | 71   | 581414   | 9.9803  | ppb   | 100       |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 851354   | 10.4454 | ppb   | 100       |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 1431679  | 9.8416  | ppb   | 100       |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 732601   | 10.8652 | ppb   | 100       |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 595338   | 9.5383  | ppb   | 100       |
| 39) Toluene                   | 13.68 | 91   | 1791147  | 9.8730  | ppb   | 100       |
| 40) 2-Hexanone                | 13.88 | 43   | 1306076  | 10.2921 | ppb   | 100       |
| 41) Dibromochloromethane      | 14.10 | 129  | 985575   | 10.7052 | ppb   | 100       |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 874488   | 10.0075 | ppb   | 100       |
| 43) Tetrachloroethene         | 14.83 | 166  | 887546   | 9.9353  | ppb   | 100       |
| 45) Chlorobenzene             | 15.54 | 112  | 1283491  | 9.6938  | ppb   | 100       |
| 46) Ethylbenzene              | 15.93 | 91   | 2077909  | 9.6783  | ppb   | 100       |
| 47) m,p-Xylene                | 16.11 | 91   | 3246353  | 19.1988 | ppb   | 100       |
| 48) Bromoform                 | 16.21 | 173  | 667801   | 10.6479 | ppb   | 100       |
| 49) Styrene                   | 16.51 | 104  | 1134476  | 9.8529  | ppb   | 100       |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 1112930  | 9.3965  | ppb   | 100       |

(#) = qualifier out of range (m) = manual integration  
 KD74S10.D T015KH18.m Tue Nov 20 10:28:34 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD74S10.D Vial: 4  
Acq Time : 11/12/2018 18:05 Operator: BB  
Sample : 10 PPB Inst : 5975-K  
Misc : (200ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:52:52 2018

Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Tue Nov 13 05:59:36 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc    | Unit | Qvalue |
|------------------------------|-------|------|----------|---------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 1560892  | 9.3052  | ppb  | 100    |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 2267189  | 10.3849 | ppb  | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 1984921  | 9.8043  | ppb  | 100    |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 1997537  | 10.5968 | ppb  | 100    |
| 56) Benzyl Chloride          | 18.85 | 91   | 1043026  | 13.8011 | ppb  | 100    |
| 57) m-Dichlorobenzene        | 18.89 | 146  | 1104521  | 11.8839 | ppb  | 100    |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 974646   | 12.4675 | ppb  | 100    |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 1065336  | 11.7797 | ppb  | 100    |
| 60) 1,2,4-Trichlorobenzene   | 21.96 | 180  | 88934    | 14.0520 | ppb  | 100    |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 346665   | 11.3798 | ppb  | 100    |

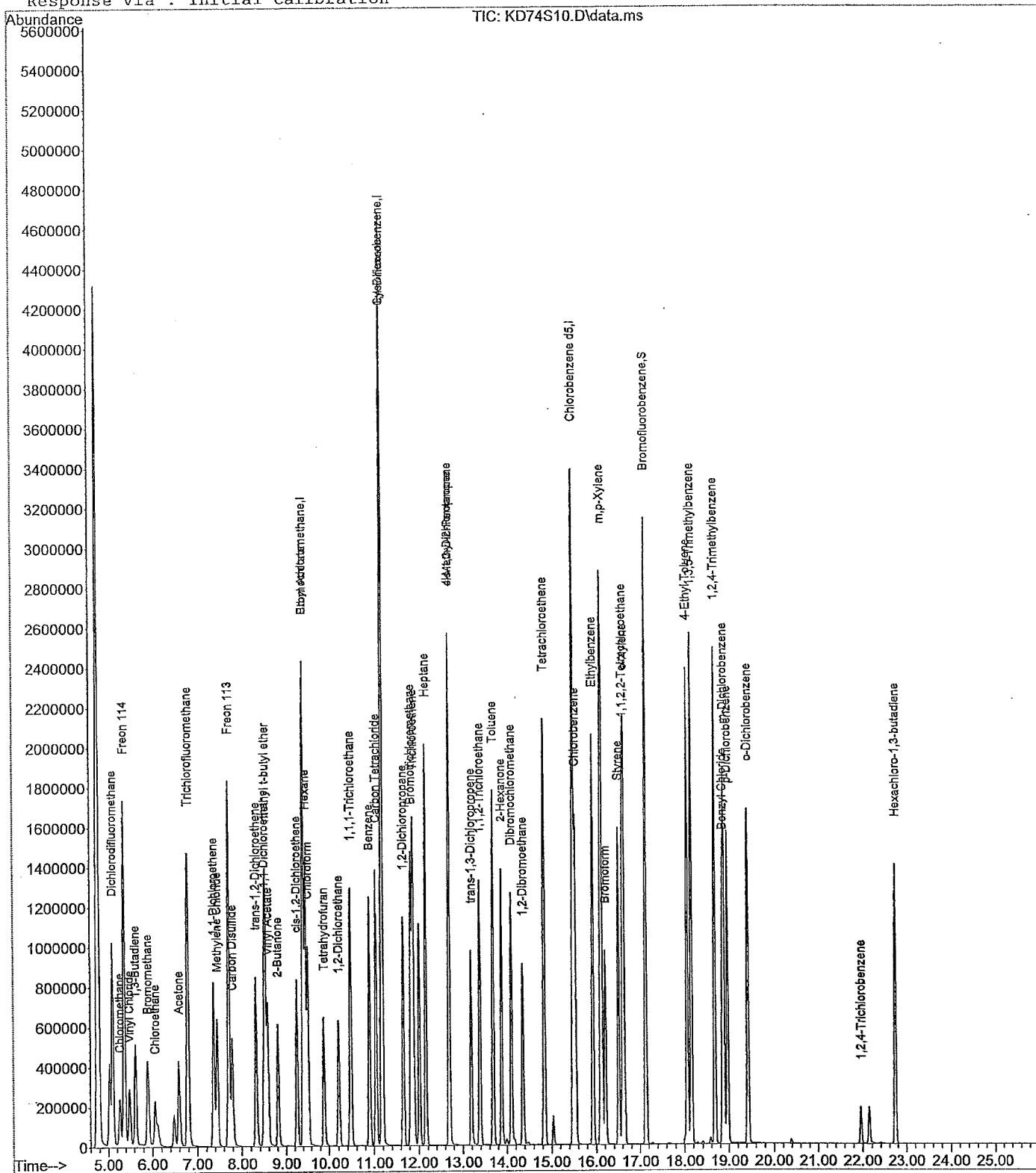
## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD74S10.D Vial: 4  
Acq Time : 11/12/2018 18:05 Operator: BB  
Sample : 10 PPB Inst : 5975-K  
Misc : (200ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:52:52 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response via : Initial Calibration





Quantitation Report  
 Data File : P:\K-5975-K\2018\NOV18\KD75S5.D Vial: 4  
 Acq Time : 11/12/2018 18:44 Operator: BB  
 Sample : 5 PPB Inst : 5975-K  
 Misc : (100ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:00 2018 Results File: TO15KH18.RES

Quant Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Tue Nov 13 05:59:36 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.40  | 130  | 299584   | 20.00 | ppb   | 99.28 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3705702  | 20.00 | ppb   | 98.45 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2781394  | 20.00 | ppb   | 99.06 |

| System Monitoring Compounds |       |    |         |       |     | %Recovery |
|-----------------------------|-------|----|---------|-------|-----|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95 | 1651793 | 21.12 | ppb | 105.59%   |

| Target Compounds              |       |     |         |        |     | Qvalue |
|-------------------------------|-------|-----|---------|--------|-----|--------|
| 2) Dichlorodifluoromethane    | 5.10  | 85  | 821177  | 4.9273 | ppb | 99     |
| 3) Chloromethane              | 5.26  | 50  | 223685  | 4.8831 | ppb | 99     |
| 4) Freon 114                  | 5.37  | 135 | 567910  | 4.8700 | ppb | 99     |
| 5) Vinyl Chloride             | 5.49  | 62  | 255882  | 4.8816 | ppb | 99     |
| 6) 1,3-Butadiene              | 5.63  | 54  | 208288  | 5.0837 | ppb | 99     |
| 7) Bromomethane               | 5.90  | 94  | 248198  | 5.0051 | ppb | 98     |
| 8) Chloroethane               | 6.06  | 64  | 159609  | 4.7994 | ppb | 100    |
| 9) Acetone                    | 6.59  | 43  | 447387  | 4.7949 | ppb | 99     |
| 10) Trichlorofluoromethane    | 6.79  | 101 | 701922  | 4.8867 | ppb | 100    |
| 11) 1,1-Dichloroethene        | 7.37  | 61  | 430513  | 4.8683 | ppb | 100    |
| 12) Methylene Chloride        | 7.45  | 84  | 228631  | 4.6004 | ppb | 99     |
| 13) Freon 113                 | 7.71  | 151 | 434646  | 4.8708 | ppb | 100    |
| 14) Carbon Disulfide          | 7.79  | 76  | 598699  | 5.0559 | ppb | 100    |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96  | 262423  | 4.9268 | ppb | 100    |
| 16) 1,1-Dichloroethane        | 8.49  | 63  | 483730  | 4.9074 | ppb | 99     |
| 17) methyl t-butyl ether      | 8.53  | 73  | 722121  | 4.9070 | ppb | 99     |
| 18) Vinyl Acetate             | 8.59  | 86  | 68035   | 5.0935 | ppb | 100    |
| 19) 2-Butanone                | 8.81  | 43  | 567502  | 4.8072 | ppb | 100    |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96  | 274853  | 4.9464 | ppb | 99     |
| 22) Ethyl Acetate             | 9.40  | 61  | 92549   | 4.8814 | ppb | 97     |
| 23) Hexane                    | 9.46  | 57  | 450974  | 4.9971 | ppb | 100    |
| 24) Chloroform                | 9.51  | 83  | 539451  | 4.9340 | ppb | 100    |
| 25) Tetrahydrofuran           | 9.88  | 42  | 304537  | 5.0064 | ppb | 99     |
| 26) 1,2-Dichloroethane        | 10.21 | 62  | 363198  | 4.9244 | ppb | 100    |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97  | 568238  | 5.0110 | ppb | 100    |
| 28) Benzene                   | 10.90 | 78  | 753395  | 4.9652 | ppb | 100    |
| 29) Carbon Tetrachloride      | 11.04 | 117 | 568466  | 5.0545 | ppb | 99     |
| 30) Cyclohexane               | 11.18 | 84  | 370418  | 4.8051 | ppb | 94     |
| 31) 1,2-Dichloropropane       | 11.66 | 63  | 290312  | 4.9231 | ppb | 100    |
| 32) Bromodichloromethane      | 11.83 | 83  | 513291  | 5.0135 | ppb | 100    |
| 33) Trichloroethene           | 11.88 | 130 | 378254  | 4.9579 | ppb | 99     |
| 34) Heptane                   | 12.15 | 71  | 287509  | 5.0130 | ppb | 99     |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75  | 407546  | 5.0790 | ppb | 100    |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43  | 698897  | 4.8800 | ppb | 100    |
| 37) trans-1,3-Dichloropropene | 13.19 | 75  | 348567  | 5.2510 | ppb | 100    |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97  | 298651  | 4.8603 | ppb | 100    |
| 39) Toluene                   | 13.68 | 91  | 889778  | 4.9818 | ppb | 100    |
| 40) 2-Hexanone                | 13.88 | 43  | 631773  | 5.0569 | ppb | 100    |
| 41) Dibromochloromethane      | 14.10 | 129 | 464857  | 5.1288 | ppb | 100    |
| 42) 1,2-Dibromoethane         | 14.36 | 107 | 436147  | 5.0698 | ppb | 99     |
| 43) Tetrachloroethene         | 14.83 | 166 | 432365  | 4.9162 | ppb | 99     |
| 45) Chlorobenzene             | 15.54 | 112 | 648636  | 4.9456 | ppb | 98     |
| 46) Ethylbenzene              | 15.93 | 91  | 1055053 | 4.9609 | ppb | 100    |
| 47) m,p-Xylene                | 16.12 | 91  | 1650649 | 9.8548 | ppb | 100    |
| 48) Bromoform                 | 16.21 | 173 | 327055  | 5.2644 | ppb | 100    |
| 49) Styrene                   | 16.51 | 104 | 598373  | 5.2463 | ppb | 100    |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83  | 614800  | 5.2402 | ppb | 100    |

(#) = qualifier out of range (m) = manual integration  
 KD75S5.D TO15KH18.m Tue Nov 20 10:28:38 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD75S5.D Vial: 4  
Acq Time : 11/12/2018 18:44 Operator: BB  
Sample : 5 PPB Inst : 5975-K  
Misc : (100ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:00 2018

Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Tue Nov 13 05:59:36 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc   | Unit | Qvalue |
|------------------------------|-------|------|----------|--------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 811535   | 4.8840 | ppb  | 100    |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 1236483  | 5.7176 | ppb  | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 1120443  | 5.5870 | ppb  | 100    |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 1070556  | 5.7332 | ppb  | 99     |
| 56) Benzyl Chloride          | 18.85 | 91   | 382997   | 5.1160 | ppb  | 100    |
| 57) m-Dichlorobenzene        | 18.88 | 146  | 542811   | 5.8959 | ppb  | 99     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 449563   | 5.8054 | ppb  | 99     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 519441   | 5.7983 | ppb  | 99     |
| 60) 1,2,4-Trichlorobenzene   | 21.97 | 180  | 28230    | 4.5029 | ppb  | 97     |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 156706   | 5.1930 | ppb  | 100    |

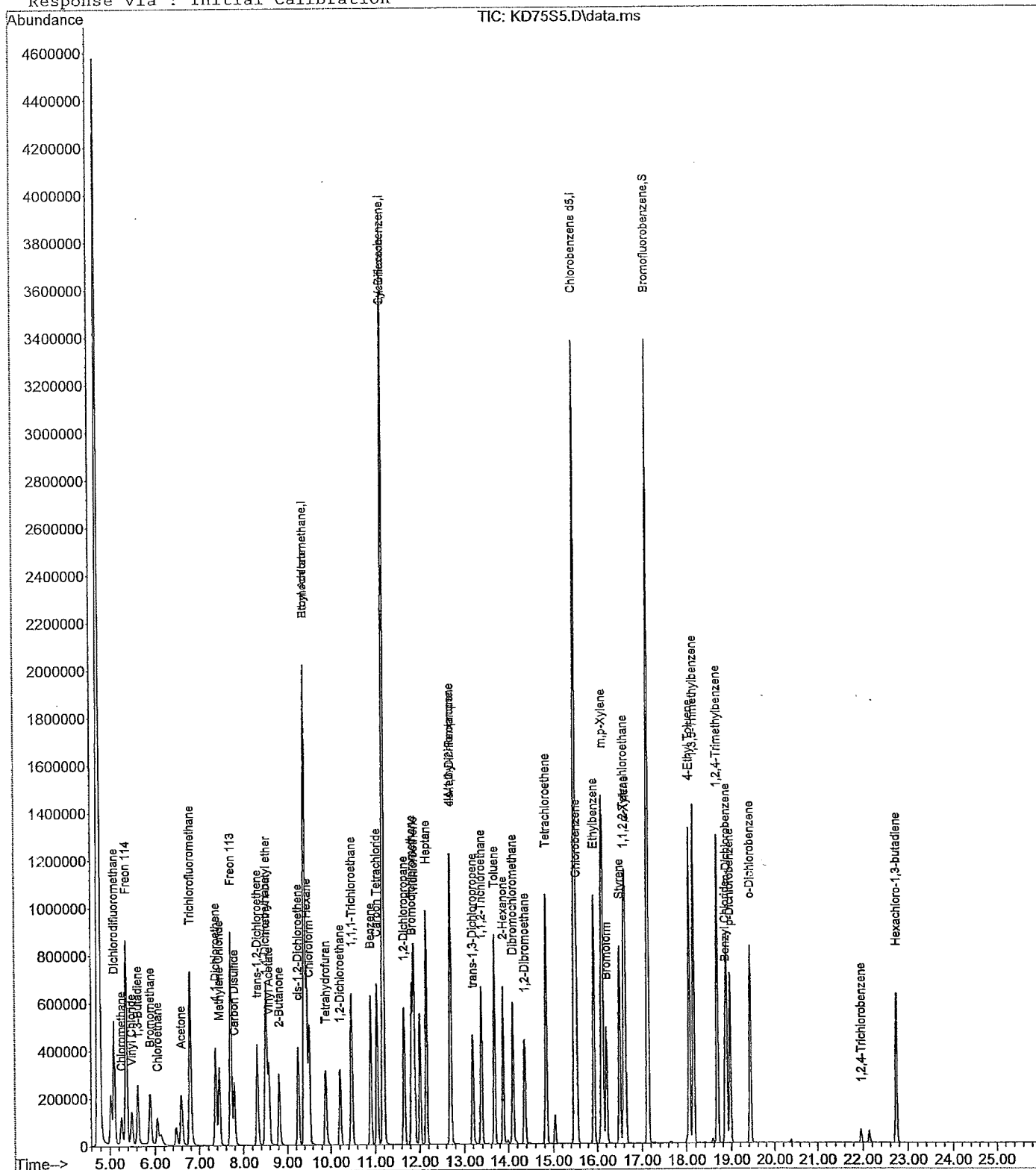
## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD75S5.D Vial: 4  
Acq Time : 11/12/2018 18:44 Operator: BB  
Sample : 5 PPB Inst : 5975-K  
Misc : (100ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:00 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD76S2.D Vial: 4  
 Acq Time : 11/12/2018 19:22 Operator: BB  
 Sample : 2 PPB Inst : 5975-K  
 Misc : (40ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:07 2018

Results File: TO15KH18.RES

Quant Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Tue Nov 13 05:59:36 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc   | Units | Area%     |
|-------------------------------|-------|------|----------|--------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 288320   | 20.00  | ppb   | 95.55     |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 3618893  | 20.00  | ppb   | 96.14     |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2770806  | 20.00  | ppb   | 98.68     |
|                               |       |      |          |        |       | %Recovery |
| System Monitoring Compounds   |       |      |          |        |       |           |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1659835  | 21.30  | ppb   | 106.51%   |
|                               |       |      |          |        |       | Qvalue    |
| Target Compounds              |       |      |          |        |       |           |
| 2) Dichlorodifluoromethane    | 5.09  | 85   | 335790   | 2.0936 | ppb   | 100       |
| 3) Chloromethane              | 5.26  | 50   | 90024    | 2.0420 | ppb   | 99        |
| 4) Freon 114                  | 5.37  | 135  | 229864   | 2.0482 | ppb   | 100       |
| 5) Vinyl Chloride             | 5.48  | 62   | 100740   | 1.9969 | ppb   | 100       |
| 6) 1,3-Butadiene              | 5.62  | 54   | 76848    | 1.9489 | ppb   | 99        |
| 7) Bromomethane               | 5.89  | 94   | 95179    | 1.9943 | ppb   | 100       |
| 8) Chloroethane               | 6.06  | 64   | 66097    | 2.0652 | ppb   | 99        |
| 9) Acetone                    | 6.59  | 43   | 191685   | 2.1347 | ppb   | 99        |
| 10) Trichlorofluoromethane    | 6.78  | 101  | 281533   | 2.0366 | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 172727   | 2.0295 | ppb   | 100       |
| 12) Methylene Chloride        | 7.45  | 84   | 97464    | 2.0377 | ppb   | 99        |
| 13) Freon 113                 | 7.71  | 151  | 177138   | 2.0626 | ppb   | 99        |
| 14) Carbon Disulfide          | 7.79  | 76   | 231243   | 2.0291 | ppb   | 100       |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 105434   | 2.0568 | ppb   | 100       |
| 16) 1,1-Dichloroethane        | 8.49  | 63   | 194842   | 2.0539 | ppb   | 99        |
| 17) methyl t-butyl ether      | 8.53  | 73   | 289595   | 2.0448 | ppb   | 99        |
| 18) Vinyl Acetate             | 8.58  | 86   | 26421    | 2.0553 | ppb   | 98        |
| 19) 2-Butanone                | 8.81  | 43   | 226195   | 1.9909 | ppb   | 99        |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 109002   | 2.0383 | ppb   | 100       |
| 22) Ethyl Acetate             | 9.40  | 61   | 37814    | 2.0423 | ppb   | 99        |
| 23) Hexane                    | 9.46  | 57   | 179013   | 2.0311 | ppb   | 98        |
| 24) Chloroform                | 9.51  | 83   | 217378   | 2.0359 | ppb   | 100       |
| 25) Tetrahydrofuran           | 9.89  | 42   | 123018   | 2.0708 | ppb   | 99        |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 148336   | 2.0594 | ppb   | 100       |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 227000   | 2.0498 | ppb   | 100       |
| 28) Benzene                   | 10.90 | 78   | 303598   | 2.0488 | ppb   | 100       |
| 29) Carbon Tetrachloride      | 11.04 | 117  | 222580   | 2.0266 | ppb   | 99        |
| 30) Cyclohexane               | 11.18 | 84   | 153845   | 2.0436 | ppb   | # 81      |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 118168   | 2.0519 | ppb   | 100       |
| 32) Bromodichloromethane      | 11.83 | 83   | 200376   | 2.0041 | ppb   | 99        |
| 33) Trichloroethene           | 11.88 | 130  | 152751   | 2.0502 | ppb   | 100       |
| 34) Heptane                   | 12.15 | 71   | 114638   | 2.0468 | ppb   | 99        |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 158661   | 2.0247 | ppb   | 99        |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 283518   | 2.0271 | ppb   | 99        |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 128580   | 1.9835 | ppb   | 99        |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 122464   | 2.0408 | ppb   | 99        |
| 39) Toluene                   | 13.68 | 91   | 355959   | 2.0408 | ppb   | 100       |
| 40) 2-Hexanone                | 13.88 | 43   | 241924   | 1.9829 | ppb   | 99        |
| 41) Dibromochloromethane      | 14.10 | 129  | 176526   | 1.9943 | ppb   | 100       |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 173856   | 2.0694 | ppb   | 99        |
| 43) Tetrachloroethene         | 14.83 | 166  | 172636   | 2.0100 | ppb   | 98        |
| 45) Chlorobenzene             | 15.54 | 112  | 268903   | 2.0581 | ppb   | 93        |
| 46) Ethylbenzene              | 15.93 | 91   | 431733   | 2.0378 | ppb   | 99        |
| 47) m,p-Xylene                | 16.12 | 91   | 685052   | 4.1055 | ppb   | 100       |
| 48) Bromoform                 | 16.21 | 173  | 120304   | 1.9439 | ppb   | 99        |
| 49) Styrene                   | 16.51 | 104  | 245236   | 2.1584 | ppb   | 99        |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 254925   | 2.1811 | ppb   | 100       |

(#) = qualifier out of range (m) = manual integration

KD76S2.D TO15KH18.m

Tue Nov 20 10:28:41 2018

# Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\KD76S2.D Vial: 4  
 Acq Time : 11/12/2018 19:22 Operator: BB  
 Sample : 2 PPB Inst : 5975-K  
 Misc : (40ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:07 2018 Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Tue Nov 13 05:59:36 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc   | Unit  | Qvalue |
|------------------------------|-------|------|----------|--------|-------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 346383   | 2.0926 | ppb   | 100    |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 446590   | 2.0730 | ppb   | 99     |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 438138   | 2.1931 | ppb   | 99     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 392507   | 2.1101 | ppb   | 98     |
| 56) Benzyl Chloride          | 18.85 | 91   | 96374    | 1.2923 | ppb   | 97     |
| 57) m-Dichlorobenzene        | 18.88 | 146  | 164168   | 1.7900 | ppb   | 99     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 127416   | 1.6517 | ppb   | 99     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 171896   | 1.9261 | ppb   | 99     |
| 60) 1,2,4-Trichlorobenzene   | 21.96 | 180  | 5766     | 0.9232 | ppb # | 93     |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 52760    | 1.7551 | ppb   | 100    |

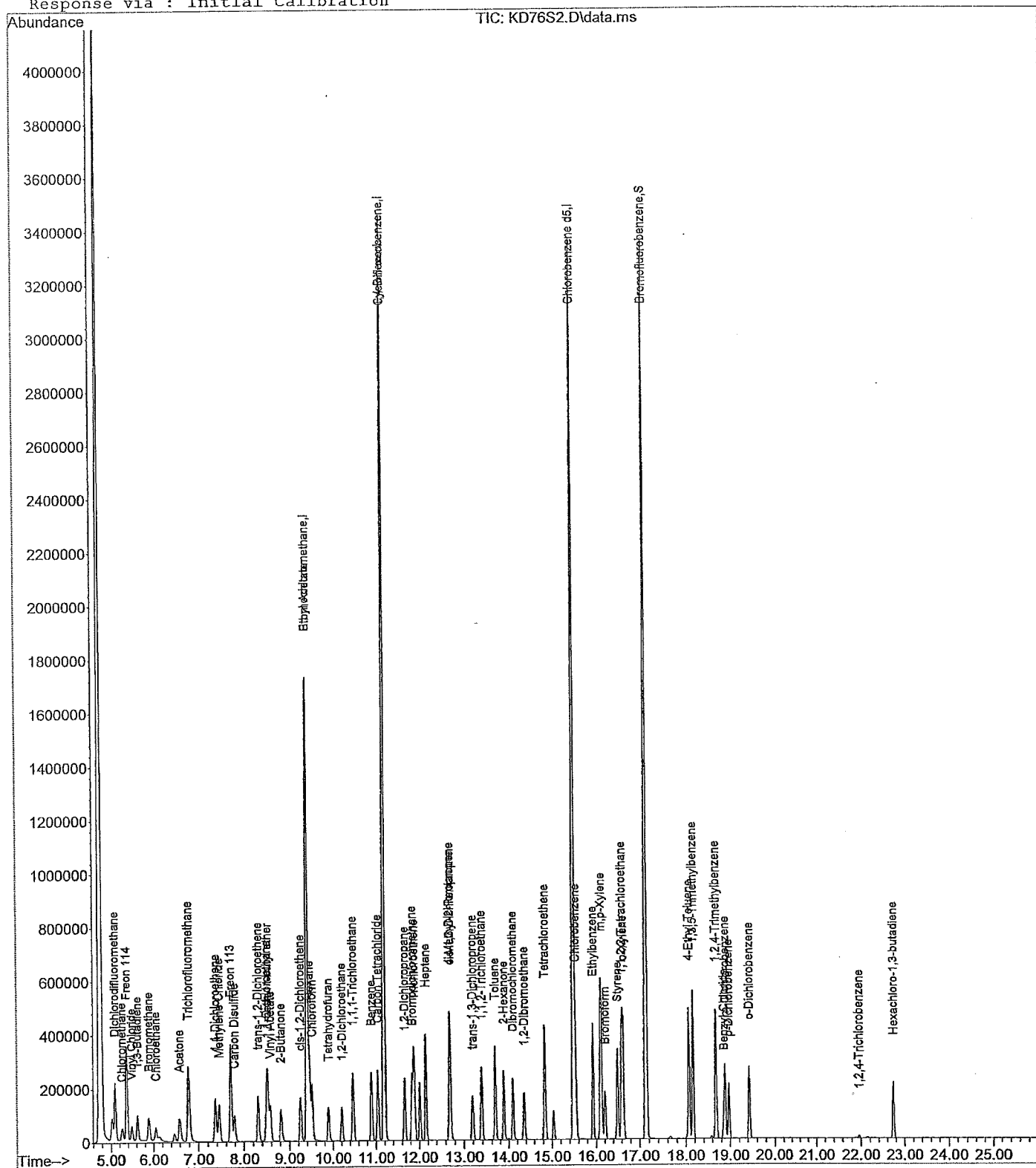
## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD76S2.D Vial: 4  
Acq Time : 11/12/2018 19:22 Operator: BB  
Sample : 2 PPB Inst : 5975-K  
Misc : (40ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:07 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response via : Initial Calibration



Quantitation Report  
 Data File : P:\K-5975-K\2018\NOV18\KD77S1.D Vial: 4  
 Acq Time : 11/12/2018 20:00 Operator: BB  
 Sample : 1 PPB Inst : 5975-K  
 Misc : (20ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:14 2018 Results File: TO15KH18.RES

Quant Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Tue Nov 13 05:59:36 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc   | Units | Area%     |
|-------------------------------|-------|------|----------|--------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 281216   | 20.00  | ppb   | 93.19     |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 3592459  | 20.00  | ppb   | 95.44     |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2833200  | 20.00  | ppb   | 100.90    |
| System Monitoring Compounds   |       |      |          |        |       | %Recovery |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1550493  | 19.46  | ppb   | 97.31%    |
| Target Compounds              |       |      |          |        |       | Qvalue    |
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 162593   | 1.0393 | ppb   | 99        |
| 3) Chloromethane              | 5.26  | 50   | 43732    | 1.0170 | ppb   | 100       |
| 4) Freon 114                  | 5.36  | 135  | 110955   | 1.0136 | ppb   | 99        |
| 5) Vinyl Chloride             | 5.48  | 62   | 49172    | 0.9993 | ppb   | 98        |
| 6) 1,3-Butadiene              | 5.63  | 54   | 38150    | 0.9919 | ppb   | 99        |
| 7) Bromomethane               | 5.89  | 94   | 46595    | 1.0010 | ppb   | 100       |
| 8) Chloroethane               | 6.06  | 64   | 31721    | 1.0161 | ppb   | 100       |
| 9) Acetone                    | 6.60  | 43   | 100325   | 1.1455 | ppb   | 99        |
| 10) Trichlorofluoromethane    | 6.78  | 101  | 137071   | 1.0166 | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 84220    | 1.0146 | ppb   | 100       |
| 12) Methylene Chloride        | 7.45  | 84   | 49386    | 1.0586 | ppb   | 99        |
| 13) Freon 113                 | 7.71  | 151  | 85375    | 1.0192 | ppb   | 100       |
| 14) Carbon Disulfide          | 7.79  | 76   | 105553   | 0.9496 | ppb   | 100       |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 49380    | 0.9876 | ppb   | 98        |
| 16) 1,1-Dichloroethane        | 8.49  | 63   | 94186    | 1.0179 | ppb   | 100       |
| 17) methyl t-butyl ether      | 8.53  | 73   | 135969   | 0.9843 | ppb   | 99        |
| 18) Vinyl Acetate             | 8.59  | 86   | 12236    | 0.9759 | ppb   | 90        |
| 19) 2-Butanone                | 8.82  | 43   | 114553   | 1.0337 | ppb   | 98        |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 53189    | 1.0197 | ppb   | 99        |
| 22) Ethyl Acetate             | 9.40  | 61   | 18123    | 0.9860 | ppb   | 92        |
| 23) Hexane                    | 9.46  | 57   | 85567    | 0.9780 | ppb   | 97        |
| 24) Chloroform                | 9.51  | 83   | 108171   | 1.0206 | ppb   | 98        |
| 25) Tetrahydrofuran           | 9.90  | 42   | 57937    | 0.9825 | ppb   | 99        |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 71939    | 1.0061 | ppb   | 99        |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 108223   | 0.9844 | ppb   | 99        |
| 28) Benzene                   | 10.90 | 78   | 149547   | 1.0166 | ppb   | 100       |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 104184   | 0.9556 | ppb   | 98        |
| 30) Cyclohexane               | 11.18 | 84   | 76804    | 1.0277 | ppb   | # 53      |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 57861    | 1.0121 | ppb   | 98        |
| 32) Bromodichloromethane      | 11.83 | 83   | 96489    | 0.9721 | ppb   | 98        |
| 33) Trichloroethene           | 11.88 | 130  | 73897    | 0.9991 | ppb   | 98        |
| 34) Heptane                   | 12.15 | 71   | 54018    | 0.9715 | ppb   | 100       |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 71474    | 0.9188 | ppb   | 99        |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 136003   | 0.9796 | ppb   | 98        |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 56063    | 0.8712 | ppb   | 99        |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 60300    | 1.0123 | ppb   | 99        |
| 39) Toluene                   | 13.68 | 91   | 173543   | 1.0023 | ppb   | 99        |
| 40) 2-Hexanone                | 13.88 | 43   | 109991   | 0.9082 | ppb   | 97        |
| 41) Dibromochloromethane      | 14.10 | 129  | 79382    | 0.9034 | ppb   | 99        |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 79632    | 0.9548 | ppb   | 98        |
| 43) Tetrachloroethene         | 14.83 | 166  | 85438    | 1.0021 | ppb   | 98        |
| 45) Chlorobenzene             | 15.54 | 112  | 131906   | 0.9873 | ppb   | # 83      |
| 46) Ethylbenzene              | 15.93 | 91   | 215293   | 0.9938 | ppb   | 99        |
| 47) m,p-Xylene                | 16.12 | 91   | 340863   | 1.9978 | ppb   | 100       |
| 48) Bromoform                 | 16.21 | 173  | 52522    | 0.8300 | ppb   | 99        |
| 49) Styrene                   | 16.51 | 104  | 107365   | 0.9241 | ppb   | 99        |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 119862   | 1.0029 | ppb   | 100       |

(#) = qualifier out of range (m) = manual integration

## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD77S1.D Vial: 4  
Acq Time : 11/12/2018 20:00 Operator: BB  
Sample : 1 PPB Inst : 5975-K  
Misc : (20ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:14 2018

Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )

Title : TO-15

Last Update : Tue Nov 13 05:59:36 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc   | Unit  | Qvalue |
|------------------------------|-------|------|----------|--------|-------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 174734   | 1.0324 | ppb   | 100    |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 195026   | 0.8853 | ppb   | 99     |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 199284   | 0.9755 | ppb   | 98     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 168293   | 0.8848 | ppb   | 98     |
| 56) Benzyl Chloride          | 18.85 | 91   | 31381    | 0.4115 | ppb   | 95     |
| 57) m-Dichlorobenzene        | 18.88 | 146  | 67243    | 0.7170 | ppb   | 99     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 50981    | 0.6463 | ppb   | 99     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 69079    | 0.7570 | ppb   | 100    |
| 60) 1,2,4-Trichlorobenzene   | 21.97 | 180  | 1146     | 0.1795 | ppb # | 18     |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 21284    | 0.6924 | ppb   | 97     |

(#) = qualifier out of range (m) = manual integration

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KD77S1.D T015KH18.m Tue Nov 20 10:28:45 2018



Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD77S1.D

Acq Time : 11/12/2018 20:00

Sample : 1 PPB

Misc : (20ml) 44730

MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:14 2018

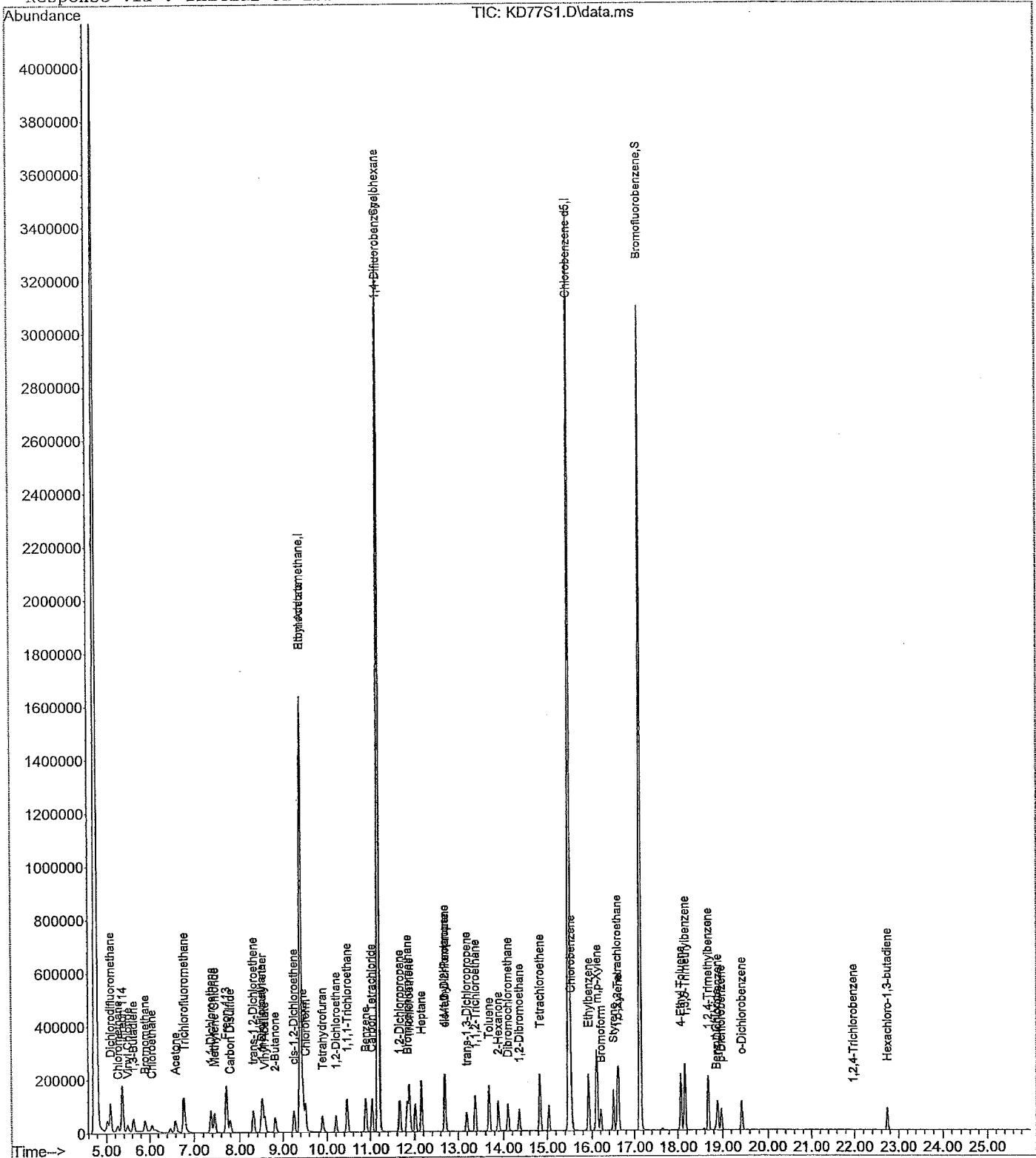
Results File: T015KH18.RES

Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator)

Title : TO-15

Last Update : Tue Nov 13 11:55:11 2018

Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD78S05.D Vial: 4  
 Acq Time : 11/12/2018 20:38 Operator: BB  
 Sample : 05 PPB Inst : 5975-K  
 Misc : (10ml) 44730 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:21 2018

Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Tue Nov 13 05:59:36 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc   | Units | Area%     |
|-------------------------------|-------|------|----------|--------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 274304   | 20.00  | ppb   | 90.90     |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 3522449  | 20.00  | ppb   | 93.58     |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2738572  | 20.00  | ppb   | 97.53     |
|                               |       |      |          |        |       | %Recovery |
| System Monitoring Compounds   |       |      |          |        |       |           |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1477113  | 19.18  | ppb   | 95.90%    |
|                               |       |      |          |        |       | Qvalue    |
| Target Compounds              |       |      |          |        |       |           |
| 2) Dichlorodifluoromethane    | 5.09  | 85   | 82945    | 0.5436 | ppb   | 99        |
| 3) Chloromethane              | 5.26  | 50   | 22654    | 0.5401 | ppb   | 97        |
| 4) Freon 114                  | 5.37  | 135  | 57292    | 0.5366 | ppb   | 100       |
| 5) Vinyl Chloride             | 5.48  | 62   | 24939    | 0.5196 | ppb   | 100       |
| 6) 1,3-Butadiene              | 5.62  | 54   | 19162    | 0.5108 | ppb   | 99        |
| 7) Bromomethane               | 5.89  | 94   | 23766    | 0.5234 | ppb   | 99        |
| 8) Chloroethane               | 6.05  | 64   | 16674    | 0.5476 | ppb   | 96        |
| 9) Acetone                    | 6.59  | 43   | 60806    | 0.7118 | ppb   | 98        |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 69911    | 0.5316 | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.36  | 61   | 42802    | 0.5286 | ppb   | 99        |
| 12) Methylene Chloride        | 7.45  | 84   | 28164    | 0.6189 | ppb   | 99        |
| 13) Freon 113                 | 7.71  | 151  | 43009    | 0.5264 | ppb   | 99        |
| 14) Carbon Disulfide          | 7.78  | 76   | 49872    | 0.4600 | ppb   | 97        |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 25745    | 0.5279 | ppb   | 99        |
| 16) 1,1-Dichloroethane        | 8.49  | 63   | 47076    | 0.5216 | ppb   | 99        |
| 17) methyl t-butyl ether      | 8.53  | 73   | 71156    | 0.5281 | ppb   | 100       |
| 18) Vinyl Acetate             | 8.59  | 86   | 5644     | 0.4615 | ppb   | 59        |
| 19) 2-Butanone                | 8.82  | 43   | 60305    | 0.5579 | ppb   | 98        |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 25912    | 0.5093 | ppb   | 98        |
| 22) Ethyl Acetate             | 9.41  | 61   | 9304     | 0.5163 | ppb   | 90        |
| 23) Hexane                    | 9.46  | 57   | 43409    | 0.5060 | ppb   | 96        |
| 24) Chloroform                | 9.51  | 83   | 53815    | 0.5178 | ppb   | 99        |
| 25) Tetrahydrofuran           | 9.90  | 42   | 29148    | 0.5041 | ppb   | 99        |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 36200    | 0.5163 | ppb   | 99        |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 54388    | 0.5046 | ppb   | 99        |
| 28) Benzene                   | 10.90 | 78   | 73926    | 0.5125 | ppb   | 99        |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 51260    | 0.4795 | ppb   | 99        |
| 30) Cyclohexane               | 11.18 | 84   | 40142    | 0.5478 | ppb   | # 7       |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 28630    | 0.5108 | ppb   | 98        |
| 32) Bromodichloromethane      | 11.83 | 83   | 45725    | 0.4698 | ppb   | 98        |
| 33) Trichloroethene           | 11.88 | 130  | 36705    | 0.5061 | ppb   | 99        |
| 34) Heptane                   | 12.15 | 71   | 26682    | 0.4894 | ppb   | 97        |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 34687    | 0.4548 | ppb   | 98        |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 69181    | 0.5082 | ppb   | 97        |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 27409    | 0.4344 | ppb   | 98        |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 31654    | 0.5419 | ppb   | 99        |
| 39) Toluene                   | 13.68 | 91   | 84905    | 0.5001 | ppb   | 100       |
| 40) 2-Hexanone                | 13.89 | 43   | 55659    | 0.4687 | ppb   | 95        |
| 41) Dibromochloromethane      | 14.10 | 129  | 38564    | 0.4476 | ppb   | 98        |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 40163    | 0.4911 | ppb   | 99        |
| 43) Tetrachloroethene         | 14.83 | 166  | 42299    | 0.5060 | ppb   | 99        |
| 45) Chlorobenzene             | 15.54 | 112  | 69120    | 0.5353 | ppb   | 95        |
| 46) Ethylbenzene              | 15.93 | 91   | 111375   | 0.5319 | ppb   | 99        |
| 47) m,p-Xylene                | 16.11 | 91   | 174770   | 1.0597 | ppb   | 99        |
| 48) Bromoform                 | 16.21 | 173  | 24732    | 0.4043 | ppb   | 99        |
| 49) Styrene                   | 16.51 | 104  | 52514    | 0.4676 | ppb   | 98        |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 62583    | 0.5418 | ppb   | 99        |

(#) = qualifier out of range (m) = manual integration

KD78S05.D T015KH18.m Tue Nov 20 10:28:48 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD78S05.D Vial: 4  
Acq Time : 11/12/2018 20:38 Operator: BB  
Sample : 05 PPB Inst : 5975-K  
Misc : (10ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 09:53:21 2018

Results File: T015KH18.RES

Quant Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )

Title : T0-15

Last Update : Tue Nov 13 05:59:36 2018

Response via : Initial Calibration

DataAcq Meth : T0-15.M

| Compound                     | R.T.  | QIon | Response | Conc         | Unit | Qvalue |
|------------------------------|-------|------|----------|--------------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 89899    | 0.5495       | ppb  | 100    |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 93617    | 0.4397       | ppb  | 98     |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 97338    | 0.4930       | ppb  | 99     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 79545    | 0.4327       | ppb  | 98     |
| 56) Benzyl Chloride          | 18.85 | 91   | 12814    | 0.1738       | ppb  | 94     |
| 57) m-Dichlorobenzene        | 18.89 | 146  | 32432    | 0.3578       | ppb  | 98     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 24592    | 0.3225       | ppb  | 99     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 32837    | 0.3723       | ppb  | 99     |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |      |        |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 10397    | 0.3499       | ppb  | 97     |

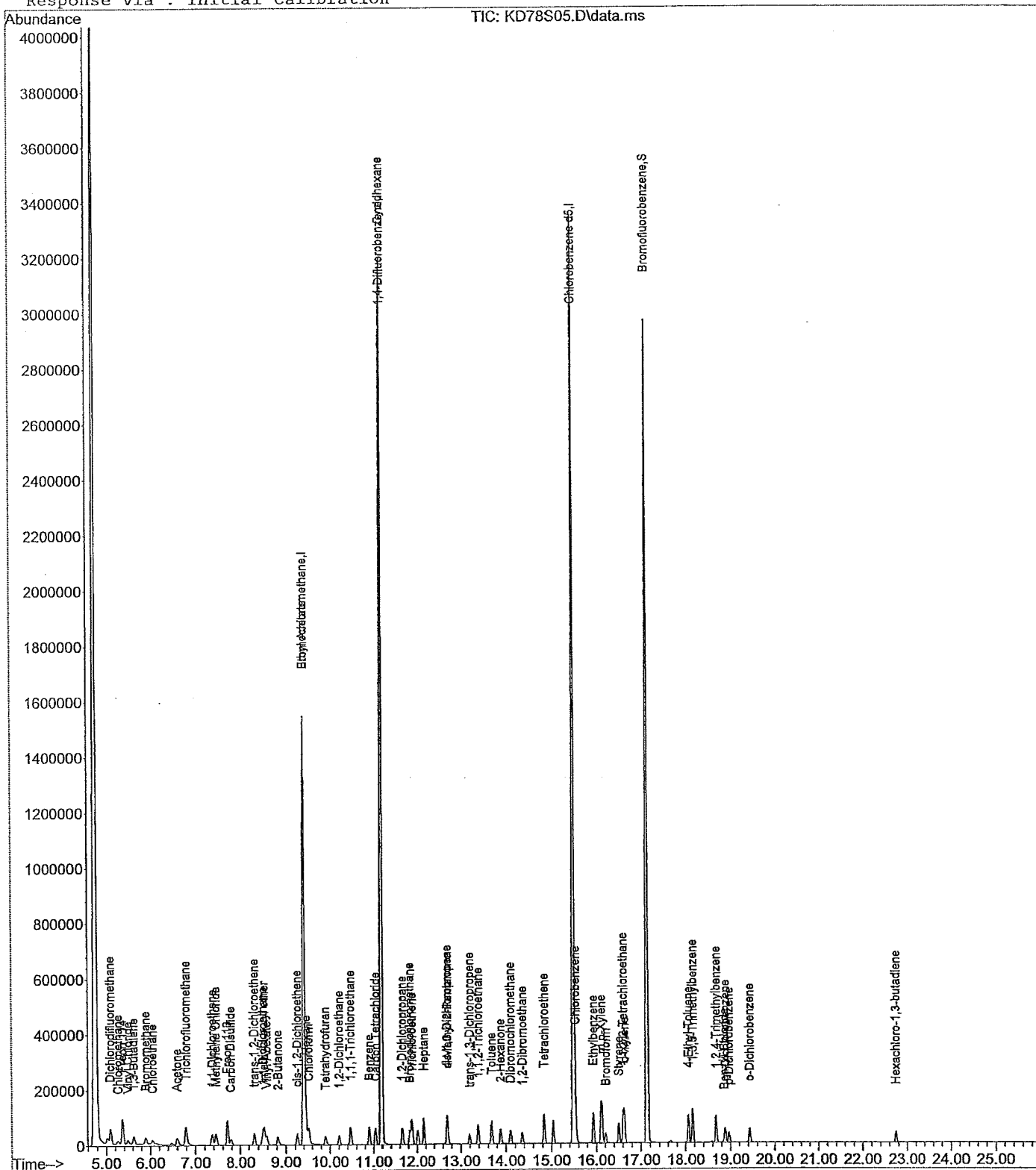
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(#) = qualifier out of range (m) = manual integration

KD78S05.D T015KH18.m Tue Nov 20 10:28:48 2018

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD78S05.D Vial: 4  
Acq Time : 11/12/2018 20:38 Operator: BB  
Sample : 05 PPB Inst : 5975-K  
Misc : (10ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response via : Initial Calibration



Quantitation Report  
 Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD88S50.D Vial: 4  
 Acq Time : 11/13/2018 10:59 Operator: BB  
 Sample : 50 PPB Inst : 5975-K  
 Misc : (200ml) 44734 44116 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 11:54:32 2018 Results File: T015KH18.RES

Quant Method : I:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
 Title : T0-15  
 Last Update : Tue Nov 13 05:59:36 2018  
 Response via : Initial Calibration  
 DataAcq Meth : T0-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc     | Units | Area%     |
|-------------------------------|-------|------|----------|----------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 327360   | 20.00    | ppb   | 108.48    |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 4075187  | 20.00    | ppb   | 108.27    |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2771610  | 20.00    | ppb   | 98.71     |
| System Monitoring Compounds   |       |      |          |          |       | %Recovery |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1550188  | 19.89    | ppb   | 99.45%    |
| Target Compounds              |       |      |          |          |       | Qvalue    |
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 8488942  | 46.6142  | ppb   | 100       |
| 3) Chloromethane              | 5.26  | 50   | 2241560  | 44.7816  | ppb   | 99        |
| 4) Freon 114                  | 5.37  | 135  | 6034851  | 47.3595  | ppb   | 94        |
| 5) Vinyl Chloride             | 5.49  | 62   | 2676343  | 46.7255  | ppb   | 99        |
| 6) 1,3-Butadiene              | 5.62  | 54   | 2186375  | 48.8353  | ppb   | 98        |
| 7) Bromomethane               | 5.90  | 94   | 2633659  | 48.6030  | ppb   | 99        |
| 8) Chloroethane               | 6.06  | 64   | 1815429  | 49.9577  | ppb   | 99        |
| 9) Acetone                    | 6.58  | 43   | 5039875  | 49.4323  | ppb   | 100       |
| 10) Trichlorofluoromethane    | 6.78  | 101  | 9152225  | 58.3108  | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 5395844  | 55.8392  | ppb   | 99        |
| 12) Methylene Chloride        | 7.45  | 84   | 2603285  | 47.9376  | ppb   | 99        |
| 13) Freon 113                 | 7.71  | 151  | 5627913  | 57.7174  | ppb   | 98        |
| 14) Carbon Disulfide          | 7.79  | 76   | 7566843  | 58.4781  | ppb   | 100       |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 3212749  | 55.1987  | ppb   | 98        |
| 16) 1,1-Dichloroethane        | 8.50  | 63   | 6208659  | 57.6416  | ppb   | 100       |
| 17) methyl t-butyl ether      | 8.53  | 73   | 9618755  | 59.8163  | ppb   | 100       |
| 18) Vinyl Acetate             | 8.58  | 86   | 853376   | 58.4675  | ppb   | 96        |
| 19) 2-Butanone                | 8.81  | 43   | 6757970  | 52.3884  | ppb   | 100       |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 3360294  | 55.3430  | ppb   | 98        |
| 22) Ethyl Acetate             | 9.40  | 61   | 1192836  | 57.2110  | ppb   | 98        |
| 23) Hexane                    | 9.46  | 57   | 6023792  | 60.6954  | ppb   | 96        |
| 24) Chloroform                | 9.52  | 83   | 6741133  | 56.0662  | ppb   | 100       |
| 25) Tetrahydrofuran           | 9.88  | 42   | 3612497  | 54.0026  | ppb   | 100       |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 4492822  | 55.3924  | ppb   | 99        |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 7338963  | 58.8504  | ppb   | 100       |
| 28) Benzene                   | 10.90 | 78   | 9284027  | 55.6378  | ppb   | 100       |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 7804928  | 63.1058  | ppb   | 100       |
| 30) Cyclohexane               | 11.18 | 84   | 4605045  | 54.3215  | ppb   | 95        |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 3685172  | 56.8264  | ppb   | 99        |
| 32) Bromodichloromethane      | 11.84 | 83   | 7354235  | 65.3182  | ppb   | 100       |
| 33) Trichloroethene           | 11.88 | 130  | 5084060  | 60.5962  | ppb   | 100       |
| 34) Heptane                   | 12.16 | 71   | 3933900  | 62.3724  | ppb   | 97        |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 5954156  | 67.4755  | ppb   | 99        |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 9057109  | 57.5070  | ppb   | 97        |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 4731146  | 64.8109  | ppb   | 99        |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 3749322  | 55.4847  | ppb   | 100       |
| 39) Toluene                   | 13.68 | 91   | 11651220 | 59.3199  | ppb   | 100       |
| 40) 2-Hexanone                | 13.89 | 43   | 7958638  | 57.9277  | ppb   | 97        |
| 41) Dibromochloromethane      | 14.10 | 129  | 6662980  | 66.8476  | ppb   | 99        |
| 42) 1,2-Dibromoethane         | 14.37 | 107  | 5561933  | 58.7905  | ppb   | 100       |
| 43) Tetrachloroethene         | 14.84 | 166  | 5950361  | 61.5238  | ppb   | 98        |
| 45) Chlorobenzene             | 15.54 | 112  | 8090975  | 61.9080  | ppb   | 99        |
| 46) Ethylbenzene              | 15.93 | 91   | 13579813 | 64.0779  | ppb   | 99        |
| 47) m,p-Xylene                | 16.12 | 91   | 22263361 | 133.3867 | ppb   | 100       |
| 48) Bromoform                 | 16.21 | 173  | 4247436  | 68.6101  | ppb   | 100       |
| 49) Styrene                   | 16.51 | 104  | 6892315  | 60.6427  | ppb   | 100       |
| 50) 1,1,2,2-Tetrachloroethane | 16.61 | 83   | 5750023  | 49.1824  | ppb   | 100       |

(#) = qualifier out of range (m) = manual integration  
 KD88S50.D T015KH18.m Tue Nov 20 10:28:51 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD88S50.D Vial: 4  
Acq Time : 11/13/2018 10:59 Operator: BB  
Sample : 50 PPB Inst : 5975-K  
Misc : (200ml) 44734 44116 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 11:54:32 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Tue Nov 13 05:59:36 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc     | Unit | Qvalue |
|------------------------------|-------|------|----------|----------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 10117338 | 61.1032  | ppb  | 99     |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 11394263 | 52.8741  | ppb  | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 9696901  | 48.5231  | ppb  | 100    |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 8668860  | 46.5890  | ppb  | 99     |
| 56) Benzyl Chloride          | 18.86 | 91   | 5806856  | 77.8402  | ppb  | 99     |
| 57) m-Dichlorobenzene        | 18.89 | 146  | 4756496  | 51.8461  | ppb  | 99     |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 4270313  | 55.3395  | ppb  | 99     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 3854478  | 43.1775  | ppb  | 100    |
| 60) 1,2,4-Trichlorobenzene   | 21.96 | 180  | 714536   | 114.3768 | ppb  | 98     |
| 61) Hexachloro-1,3-butadiene | 22.74 | 225  | 1572225  | 52.2855  | ppb  | 99     |

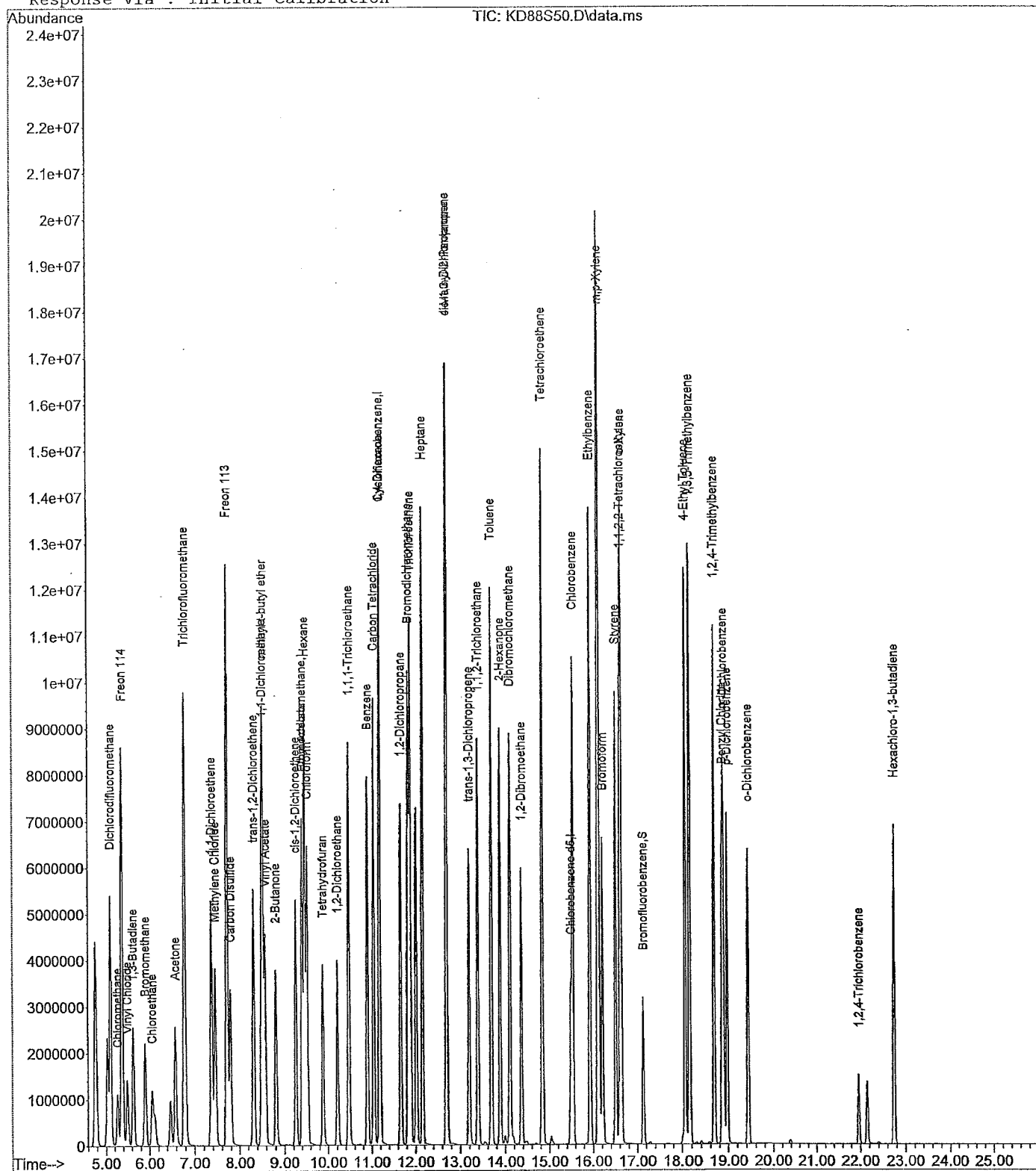
## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD88S50.D Vial: 4  
Acq Time : 11/13/2018 10:59 Operator: BB  
Sample : 50 PPB Inst : 5975-K  
Misc : (200ml) 44734 44116 Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Nov 13 11:54:32 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response via : Initial Calibration



## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD89SICV.D Vial: 6  
 Acq Time : 11/13/2018 14:13 Operator: BB  
 Sample : 10 ppb ICV Inst : 5975-K  
 Misc : (200ml) 44731 44116 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 15:21:29 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Tue Nov 13 11:55:11 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards            | R.T.  | QIon | Response | Conc    | Units | Area%     |
|-------------------------------|-------|------|----------|---------|-------|-----------|
| 1) Bromochloromethane         | 9.40  | 130  | 311744   | 20.00   | ppb   | 103.31    |
| 21) 1,4-Difluorobenzene       | 11.19 | 114  | 3863528  | 20.00   | ppb   | 102.64    |
| 44) Chlorobenzene d5          | 15.49 | 117  | 2940679  | 20.00   | ppb   | 104.73    |
| System Monitoring Compounds   |       |      |          |         |       | %Recovery |
| 52) Bromofluorobenzene        | 17.13 | 95   | 1605807  | 19.43   | ppb   | 97.17%    |
| Target Compounds              |       |      |          |         |       | Qvalue    |
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 1577698  | 9.1862  | ppb   | 100       |
| 3) Chloromethane              | 5.27  | 50   | 436543   | 9.2967  | ppb   | 99        |
| 4) Freon 114                  | 5.37  | 135  | 1161764  | 9.6466  | ppb   | 97        |
| 5) Vinyl Chloride             | 5.49  | 62   | 518901   | 9.6030  | ppb   | 99        |
| 6) 1,3-Butadiene              | 5.63  | 54   | 415263   | 9.7725  | ppb   | 98        |
| 7) Bromomethane               | 5.90  | 94   | 501731   | 9.7620  | ppb   | 100       |
| 8) Chloroethane               | 6.06  | 64   | 354604   | 10.2482 | ppb   | 99        |
| 9) Acetone                    | 6.59  | 43   | 838068   | 8.6481  | ppb   | 100       |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 1488694  | 9.7289  | ppb   | 100       |
| 11) 1,1-Dichloroethene        | 7.37  | 61   | 910365   | 9.7306  | ppb   | 99        |
| 12) Methylene Chloride        | 7.45  | 84   | 470846   | 9.1586  | ppb   | 99        |
| 13) Freon 113                 | 7.71  | 151  | 880966   | 9.2827  | ppb   | 99        |
| 14) Carbon Disulfide          | 7.79  | 76   | 944271   | 7.4818  | ppb   | 100       |
| 15) trans-1,2-Dichloroethene  | 8.31  | 96   | 488552   | 8.6853  | ppb   | 99        |
| 16) 1,1-Dichloroethane        | 8.49  | 63   | 1006513  | 9.6030  | ppb   | 99        |
| 17) methyl t-butyl ether      | 8.53  | 73   | 1479205  | 9.3960  | ppb   | 100       |
| 18) Vinyl Acetate             | 8.58  | 86   | 146364   | 10.2814 | ppb   | 98        |
| 19) 2-Butanone                | 8.81  | 43   | 1184032  | 9.5732  | ppb   | 100       |
| 20) cis-1,2-Dichloroethene    | 9.25  | 96   | 575020   | 9.7953  | ppb   | 100       |
| 22) Ethyl Acetate             | 9.40  | 61   | 192461   | 9.5400  | ppb   | 99        |
| 23) Hexane                    | 9.46  | 57   | 892835   | 9.2076  | ppb   | 99        |
| 24) Chloroform                | 9.51  | 83   | 1137022  | 9.8048  | ppb   | 100       |
| 25) Tetrahydrofuran           | 9.88  | 42   | 670396   | 10.4511 | ppb   | 99        |
| 26) 1,2-Dichloroethane        | 10.21 | 62   | 786690   | 10.0753 | ppb   | 100       |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 1225045  | 10.1061 | ppb   | 100       |
| 28) Benzene                   | 10.90 | 78   | 1604920  | 9.9841  | ppb   | 100       |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 1235647  | 10.1577 | ppb   | 100       |
| 30) Cyclohexane               | 11.18 | 84   | 769747   | 9.4606  | ppb   | 100       |
| 31) 1,2-Dichloropropane       | 11.66 | 63   | 623804   | 9.9521  | ppb   | 100       |
| 32) Bromodichloromethane      | 11.83 | 83   | 1168860  | 10.4911 | ppb   | 99        |
| 33) Trichloroethene           | 11.88 | 130  | 805548   | 9.8296  | ppb   | 100       |
| 34) Heptane                   | 12.16 | 71   | 617748   | 9.9783  | ppb   | 99        |
| 35) cis-1,3-Dichloropropene   | 12.69 | 75   | 930887   | 10.5981 | ppb   | 100       |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 1486532  | 9.7466  | ppb   | 99        |
| 37) trans-1,3-Dichloropropene | 13.19 | 75   | 792890   | 10.9915 | ppb   | 100       |
| 38) 1,1,2-Trichloroethane     | 13.38 | 97   | 646395   | 9.9341  | ppb   | 99        |
| 39) Toluene                   | 13.68 | 91   | 1951870  | 10.2101 | ppb   | 100       |
| 40) 2-Hexanone                | 13.88 | 43   | 1311938  | 9.8129  | ppb   | 99        |
| 41) Dibromochloromethane      | 14.10 | 129  | 1070362  | 10.8067 | ppb   | 100       |
| 42) 1,2-Dibromoethane         | 14.36 | 107  | 952187   | 10.3561 | ppb   | 99        |
| 43) Tetrachloroethene         | 14.83 | 166  | 947574   | 10.0048 | ppb   | 99        |
| 45) Chlorobenzene             | 15.54 | 112  | 1421108  | 9.9112  | ppb   | 100       |
| 46) Ethylbenzene              | 15.93 | 91   | 2326439  | 9.9464  | ppb   | 100       |
| 47) m,p-Xylene                | 16.12 | 91   | 3615156  | 19.4849 | ppb   | 100       |
| 48) Bromoform                 | 16.21 | 173  | 654168   | 9.3777  | ppb   | 100       |
| 49) Styrene                   | 16.51 | 104  | 1230788  | 9.8569  | ppb   | 100       |
| 50) 1,1,2,2-Tetrachloroethane | 16.60 | 83   | 1147689  | 9.2739  | ppb   | 100       |

(#)=qualifier out of range (m)=manual integration

KD89SICV.D TO15KH18.m Tue Nov 20 10:28:54 2018



# Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD89SICV.D Vial: 6  
 Acq Time : 11/13/2018 14:13 Operator: BB  
 Sample : 10 ppb ICV Inst : 5975-K  
 Misc : (200ml) 44731 44116 Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Nov 13 15:21:29 2018 Results File: T015KH18.RES

Quant Method : I:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Tue Nov 13 11:55:11 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc    | Unit | Qvalue |
|------------------------------|-------|------|----------|---------|------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 1729544  | 9.5422  | ppb  | 99     |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 2376749  | 10.2964 | ppb  | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 2012540  | 9.5387  | ppb  | 100    |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 1958032  | 10.0321 | ppb  | 99     |
| 56) Benzyl Chloride          | 18.85 | 91   | 1091183  | 12.6155 | ppb  | 100    |
| 57) m-Dichlorobenzene        | 18.89 | 146  | 1056909  | 10.7916 | ppb  | 100    |
| 58) p-Dichlorobenzene        | 18.97 | 146  | 945600   | 11.3476 | ppb  | 99     |
| 59) o-Dichlorobenzene        | 19.43 | 146  | 987130   | 10.6645 | ppb  | 100    |
| 60) 1,2,4-Trichlorobenzene   | 21.96 | 180  | 84650    | 10.5147 | ppb  | 99     |
| 61) Hexachloro-1,3-butadiene | 22.71 | 225  | 357594   | 11.1236 | ppb  | 99     |

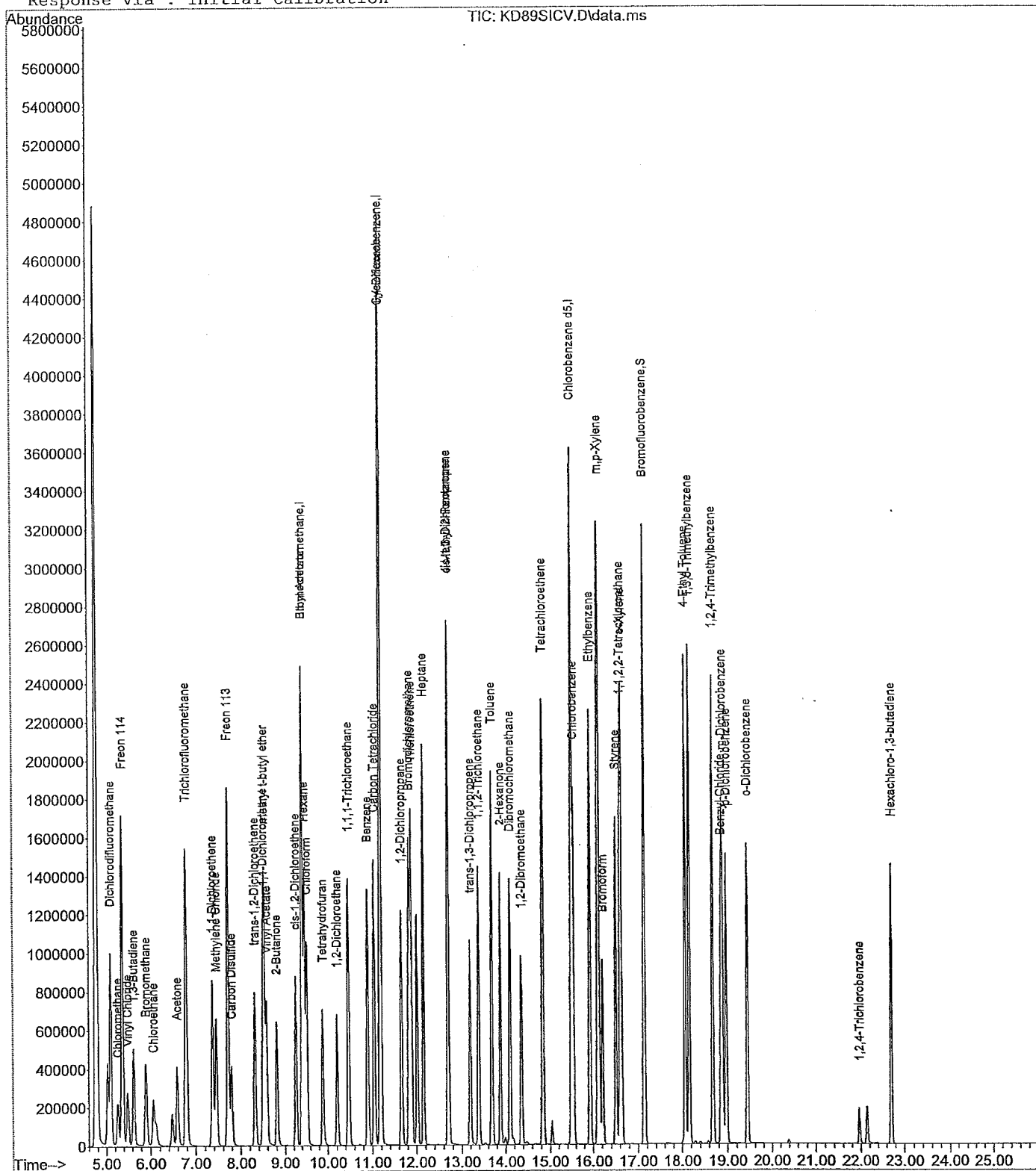
## Quantitation Report

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD89SICV.D Vial: 6  
Acq Time : 11/13/2018 14:13 Operator: BB  
Sample : 10 ppb ICV Inst : 5975-K  
Misc : (200ml) 44731 44116 Multiplr: 1.00  
MS Integration Params: rteint.p

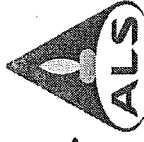
Quant Time: Nov 13 15:21:29 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response via : Initial Calibration



# Batch Worklist



Batch: IVOA/4201

Rule: EPA TO-15, Air

Created: 12/20/2018 09:25

Analyst: B. Boy

Instrument: 5975-K

Status: RE

HBN: 229851



Workorder: 1835256 [ENV\_LVL1]  
 Workorder: 1835290 [ENV\_LVL2]  
 Workorder: 1835293 [ENV\_LVL4]  
 Workorder: 1835379 [ENV\_LVL4]

| Pos | Lab ID     | Sample ID                       | Prep Initial | Prep Final | Dust Weight | Type   | Mx | Container    | Procedure  | Mgr  | Expire Date | Due Date   | Run Date   |
|-----|------------|---------------------------------|--------------|------------|-------------|--------|----|--------------|------------|------|-------------|------------|------------|
| 1   | 633626     | MB for HBN 229851 [IVOA/4201]   |              |            |             | MB     | 1  |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 2   | 633627     | LCS for HBN 229851 [IVOA/4201]  |              |            |             | LCS    | 1  |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 3   | 633628     | LCSD for HBN 229851 [IVOA/4201] |              |            |             | LCSD   | 1  |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 4   | 633629     | RLVS for HBN 229851 [IVOA/4201] |              |            |             | RLVS   | 1  |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 5   | 1835379001 | Air 1                           |              |            |             | SAMPLE | 1  | 1835379001-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 6   | 1835379002 | Air 3                           |              |            |             | SAMPLE | 1  | 1835379002-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 7   | 1835379003 | Air 4                           |              |            |             | SAMPLE | 1  | 1835379003-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 8   | 1835379004 | Air 5                           |              |            |             | SAMPLE | 1  | 1835379004-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 9   | 1835379005 | Air 6                           |              |            |             | SAMPLE | 1  | 1835379005-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 10  | 1835290001 | SV-1                            |              |            |             | SAMPLE | 1  | 1835290001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 11  | 1835290002 | SV-2                            |              |            |             | SAMPLE | 1  | 1835290002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 12  | 1835290003 | SV-3                            |              |            |             | SAMPLE | 1  | 1835290003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 13  | 1835290004 | SV-4                            |              |            |             | SAMPLE | 1  | 1835290004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 14  | 1835293001 | IA-8                            |              |            |             | SAMPLE | 1  | 1835293001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 15  | 1835293002 | OA-2                            |              |            |             | SAMPLE | 1  | 1835293002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 16  | 1835293003 | IA-6                            |              |            |             | SAMPLE | 1  | 1835293003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 17  | 1835293004 | IA-7                            |              |            |             | SAMPLE | 1  | 1835293004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 18  | 1835256003 | KT181212-1                      |              |            |             | SAMPLE | 1  | 1835256003-A | ETO15...J  | 5875 |             | 12/27/2018 |            |



Analyst Notebook

TO15

HBN: 229851

Workorder #'s/Sample #'s:

1835379001-005

1835290001-004

1835293001-004

1835256003

Date of analysis/extraction: 12/19/18

Analyst: BB

Instrument : 5975-K

QC/QD: 45202 (200ml)

RLVS: 45202 (10 ml)

ISTD: 44228 (100 ml)

Column: DB-1

Inst. Program: TO-15; Initial 40 °C for 4 min; 10 °C/min to 220 °C hold for 3 mins.

Run time: 26 min for 5975-K

Carrier Gas: Helium

Cold Trap Dehydration

Initial Calibration Curve/Quantitation method: TO15KH18 (HBN: 227674) ICV; 44731

Dilutions: none

Comments:

The percent difference for target compounds in the CCV standard must be less than 30% relative to the target. The following compound(s) did not meet this criteria; estimates.

The LCS/LSCD percent recovery did not meet performance limits for all compounds. This is not a method a requirement.

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## 5.6 GC/MS Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

| <u>GC/MS Technical Review Criteria</u>                                                                                                                            | <u>Analyst Initials</u> | <u>Reviewer Initials</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|
| <u>Batch(es)/SDG:</u> 229851                                                                                                                                      |                         |                          |
| <u>Sample Set IDs if Applicable:</u> 1835256, 5243, 5290                                                                                                          |                         |                          |
| <u>GC/MS Tuning passed criteria (BFB or DFTPP)</u>                                                                                                                | BFB                     |                          |
| <u>Calibration standards analyzed and meets criteria</u>                                                                                                          | BFB                     |                          |
| <u>Standards traceability checked and meets criteria</u>                                                                                                          | BFB                     |                          |
| <u>Standard curve coefficient evaluated and meets criteria</u>                                                                                                    | BFB                     |                          |
| <u>ICVs analyzed and meet acceptance criteria</u>                                                                                                                 | BFB                     |                          |
| <u>CCVs analyzed and meet acceptance criteria</u>                                                                                                                 | BFB                     |                          |
| <u>Method Blanks analyzed and meet acceptance criteria</u>                                                                                                        | BFB                     |                          |
| <u>Review of spectral assignments</u>                                                                                                                             | BFB                     |                          |
| <u>Relative Retention Time checked</u>                                                                                                                            | BFB                     |                          |
| <u>Internal Standards checked</u>                                                                                                                                 | BFB                     |                          |
| <u>Surrogate recoveries checked and appropriately addressed</u>                                                                                                   | BFB                     |                          |
| <u>Sample Frequency – Analyzed within appropriate tune window</u>                                                                                                 | BFB                     |                          |
| <u>Method Preparation Blanks analyzed and meet acceptance criteria</u>                                                                                            | BFB                     |                          |
| <u>MSs, MSDs, and/or MDs analyzed and calculations checked; applicable flags applied on QC reports; LCSs analyzed and meet acceptance criteria when performed</u> | BFB                     |                          |
| <u>RLVS analyzed</u>                                                                                                                                              | BFB                     |                          |
| <u>Preparation and analysis hold times met</u>                                                                                                                    | BFB                     |                          |
| <u>Preparation deviations and re-preparations noted when performed</u>                                                                                            | BFB                     |                          |
| <u>Analysis deviations and re-analyses noted when performed</u>                                                                                                   | BFB                     |                          |
| <u>Sample dilution factors noted on reports</u>                                                                                                                   | BFB                     |                          |
| <u>Electronic records in HBN transcription accuracy and completeness checked</u>                                                                                  | BFB                     |                          |
| <u>Preparation and analysis calculations checked</u>                                                                                                              | BFB                     |                          |
| <u>NCRs are completed as necessary</u> NC/CAR#                                                                                                                    | N/A                     |                          |
| <u>Report forms are complete and accurate</u>                                                                                                                     | BFB                     |                          |
| <u>Manual integrations checked</u>                                                                                                                                | BFB                     |                          |

|          |                               |    |          | seqnce |       |   |       |              |  |
|----------|-------------------------------|----|----------|--------|-------|---|-------|--------------|--|
| KE52BFB  | 12/19/2018 11:42              | BB | TO15KH18 | 3      | 25.99 | 1 | WATER | BFB          |  |
|          | 0                             |    |          |        |       |   |       |              |  |
|          | COMMENTS: 44228               |    |          |        |       |   |       |              |  |
| KE53LCS  | 12/19/2018 12:21              | BB | TO15KH18 | 2      | 25.99 | 1 | WATER | 10 PPB LCS   |  |
|          | 277824                        |    |          |        |       |   |       |              |  |
|          | COMMENTS: (200ml) 45202 44228 |    |          |        |       |   |       |              |  |
| KE54LCSD | 12/19/2018 13:01              | BB | TO15KH18 | 2      | 25.99 | 1 | WATER | 10 PPB LCSD  |  |
|          | 280576                        |    |          |        |       |   |       |              |  |
|          | COMMENTS: (200ml) 45202 44228 |    |          |        |       |   |       |              |  |
| KE55RLVS | 12/19/2018 13:39              | BB | TO15KH18 | 2      | 25.99 | 1 | WATER | 0.5 PPB RLVS |  |
|          | 256960                        |    |          |        |       |   |       |              |  |
|          | COMMENTS: (10ml) 45202 44228  |    |          |        |       |   |       |              |  |
| KE56BLK  | 12/19/2018 14:18              | BB | TO15KH18 | 3      | 25.99 | 1 | WATER | BLANK        |  |
|          | 235200                        |    |          |        |       |   |       |              |  |
|          | COMMENTS: 44228               |    |          |        |       |   |       |              |  |
| KE57BLK  | 12/19/2018 16:01              | BB | TO15KH18 | 3      | 25.99 | 1 | WATER | BLANK        |  |
|          | 225536                        |    |          |        |       |   |       |              |  |
|          | COMMENTS: 44228               |    |          |        |       |   |       |              |  |
| KE58I001 | 12/19/2018 17:01              | BB | TO15KH18 | 4      | 25.99 | 1 | WATER | 1835379001   |  |
|          | 221312                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE59I002 | 12/19/2018 17:41              | BB | TO15KH18 | 14     | 25.99 | 1 | WATER | 1835379002   |  |
|          | 230912                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE60I003 | 12/19/2018 18:21              | BB | TO15KH18 | 15     | 25.99 | 1 | WATER | 1835379003   |  |
|          | 232640                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE61I004 | 12/19/2018 19:01              | BB | TO15KH18 | 16     | 25.99 | 1 | WATER | 1835379004   |  |
|          | 232064                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE62I005 | 12/19/2018 19:41              | BB | TO15KH18 | 3      | 25.99 | 1 | WATER | 1835379005   |  |
|          | 238272                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE63I001 | 12/19/2018 21:43              | BB | TO15KH18 | 9      | 25.99 | 1 | WATER | 1835290001   |  |
|          | 242816                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE64I002 | 12/19/2018 22:24              | BB | TO15KH18 | 10     | 25.99 | 1 | WATER | 1835290002   |  |
|          | 265344                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE65I003 | 12/19/2018 23:04              | BB | TO15KH18 | 11     | 25.99 | 1 | WATER | 1835290003   |  |
|          | 287232                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |
| KE66I002 | 12/19/2018 23:42              | BB | TO15KH18 | 10     | 25.99 | 1 | WATER | 1835290002   |  |
|          | 267520                        |    |          |        |       |   |       |              |  |
|          | COMMENTS: 1:20 dil 10ml       |    |          |        |       |   |       |              |  |
| KE67I004 | 12/20/2018 00:21              | BB | TO15KH18 | 12     | 25.99 | 1 | WATER | 1835290004   |  |
|          | 259904                        |    |          |        |       |   |       |              |  |
|          | COMMENTS:                     |    |          |        |       |   |       |              |  |

seqnce

|          |                                   |    |          |    |       |   |       |            |
|----------|-----------------------------------|----|----------|----|-------|---|-------|------------|
| KE68I002 | 12/20/2018 01:02                  | BB | TO15KH18 | 6  | 25.99 | 1 | WATER | 1835293002 |
|          | 247232                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE69I004 | 12/20/2018 01:42                  | BB | TO15KH18 | 8  | 25.99 | 1 | WATER | 1835293004 |
|          | 277184                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE70I001 | 12/20/2018 02:23                  | BB | TO15KH18 | 13 | 25.99 | 1 | WATER | 1835256003 |
|          | 334592                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE71I001 | 12/20/2018 03:02                  | BB | TO15KH18 | 13 | 25.99 | 1 | WATER | 1835256003 |
|          | 249856                            |    |          |    |       |   |       |            |
|          | COMMENTS: 1:20 DIL 10ML           |    |          |    |       |   |       |            |
| KE72I003 | 12/20/2018 03:40                  | BB | TO15KH18 | 7  | 25.99 | 1 | WATER | 1835293003 |
|          | 241280                            |    |          |    |       |   |       |            |
|          | COMMENTS: 1:20 dil 10ml           |    |          |    |       |   |       |            |
| KE74I004 | 12/20/2018 07:57                  | BB | TO15KH18 | 8  | 25.99 | 1 | WATER | 1835293004 |
|          | 0                                 |    |          |    |       |   |       |            |
|          | COMMENTS: 1:20 dil 10ml           |    |          |    |       |   |       |            |
| KE75I001 | 12/20/2018 08:42                  | BB | TO15KH18 | 4  | 25.99 | 1 | WATER | 1835293001 |
|          | 240128                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE76I003 | 12/20/2018 09:19                  | BB | TO15KH18 | 7  | 25.99 | 1 | WATER | 1835293003 |
|          | 279808                            |    |          |    |       |   |       |            |
|          | COMMENTS:                         |    |          |    |       |   |       |            |
| KE77I001 | 12/20/2018 09:58                  | BB | TO15KH18 | 16 | 25.99 | 1 | WATER | 1835288001 |
|          | 219264                            |    |          |    |       |   |       |            |
|          | COMMENTS: 1:1000 dil 20ml of 100x |    |          |    |       |   |       |            |

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE63I001.D Vial: 9  
 Acq Time : 12/19/2018 21:43 Operator: BB  
 Sample : 1835290001 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:42:07 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.40  | 130  | 242816   | 20.00 | ppb   | 80.47 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3226327  | 20.00 | ppb   | 85.71 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2636656  | 20.00 | ppb   | 93.90 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1431353  | 19.32 | ppb   | 96.60%    |

| Target Compounds              | R.T.  | QIon | Response | Conc         | Units | Qvalue |
|-------------------------------|-------|------|----------|--------------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 66562    | 0.4976       | ppb   | 96     |
| 3) Chloromethane              | 0.00  | 50   |          | Not Detected |       |        |
| 4) Freon 114                  | 0.00  | 135  |          | Not Detected |       |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          | Not Detected |       |        |
| 6) 1,3-Butadiene              | 0.00  | 54   |          | Not Detected |       |        |
| 7) Bromomethane               | 0.00  | 94   |          | Not Detected |       |        |
| 8) Chloroethane               | 0.00  | 64   |          | Not Detected |       |        |
| 9) Acetone                    | 6.59  | 43   | 1244452  | 16.4869      | ppb   | 99     |
| 10) Trichlorofluoromethane    | 6.78  | 101  | 26639    | 0.2235       | ppb   | 100    |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          | Not Detected |       |        |
| 12) Methylene Chloride        | 7.46  | 84   | 9704     | 0.2423       | ppb   | 96     |
| 13) Freon 113                 | 0.00  | 151  |          | Not Detected |       |        |
| 14) Carbon Disulfide          | 0.00  | 76   |          | Not Detected |       |        |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          | Not Detected |       |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          | Not Detected |       |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          | Not Detected |       |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          | Not Detected |       |        |
| 19) 2-Butanone                | 8.82  | 43   | 102658   | 1.0656       | ppb   | 98     |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          | Not Detected |       |        |
| 22) Ethyl Acetate             | 0.00  | 61   |          | Not Detected |       |        |
| 23) Hexane                    | 9.46  | 57   | 26068    | 0.3219       | ppb   | 92     |
| 24) Chloroform                | 0.00  | 83   |          | Not Detected |       |        |
| 25) Tetrahydrofuran           | 9.90  | 42   | 33628    | 0.6278       | ppb   | 98     |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          | Not Detected |       |        |
| 27) 1,1,1-Trichloroethane     | 10.48 | 97   | 76875    | 0.7594       | ppb   | 98     |
| 28) Benzene                   | 10.90 | 78   | 68560    | 0.5107       | ppb   | 99     |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          | Not Detected |       |        |
| 30) Cyclohexane               | 0.00  | 84   |          | Not Detected |       |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          | Not Detected |       |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          | Not Detected |       |        |
| 33) Trichloroethene           | 0.00  | 130  |          | Not Detected |       |        |
| 34) Heptane                   | 12.16 | 71   | 10206    | 0.1974       | ppb # | 82     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          | Not Detected |       |        |
| 36) 4-Methyl-2-Pentanone      | 0.00  | 43   |          | Not Detected |       |        |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          | Not Detected |       |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 39) Toluene                   | 13.68 | 91   | 208144   | 1.3038       | ppb   | 98     |
| 40) 2-Hexanone                | 0.00  | 43   |          | Not Detected |       |        |
| 41) Dibromochloromethane      | 0.00  | 129  |          | Not Detected |       |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          | Not Detected |       |        |
| 43) Tetrachloroethene         | 14.84 | 166  | 13220    | 0.1671       | ppb   | 95     |
| 45) Chlorobenzene             | 0.00  | 112  |          | Not Detected |       |        |
| 46) Ethylbenzene              | 15.93 | 91   | 47706    | 0.2275       | ppb   | 98     |
| 47) m,p-Xylene                | 16.10 | 91   | 177574   | 1.0674       | ppb   | 98     |
| 48) Bromoform                 | 0.00  | 173  |          | Not Detected |       |        |
| 49) Styrene                   | 16.51 | 104  | 72397    | 0.6467       | ppb   | 98     |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          | Not Detected |       |        |

(#)= qualifier out of range (m)= manual integration

KE63I001.D TO15KH18.m Thu Dec 20 14:54:38 2018



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE63I001.D Vial: 9  
Acq Time : 12/19/2018 21:43 Operator: BB  
Sample : 1835290001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:42:07 2018 Results File: T015KH18.RES

Quant Method : I:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc Unit    | Qvalue |
|------------------------------|-------|------|----------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 57296    | 0.3526 ppb   | 97     |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |        |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 58167    | 0.3324 ppb   | 98     |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |        |

-----  
(#) = qualifier out of range (m) = manual integration

KE63I001.D T015KH18.m Thu Dec 20 14:54:38 2018

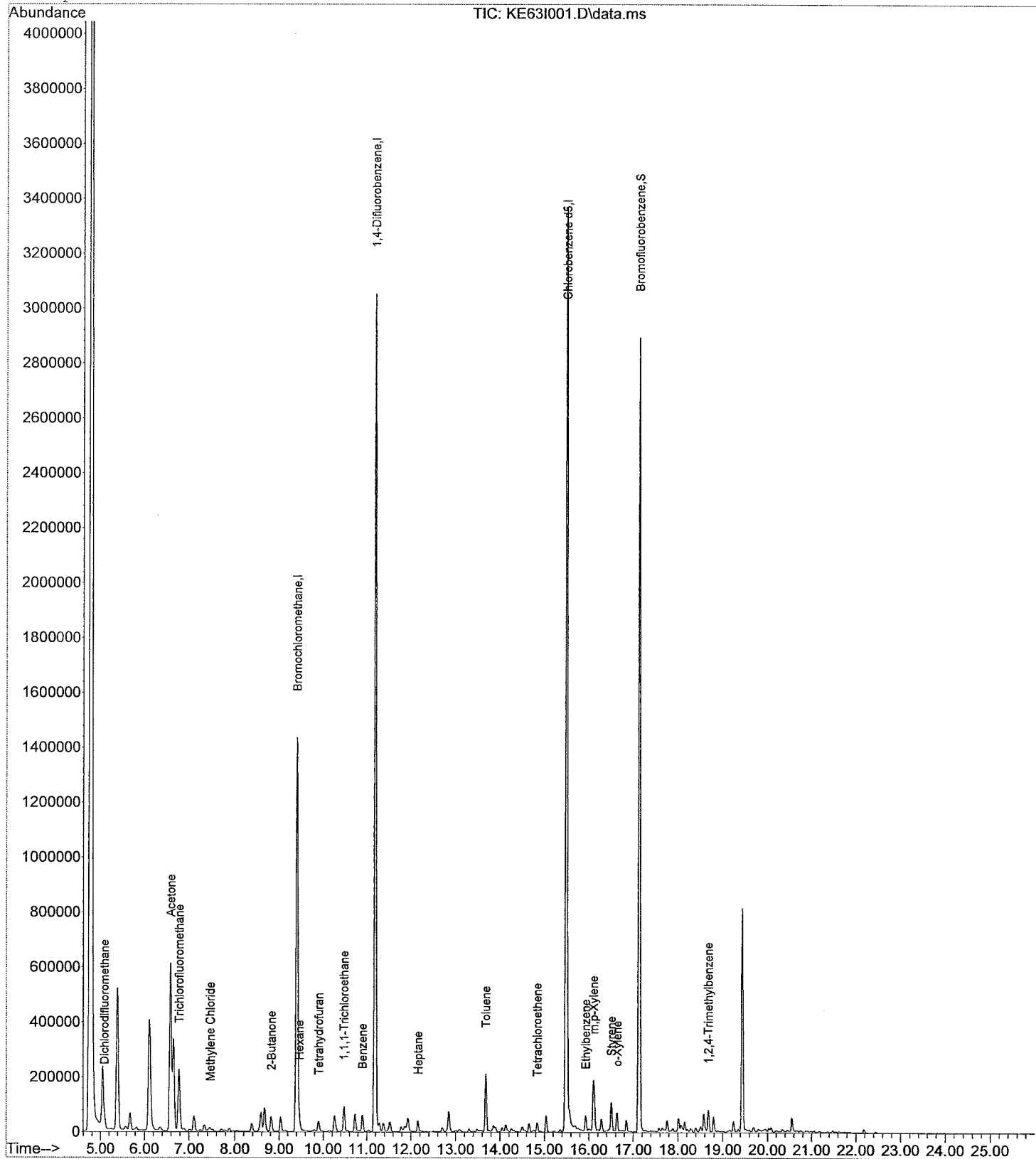
## Quantitation Report

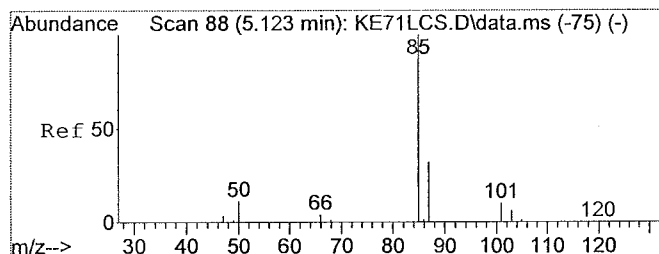
Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE63I001.D Vial: 9  
Acq Time : 12/19/2018 21:43 Operator: BB  
Sample : 1835290001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:42:07 2018

Results File: T015KH18.RES

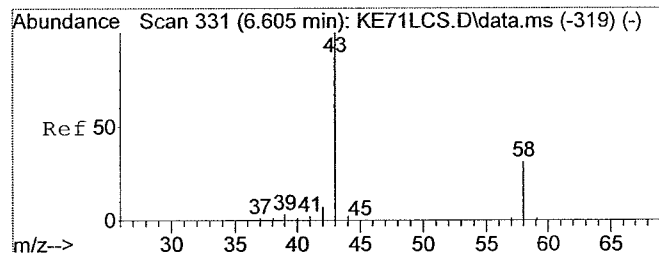
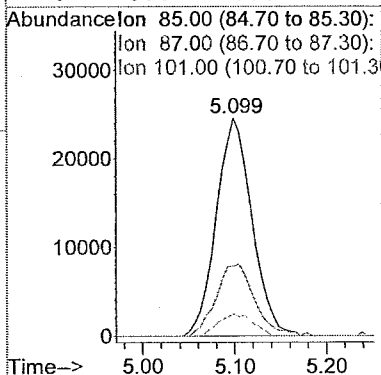
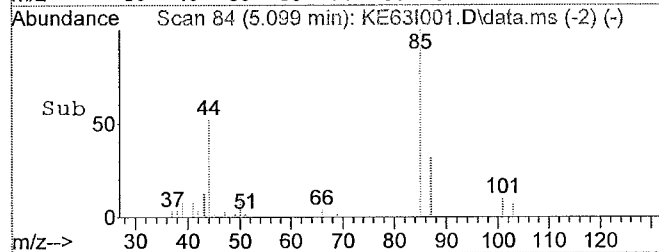
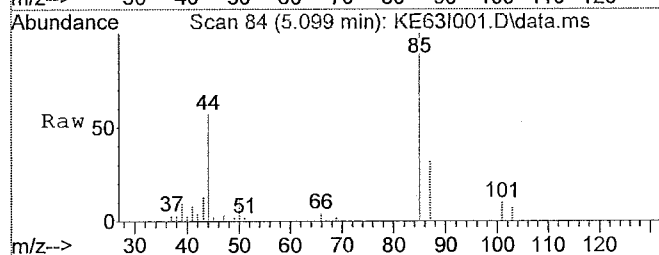
Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration





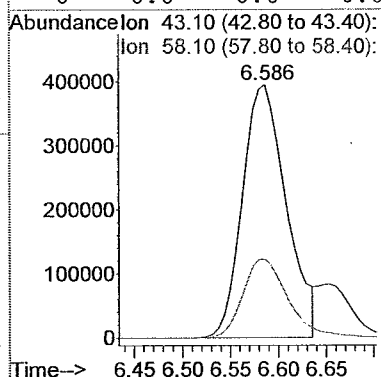
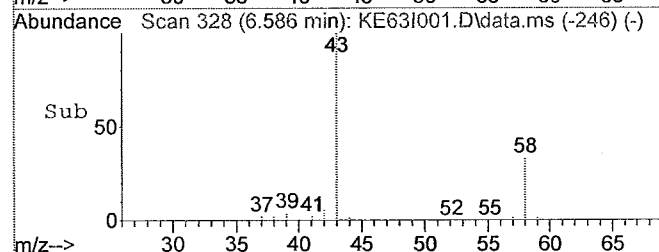
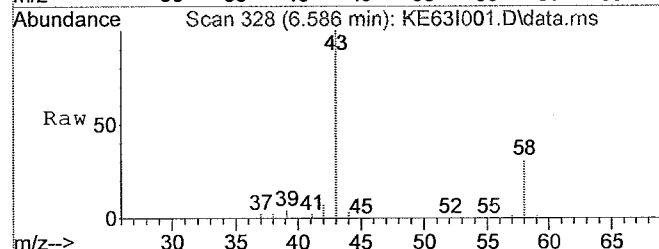
#2  
Dichlorodifluoromethane  
Concen: 0.50 ppb  
RT: 5.10 min Scan# 84  
Delta R.T. -0.00 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

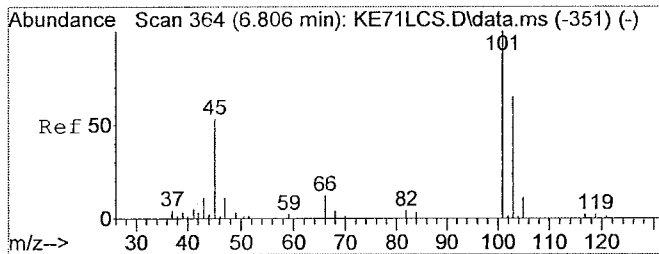
Tgt Ion: 85 Resp: 66562  
Ion Ratio Lower Upper  
85 100  
87 35.5 26.1 39.1  
101 9.8 8.1 12.1  
0 0.0 0.0 0.0



#9  
Acetone  
Concen: 16.49 ppb  
RT: 6.59 min Scan# 328  
Delta R.T. 0.00 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

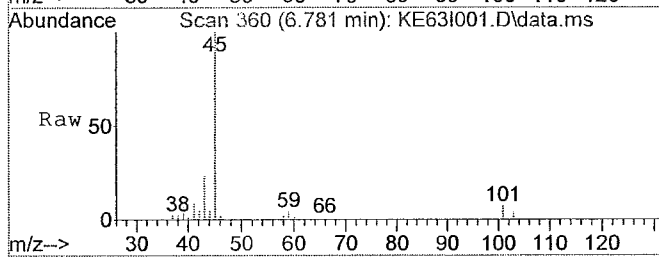
Tgt Ion: 43.1 Resp: 1244452  
Ion Ratio Lower Upper  
43 100  
58 32.0 25.1 37.7  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



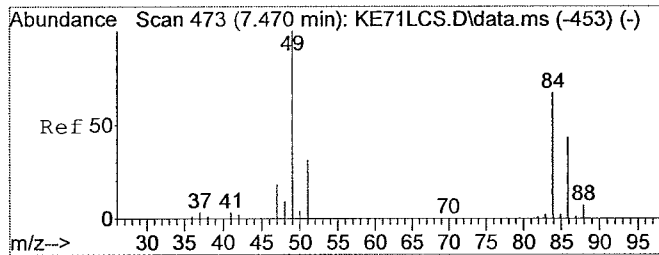
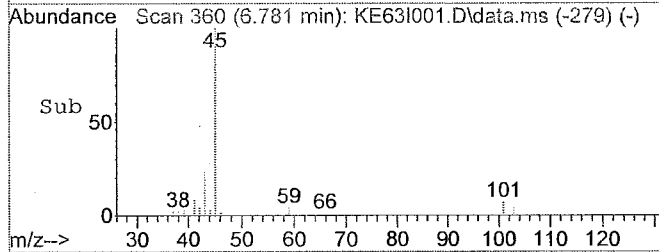
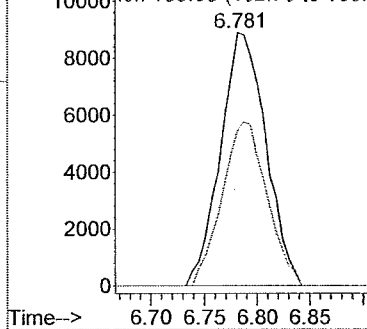


#10  
Trichlorofluoromethane  
Concen: 0.22 ppb  
RT: 6.78 min Scan# 360  
Delta R.T. -0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

|             |       |           |
|-------------|-------|-----------|
| Tgt Ion:101 | Resp: | 26639     |
| Ion Ratio   | Lower | Upper     |
| 101         | 100   |           |
| 103         | 64.4  | 51.6 77.4 |
| 0           | 0.0   | 0.0 0.0   |
| 0           | 0.0   | 0.0 0.0   |

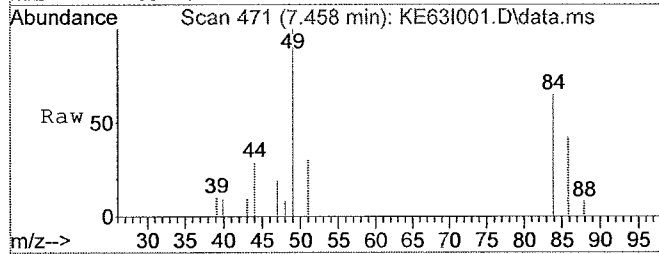


Abundance Ion 101.00 (100.70 to 101.30)  
Ion 103.00 (102.70 to 103.30)



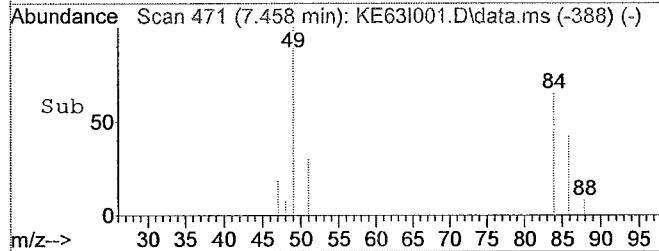
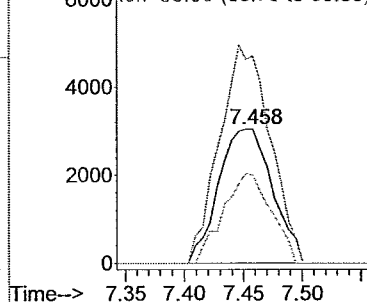
#12  
Methylene Chloride  
Concen: 0.24 ppb  
RT: 7.46 min Scan# 471  
Delta R.T. 0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

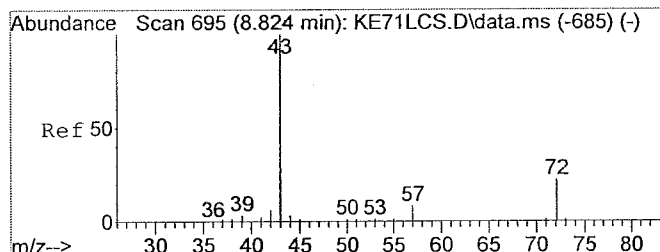
|            |       |             |
|------------|-------|-------------|
| Tgt Ion:84 | Resp: | 9704        |
| Ion Ratio  | Lower | Upper       |
| 84         | 100   |             |
| 49         | 153.1 | 119.1 178.7 |
| 86         | 59.7  | 52.0 78.0   |
| 0          | 0.0   | 0.0 0.0     |



Abundance Ion 84.00 (83.70 to 84.30):

Ion 49.00 (48.70 to 49.30):  
Ion 86.00 (85.70 to 86.30):

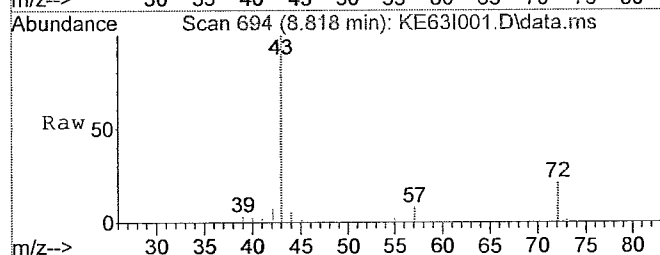




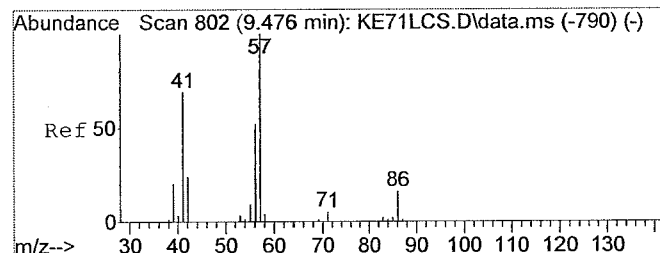
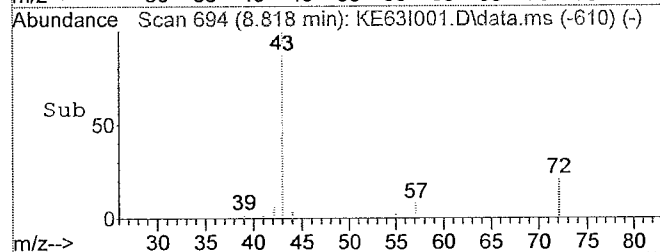
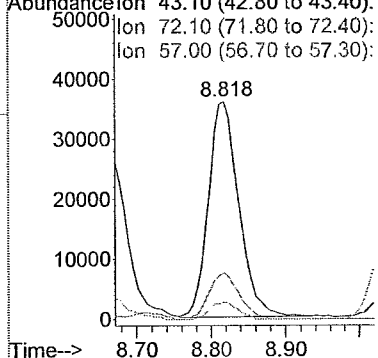
#19  
2-Butanone  
Concen: 1.07 ppb  
RT: 8.82 min Scan# 694  
Delta R.T. 0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

Tgt Ion: 43.1 Resp: 102658

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 72  | 21.2  | 17.9  | 26.9  |
| 57  | 7.2   | 6.4   | 9.6   |
| 0   | 0.0   | 0.0   | 0.0   |



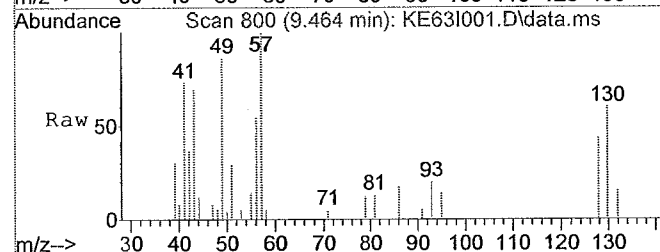
Abundance Ion 43.10 (42.80 to 43.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 57.00 (56.70 to 57.30):



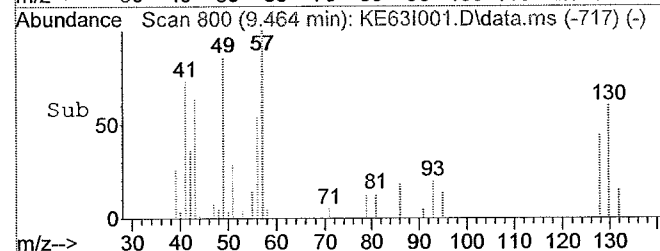
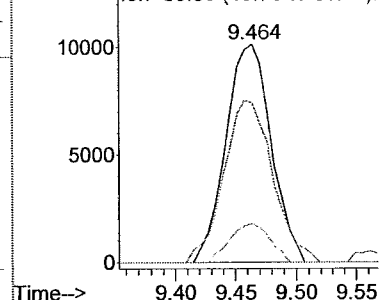
#23  
Hexane  
Concen: 0.32 ppb  
RT: 9.46 min Scan# 800  
Delta R.T. 0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

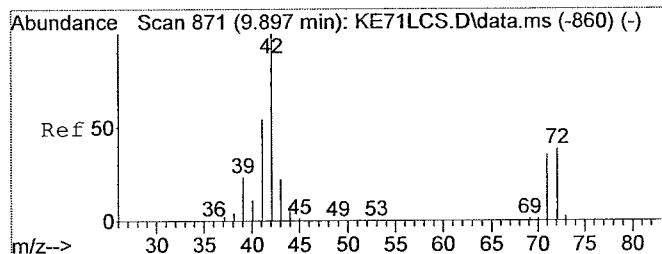
Tgt Ion: 57.1 Resp: 26068

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 57  | 100   |       |       |
| 41  | 80.6  | 58.6  | 88.0  |
| 86  | 15.6  | 14.2  | 21.4  |
| 0   | 0.0   | 0.0   | 0.0   |



Abundance Ion 57.10 (56.80 to 57.40):  
Ion 41.00 (40.70 to 41.30):  
Ion 86.00 (85.70 to 86.30):

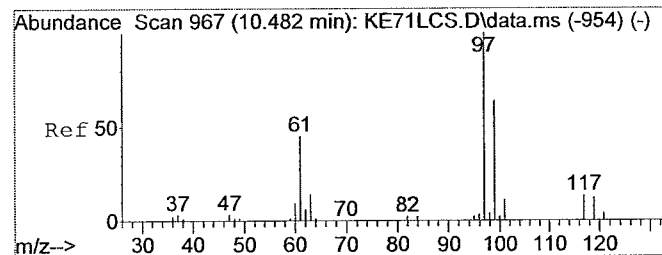
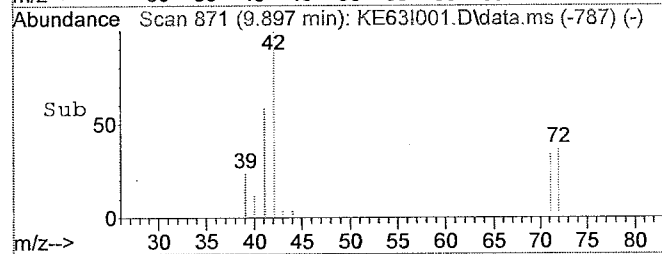
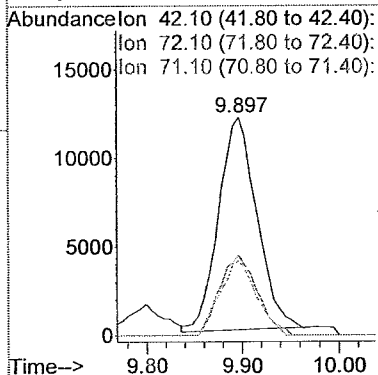
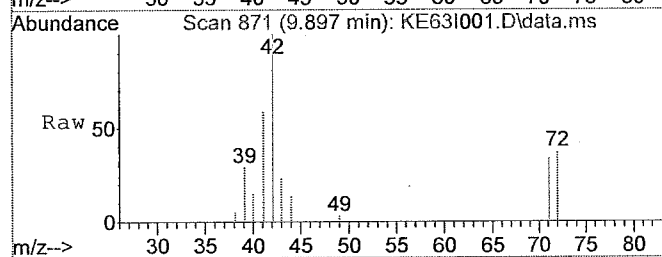




#25  
Tetrahydrofuran  
Concen: 0.63 ppb  
RT: 9.90 min Scan# 871  
Delta R.T. 0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

Tgt Ion: 42.1 Resp: 33628

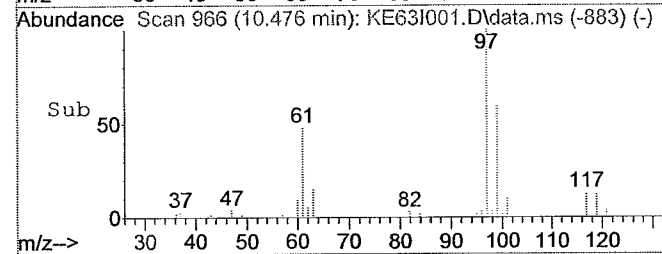
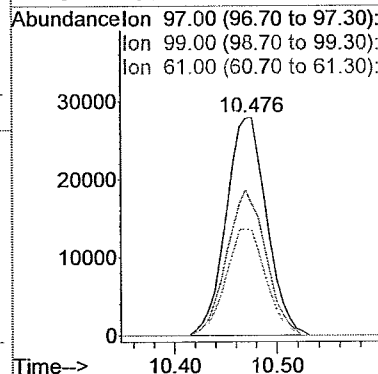
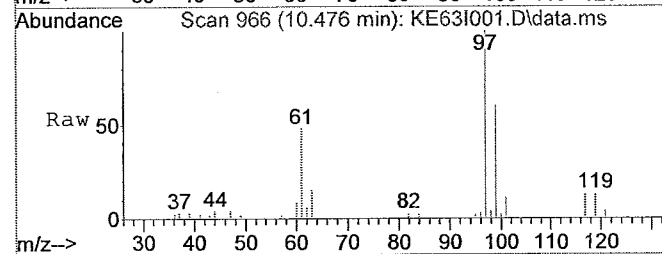
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 42  | 100   |       |       |
| 72  | 36.9  | 29.7  | 44.5  |
| 71  | 33.4  | 28.1  | 42.1  |
| 0   | 0.0   | 0.0   | 0.0   |

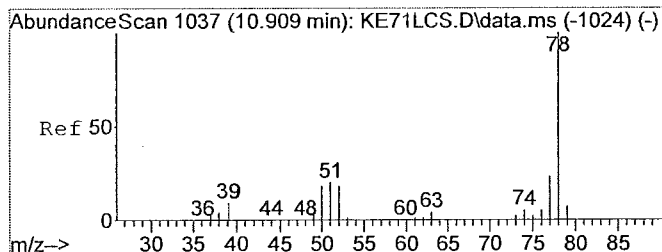


#27  
1,1,1-Trichloroethane  
Concen: 0.76 ppb  
RT: 10.48 min Scan# 966  
Delta R.T. 0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

Tgt Ion: 97 Resp: 76875

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 97  | 100   |       |       |
| 99  | 64.4  | 51.6  | 77.4  |
| 61  | 48.4  | 35.8  | 53.6  |
| 0   | 0.0   | 0.0   | 0.0   |

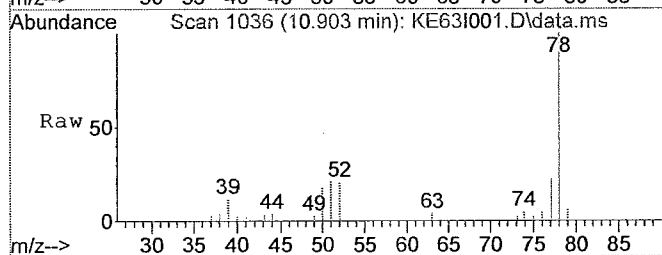




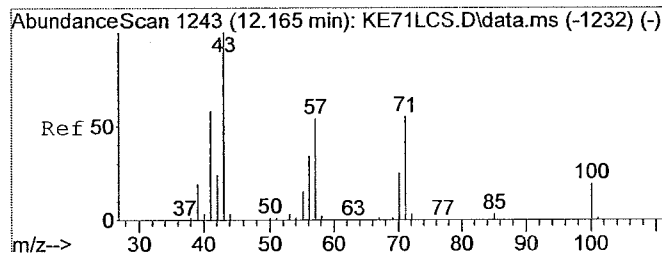
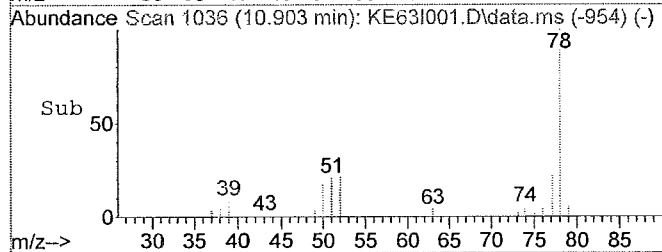
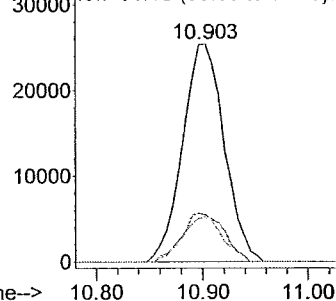
#28  
Benzene  
Concen: 0.51 ppb  
RT: 10.90 min Scan# 1036  
Delta R.T. 0.00 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

Tgt Ion: 78.1 Resp: 68560

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 78  | 100   |       |       |
| 77  | 22.8  | 18.6  | 28.0  |
| 51  | 20.0  | 15.7  | 23.5  |
| 0   | 0.0   | 0.0   | 0.0   |



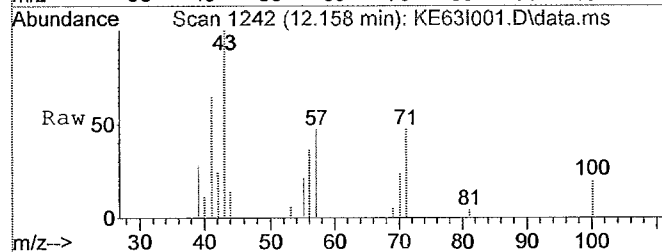
Abundance Ion 78.10 (77.80 to 78.40):  
Ion 77.10 (76.80 to 77.40):  
Ion 51.10 (50.80 to 51.40):



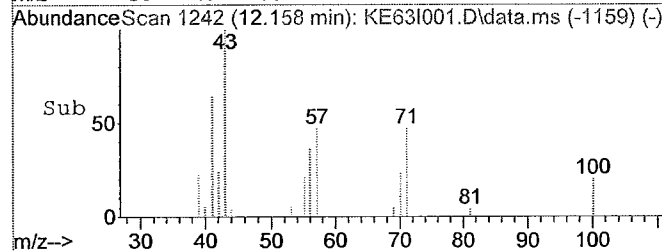
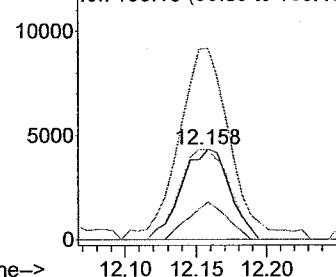
#34  
Heptane  
Concen: 0.20 ppb  
RT: 12.16 min Scan# 1242  
Delta R.T. 0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

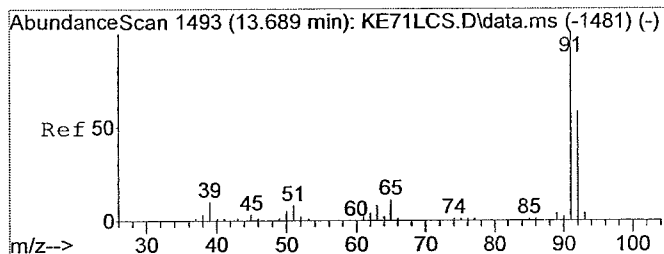
Tgt Ion: 71.1 Resp: 10206

| Ion | Ratio | Lower | Upper  |
|-----|-------|-------|--------|
| 71  | 100   |       |        |
| 43  | 226.5 | 148.1 | 222.1# |
| 57  | 104.1 | 79.4  | 119.0  |
| 100 | 33.2  | 28.0  | 42.0   |



Abundance Ion 71.10 (70.80 to 71.40):  
Ion 43.10 (42.80 to 43.40):  
Ion 57.10 (56.80 to 57.40):  
Ion 100.10 (99.80 to 100.40):

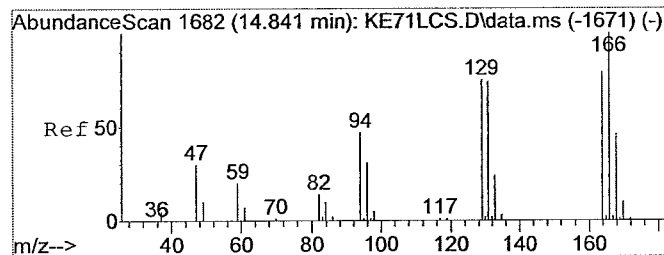
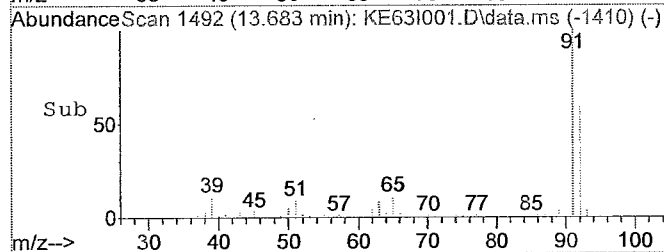
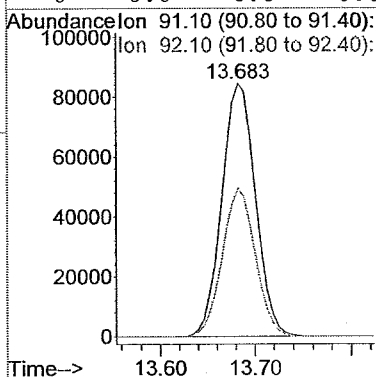
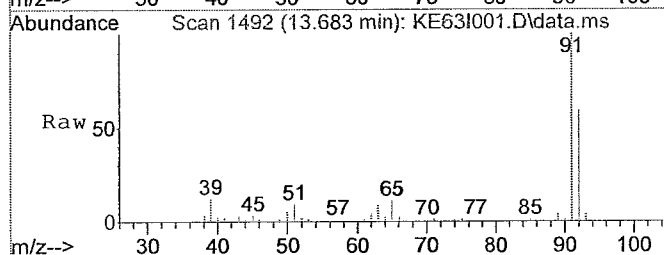




#39  
Toluene  
Concen: 1.30 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. 0.00 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

Tgt Ion:91.1 Resp: 208144

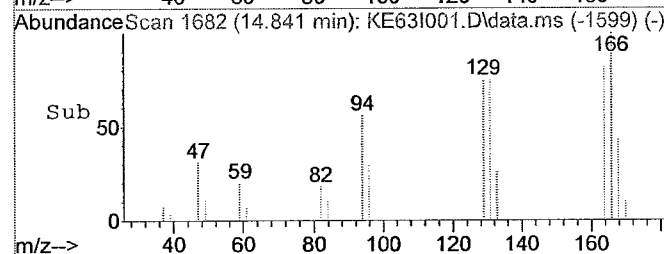
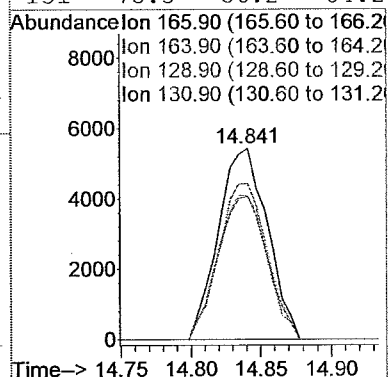
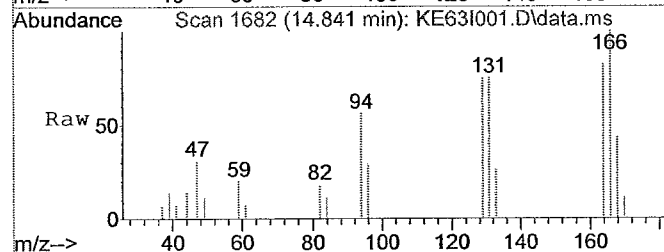
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 92  | 57.4  | 46.9  | 70.3  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



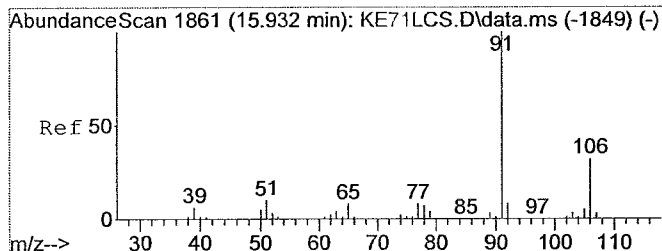
#43  
Tetrachloroethene  
Concen: 0.17 ppb  
RT: 14.84 min Scan# 1682  
Delta R.T. 0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

Tgt Ion:165.9 Resp: 13220

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 166 | 100   |       |       |
| 164 | 79.4  | 62.3  | 93.5  |
| 129 | 78.1  | 58.4  | 87.6  |
| 131 | 75.3  | 56.2  | 84.2  |



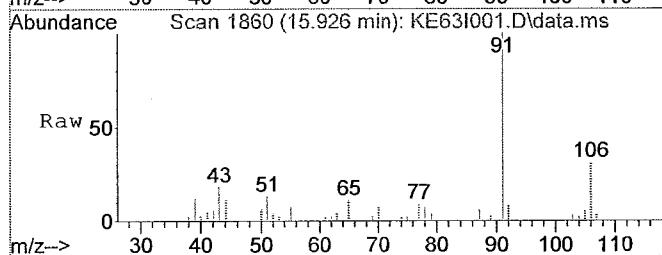




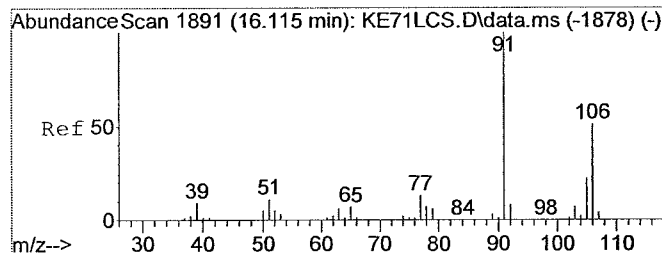
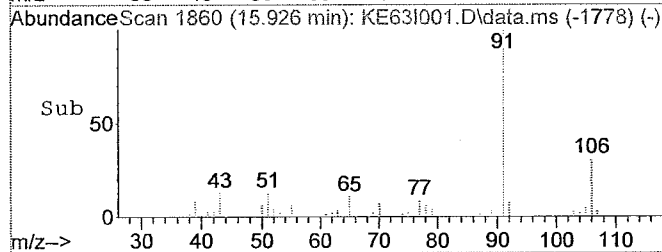
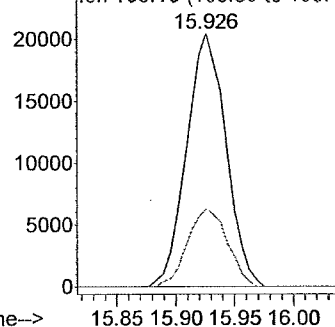
#46  
Ethylbenzene  
Concen: 0.23 ppb  
RT: 15.93 min Scan# 1860  
Delta R.T. 0.00 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

Tgt Ion: 91.1 Resp: 47706

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 31.2  | 25.8  | 38.8  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



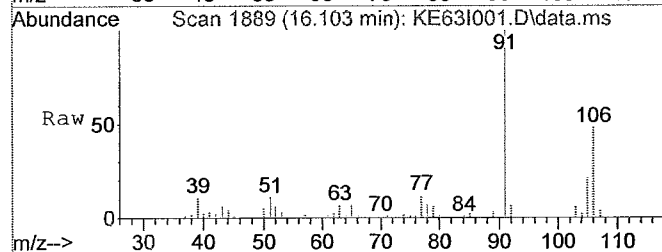
AbundanceIon 91.10 (90.80 to 91.40):  
Ion 106.10 (105.80 to 106.40):



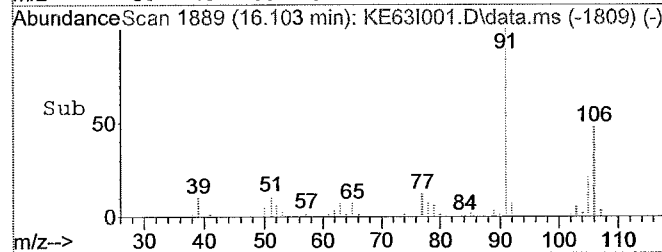
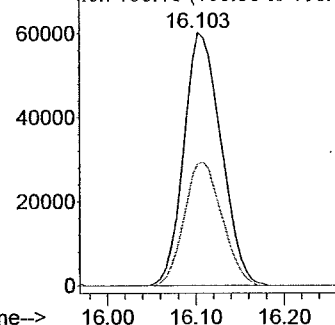
#47  
m,p-Xylene  
Concen: 1.07 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

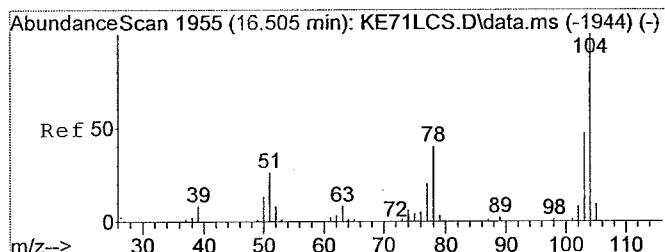
Tgt Ion: 91.1 Resp: 177574

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 49.5  | 40.5  | 60.7  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |

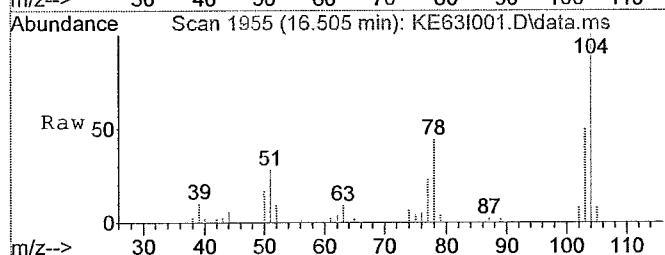


AbundanceIon 91.10 (90.80 to 91.40):  
Ion 106.10 (105.80 to 106.40):



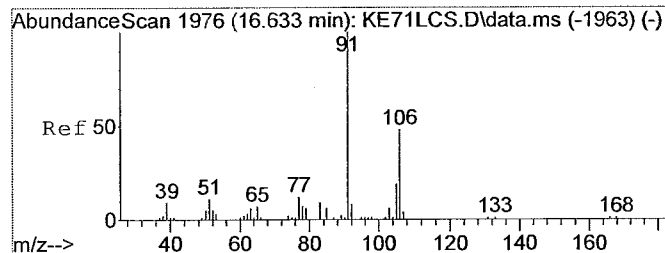
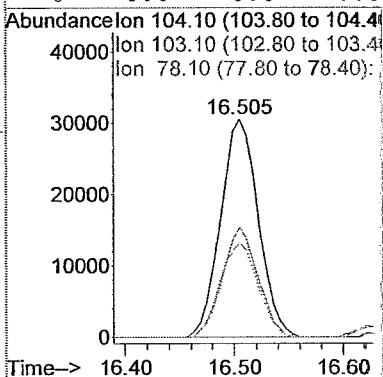
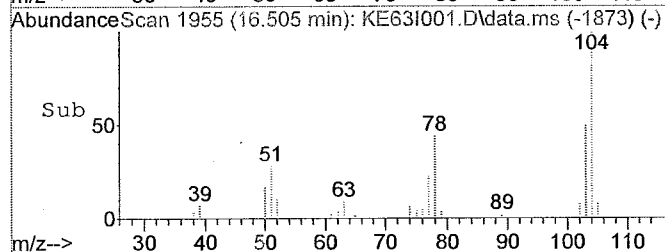


#49  
Styrene  
Concen: 0.65 ppb  
RT: 16.51 min Scan# 1955  
Delta R.T. 0.00 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43

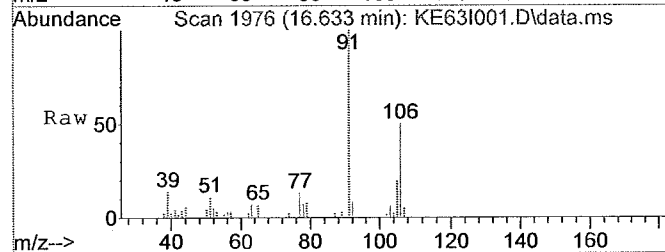


Tgt Ion:104.1 Resp: 72397

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 104 | 100   |       |       |
| 103 | 47.8  | 37.6  | 56.4  |
| 78  | 42.6  | 32.3  | 48.5  |
| 0   | 0.0   | 0.0   | 0.0   |

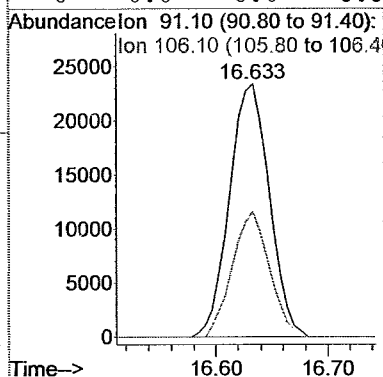
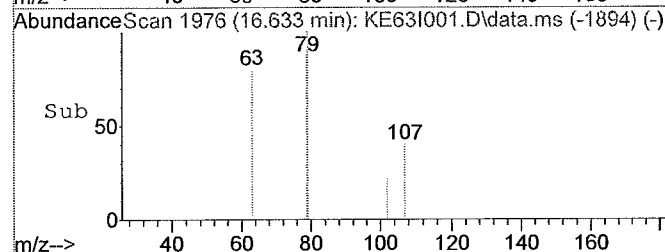


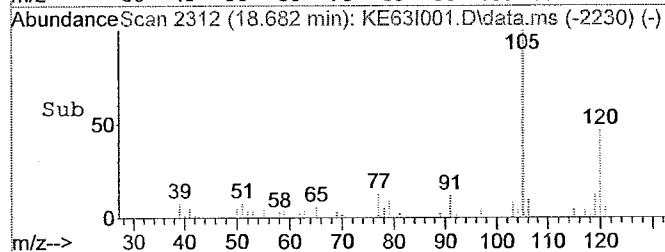
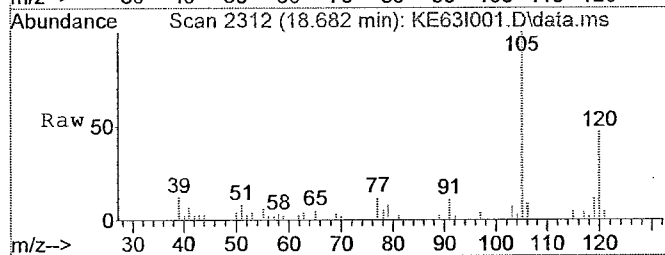
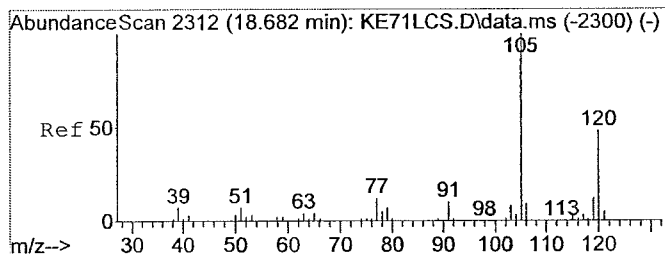
#51  
o-Xylene  
Concen: 0.35 ppb  
RT: 16.63 min Scan# 1976  
Delta R.T. 0.00 min  
Lab File: KE63I001.D  
Acq: 12/19/2018 21:43



Tgt Ion:91.1 Resp: 57296

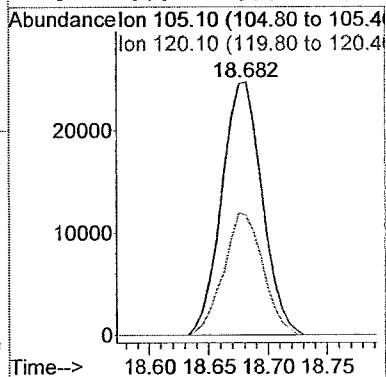
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 45.9  | 38.2  | 57.4  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |





#55  
 1,2,4-Trimethylbenzene  
 Concen: 0.33 ppb  
 RT: 18.68 min Scan# 2312  
 Delta R.T. 0.00 min  
 Lab File: KE63I001.D  
 Acq: 12/19/2018 21:43

Tgt Ion:105.1 Resp: 58167  
 Ion Ratio Lower Upper  
 105 100  
 120 47.1 38.7 58.1  
 0 0.0 0.0 0.0  
 0 0.0 0.0 0.0



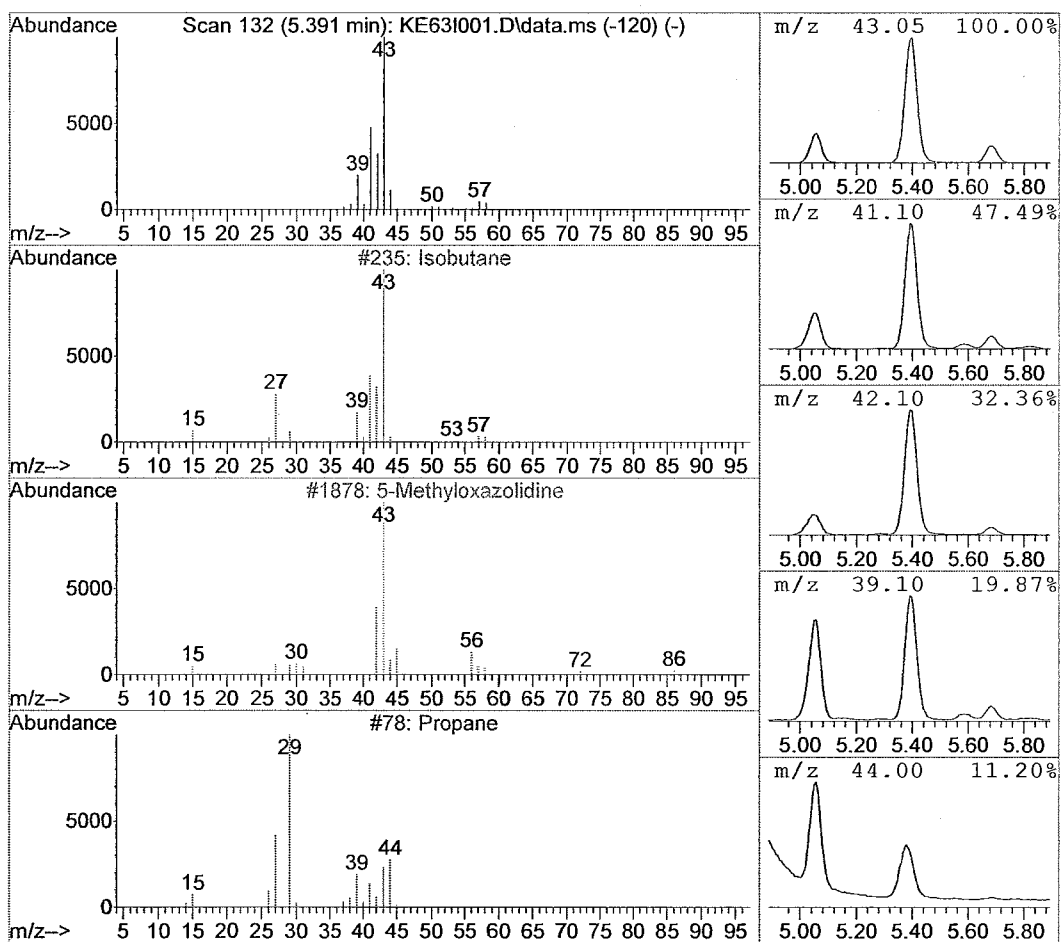
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE63I001.D Vial: 9  
Acq Time : 12/19/2018 21:43 Operator: BB  
Sample : 1835290001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 5.39 | 7.54 ppb | 1589466 | Bromochloromethane | 4216670   |

| Hit# of 20 | Tentative ID               | Ref#  | CAS#        | Qual  |
|------------|----------------------------|-------|-------------|-------|
| 1          | Isobutane                  | 235   | 000075-28-5 | 72.00 |
| 2          | 5-Methyloxazolidine        | 1878  | 058328-22-6 | 9.00  |
| 3          | Propane                    | 78    | 000074-98-6 | 4.00  |
| 4          | Isopropylsulfonyl chloride | 19275 | 010147-37-2 | 4.00  |
| 5          | Cyclobutylamine            | 609   | 002516-34-9 | 4.00  |



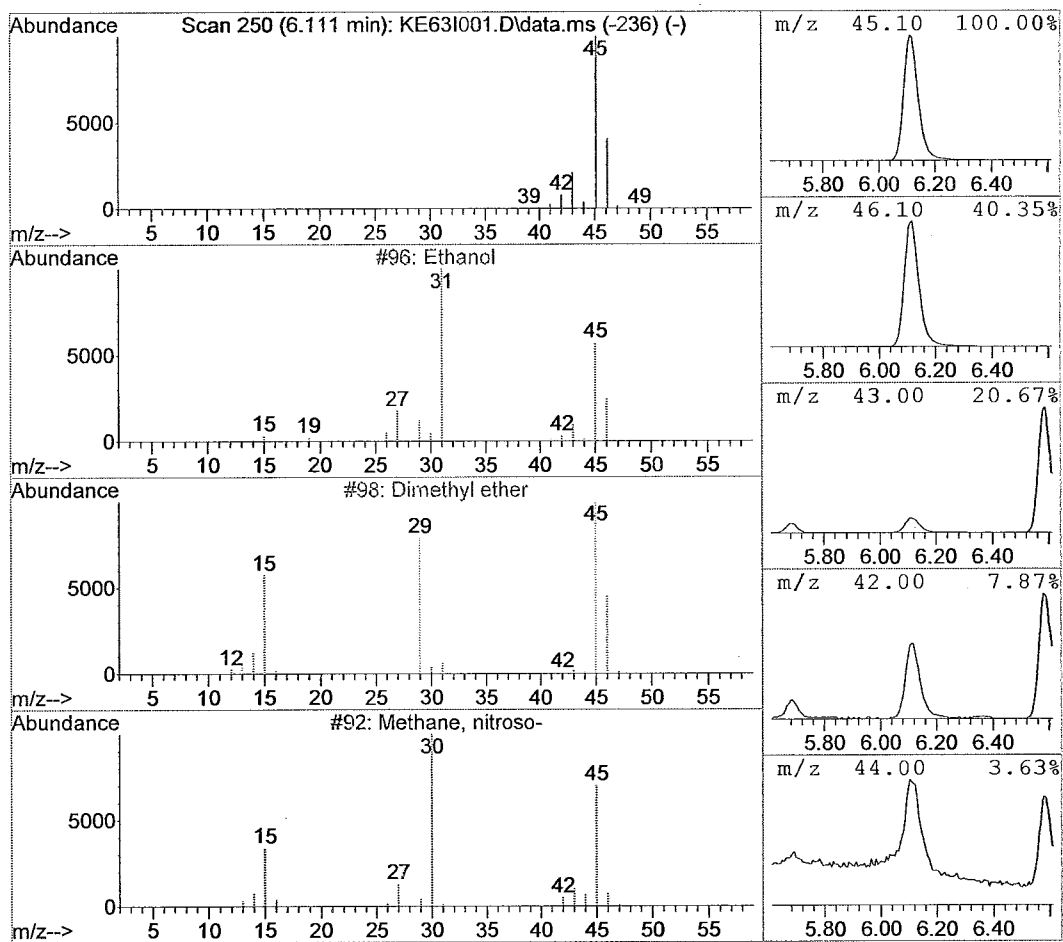
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE63I001.D Vial: 9  
Acq Time : 12/19/2018 21:43 Operator: BB  
Sample : 1835290001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 6.11 | 6.91 ppb | 1457542 | Bromochloromethane | 4216670   |

| Hit# of 20 | Tentative ID      | Ref# | CAS#        | Qual  |
|------------|-------------------|------|-------------|-------|
| 1          | Ethanol           | 96   | 000064-17-5 | 74.00 |
| 2          | Dimethyl ether    | 98   | 000115-10-6 | 9.00  |
| 3          | Methane, nitroso- | 92   | 000865-40-7 | 4.00  |
| 4          | Formic acid       | 100  | 000064-18-6 | 4.00  |
| 5          | Oxalic acid       | 2224 | 000144-62-7 | 4.00  |

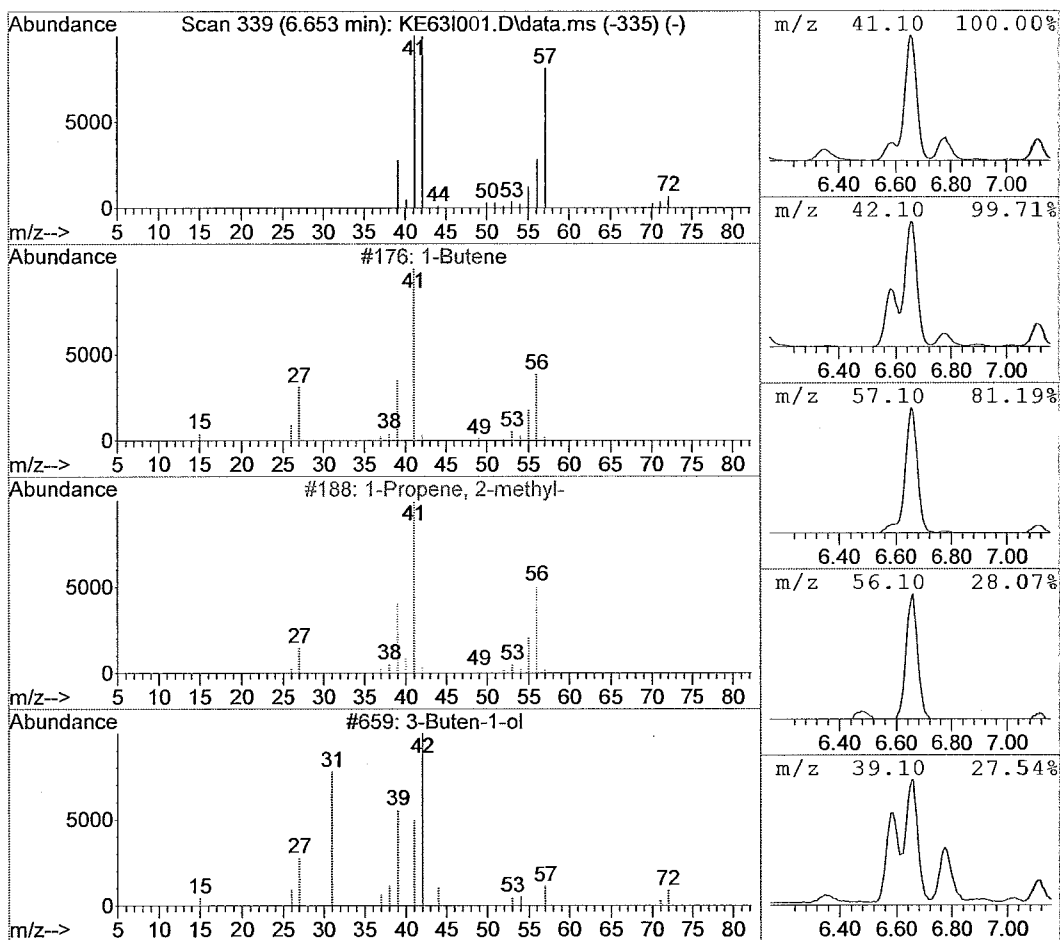


## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE63I001.D Vial: 9  
Acq Time : 12/19/2018 21:43 Operator: BB  
Sample : 1835290001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.       | Conc                       | Area   | Relative to ISTD   | ISTD Area   |       |
|------------|----------------------------|--------|--------------------|-------------|-------|
| 6.65       | 4.17 ppb                   | 878589 | Bromochloromethane | 4216670     |       |
| Hit# of 20 | Tentative ID               |        | Ref#               | CAS#        | Qual  |
| 1          | 1-Butene                   |        | 176                | 000106-98-9 | 14.00 |
| 2          | 1-Propene, 2-methyl-       |        | 188                | 000115-11-7 | 10.00 |
| 3          | 3-Buten-1-ol               |        | 659                | 000627-27-0 | 9.00  |
| 4          | Cyclobutane                |        | 179                | 000287-23-0 | 9.00  |
| 5          | Propane, 2-methyl-2-nitro- |        | 4567               | 000594-70-7 | 9.00  |



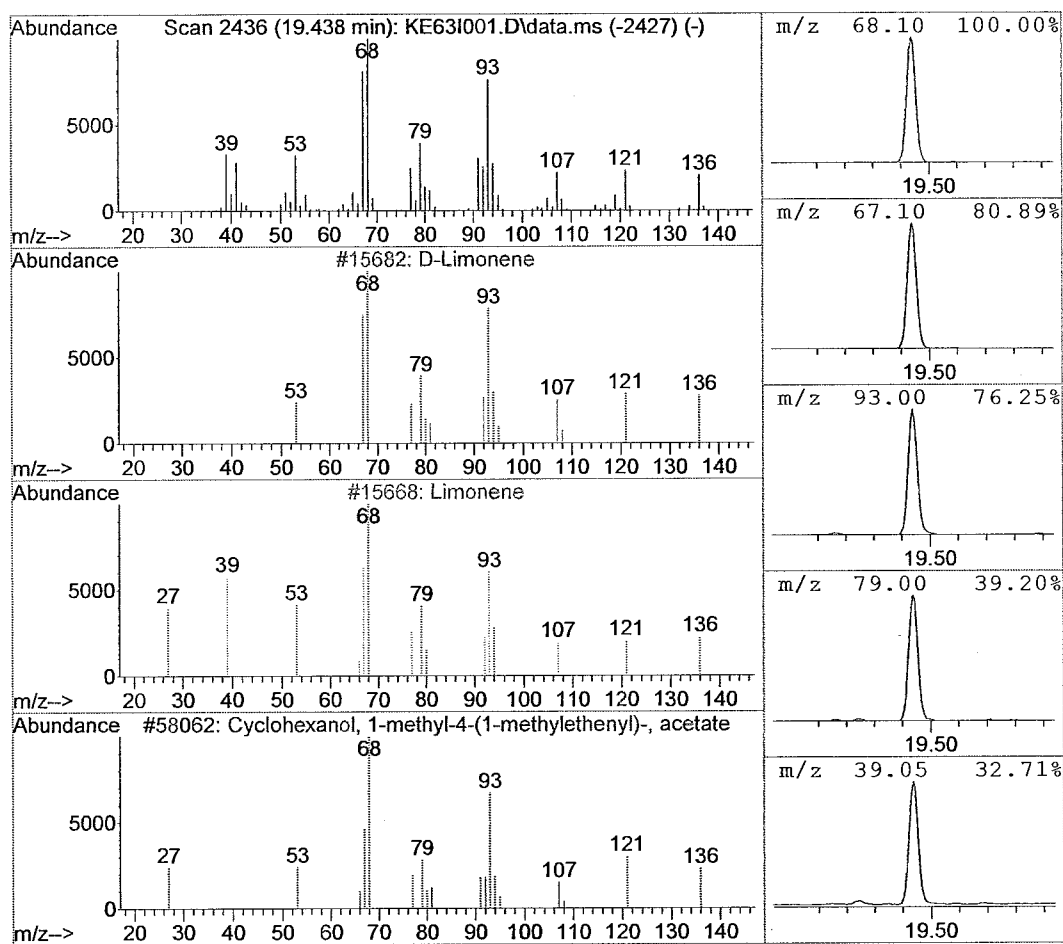
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE63I001.D Vial: 9  
Acq Time : 12/19/2018 21:43 Operator: BB  
Sample : 1835290001 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 19.44 | 4.14 ppb | 1798244 | Chlorobenzene d5 | 8680269   |

| Hit# of 20 | Tentative ID                        | Ref#  | CAS#        | Qual  |
|------------|-------------------------------------|-------|-------------|-------|
| 1          | D-Limonene                          | 15682 | 005989-27-5 | 98.00 |
| 2          | Limonene                            | 15668 | 000138-86-3 | 89.00 |
| 3          | Cyclohexanol, 1-methyl-4-(1-methyle | 58062 | 010198-23-9 | 80.00 |
| 4          | Cyclohexene, 1-methyl-4-(1-methylet | 15879 | 005989-54-8 | 74.00 |
| 5          | Bicyclo[2.2.1]heptane, 7,7-dimethyl | 15886 | 000471-84-1 | 50.00 |



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
 Acq Time : 12/19/2018 22:24 Operator: BB  
 Sample : 1835290002 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:43:14 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area%  |
|-------------------------|-------|------|----------|-------|-------|--------|
| 1) Bromochloromethane   | 9.40  | 130  | 265344   | 20.00 | ppb   | 87.93  |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3520895  | 20.00 | ppb   | 93.54  |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2833140  | 20.00 | ppb   | 100.90 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1505222  | 18.91 | ppb   | 94.54%    |

| Target Compounds              | R.T.  | QIon | Response | Conc         | Units | Qvalue |
|-------------------------------|-------|------|----------|--------------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 63031    | 0.4312       | ppb   | 100    |
| 3) Chloromethane              | 0.00  | 50   |          | Not Detected |       |        |
| 4) Freon 114                  | 0.00  | 135  |          | Not Detected |       |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          | Not Detected |       |        |
| 6) 1,3-Butadiene              | 5.62  | 54   | 29325    | 0.8108       | ppb # | 30     |
| 7) Bromomethane               | 0.00  | 94   |          | Not Detected |       |        |
| 8) Chloroethane               | 0.00  | 64   |          | Not Detected |       |        |
| 9) Acetone                    | 6.54  | 43   | 51600985 | 625.5876     | ppb m |        |
| 10) Trichlorofluoromethane    | 6.78  | 101  | 107023   | 0.8217       | ppb   | 99     |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          | Not Detected |       |        |
| 12) Methylene Chloride        | 7.45  | 84   | 9042     | 0.2066       | ppb   | 89     |
| 13) Freon 113                 | 0.00  | 151  |          | Not Detected |       |        |
| 14) Carbon Disulfide          | 7.79  | 76   | 31929    | 0.2972       | ppb   | 97     |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          | Not Detected |       |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          | Not Detected |       |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          | Not Detected |       |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          | Not Detected |       |        |
| 19) 2-Butanone                | 8.82  | 43   | 125918   | 1.1961       | ppb   | 97     |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          | Not Detected |       |        |
| 22) Ethyl Acetate             | 0.00  | 61   |          | Not Detected |       |        |
| 23) Hexane                    | 9.46  | 57   | 60518    | 0.6848       | ppb   | 87     |
| 24) Chloroform                | 0.00  | 83   |          | Not Detected |       |        |
| 25) Tetrahydrofuran           | 9.88  | 42   | 18971    | 0.3245       | ppb # | 92     |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          | Not Detected |       |        |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 28) Benzene                   | 10.90 | 78   | 293676   | 2.0047       | ppb   | 98     |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          | Not Detected |       |        |
| 30) Cyclohexane               | 0.00  | 84   |          | Not Detected |       |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          | Not Detected |       |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          | Not Detected |       |        |
| 33) Trichloroethene           | 0.00  | 130  |          | Not Detected |       |        |
| 34) Heptane                   | 12.16 | 71   | 20806    | 0.3688       | ppb   | 93     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          | Not Detected |       |        |
| 36) 4-Methyl-2-Pentanone      | 12.71 | 43   | 15828464 | 113.8801     | ppb   | 98     |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          | Not Detected |       |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 39) Toluene                   | 13.68 | 91   | 407322   | 2.3380       | ppb   | 99     |
| 40) 2-Hexanone                | 0.00  | 43   |          | Not Detected |       |        |
| 41) Dibromochloromethane      | 0.00  | 129  |          | Not Detected |       |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          | Not Detected |       |        |
| 43) Tetrachloroethene         | 0.00  | 166  |          | Not Detected |       |        |
| 45) Chlorobenzene             | 0.00  | 112  |          | Not Detected |       |        |
| 46) Ethylbenzene              | 15.93 | 91   | 7155513  | 31.7536      | ppb   | 99     |
| 47) m,p-Xylene                | 16.10 | 91   | 33009870 | 184.6693     | ppb m | 99     |
| 48) Bromoform                 | 0.00  | 173  |          | Not Detected |       |        |
| 49) Styrene                   | 16.51 | 104  | 30032    | 0.2496       | ppb   | 92     |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          | Not Detected |       |        |

(#)=qualifier out of range (m)=manual integration

KE64I002.D TO15KH18.m

Thu Dec 20 14:54:52 2018



## Quantitation Report

Data File : F:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:43:14 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response          | Conc              | Unit           | Qvalue        |
|------------------------------|-------|------|-------------------|-------------------|----------------|---------------|
| 51) o-Xylene                 | 16.63 | 91   | 22867470          | 130.9534          | ppb            | 90 <i>7.2</i> |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 3524289           | 15.8472           | ppb            | 100           |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 5379475           | 26.4645           | ppb            | 100           |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 19197293          | 102.0921          | ppb            | 98 <i>0.2</i> |
| 56) Benzyl Chloride          | 18.97 | 91   | <del>322698</del> | <del>3.8724</del> | <del>ppb</del> | <del>55</del> |
| 57) m-Dichlorobenzene        | 0.00  | 146  |                   |                   | Not Detected   |               |
| 58) p-Dichlorobenzene        | 0.00  | 146  |                   |                   | Not Detected   |               |
| 59) o-Dichlorobenzene        | 0.00  | 146  |                   |                   | Not Detected   |               |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |                   |                   | Not Detected   |               |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |                   |                   | Not Detected   |               |

-----  
(#) = qualifier out of range (m) = manual integration

KE64I002.D TO15KH18.m

Thu Dec 20 14:54:53 2018

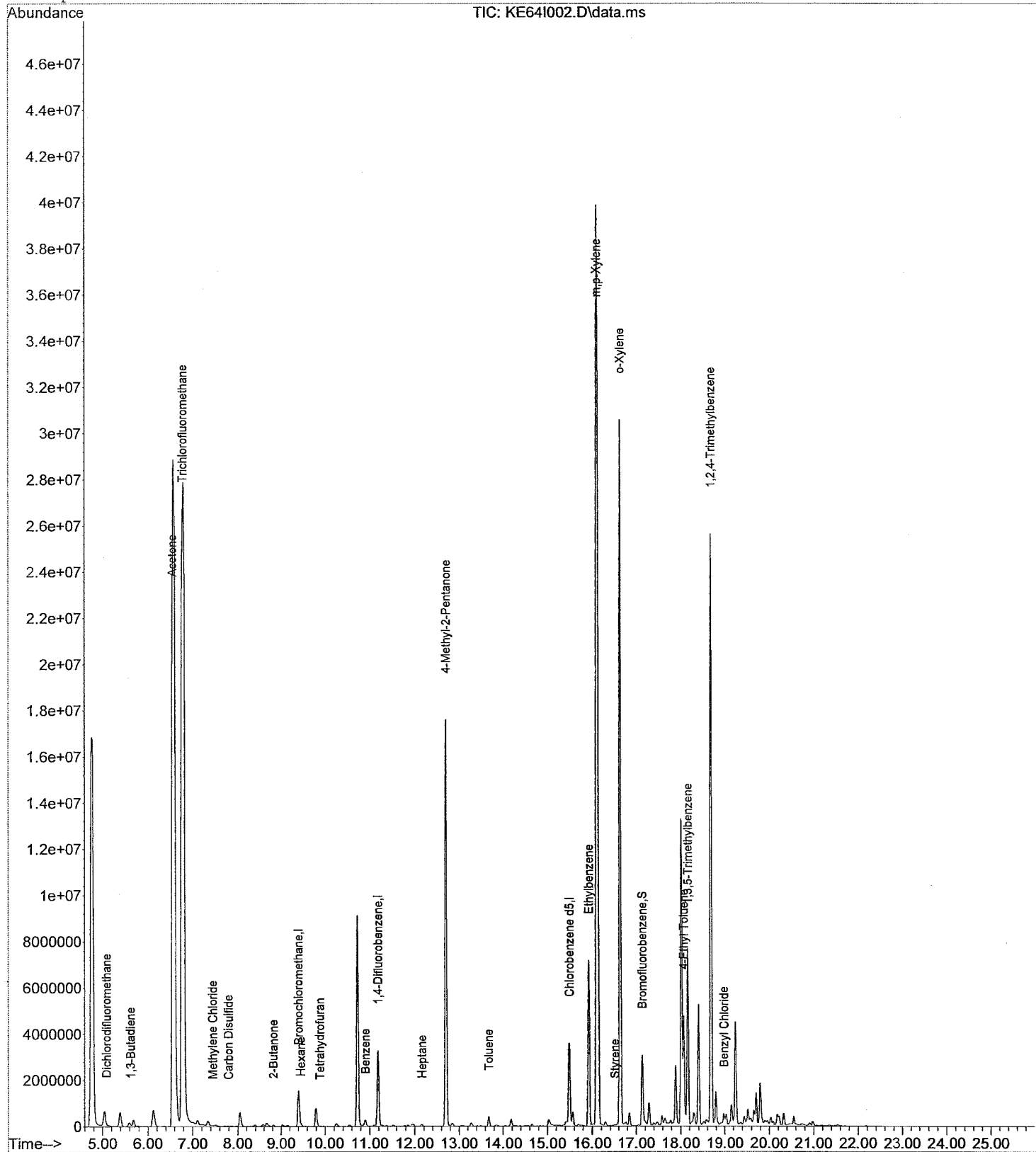
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:43:14 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



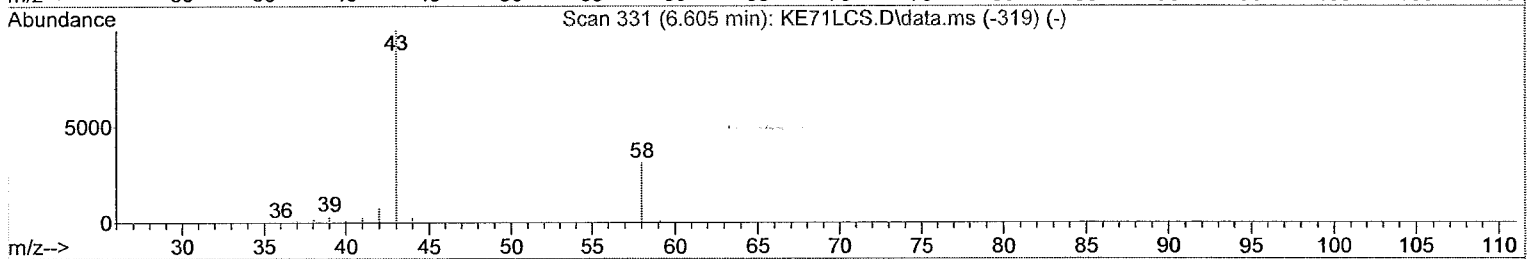
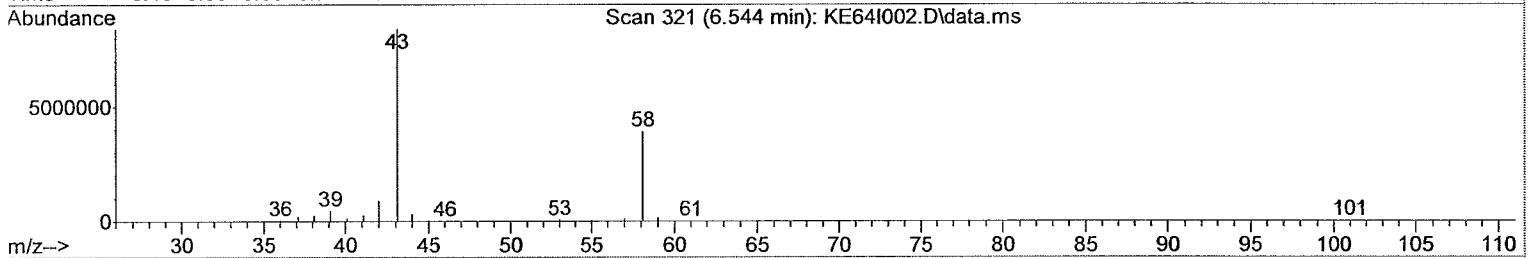
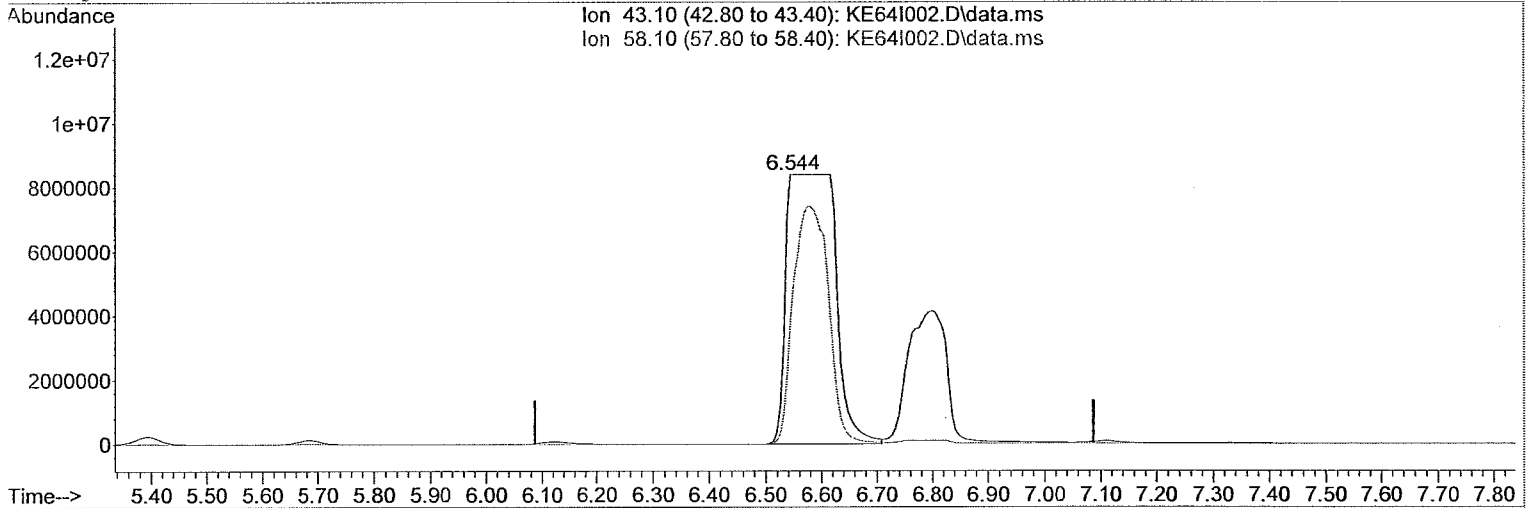
Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE64I002.D  
Acq On : 12/19/2018 22:24  
Operator : BB  
Sample : 1835290002  
Inst : 5975-K  
Misc :  
ALS Vial : 10 Sample Multiplier: 1

## MANUAL RE-INTEGRATION

- ☒ missed peak assignment  
☐ assigned incorrect name to peak  
☐ over-integrated peak's area  
☐ under-integrated peak's area  
☐ other \_\_\_\_\_

Quant Time: Dec 20 07:29:48 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration

initials BTB date 12/20/18



TIC: KE64I002.D\data.ms

(9) Acetone

6.544min (-0.043) 625.59 ppb m

response 51600985

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 43.10 | 100.00 | 100.00 |
| 58.10 | 31.40  | 0.00#  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

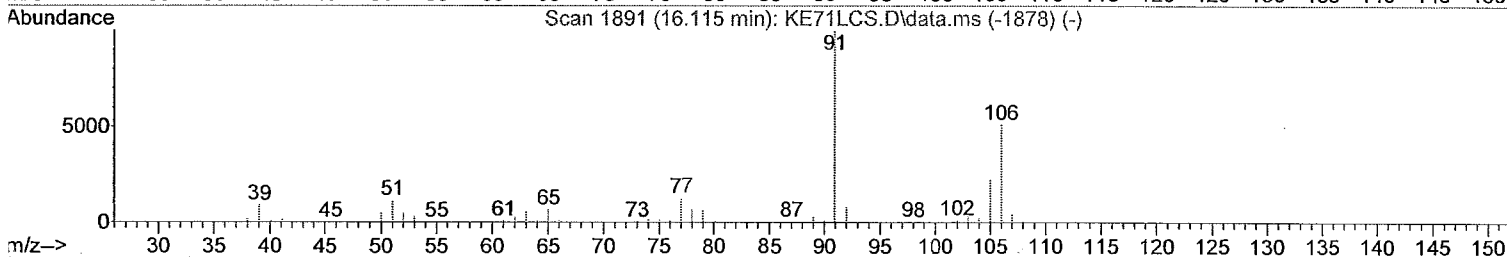
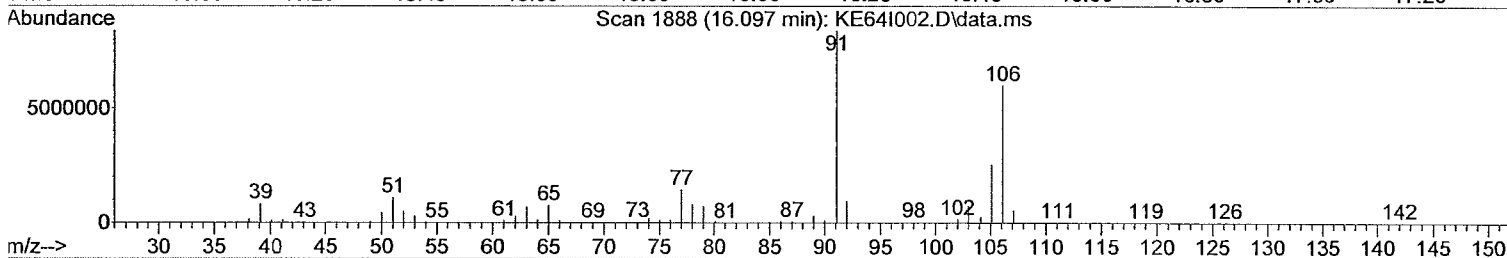
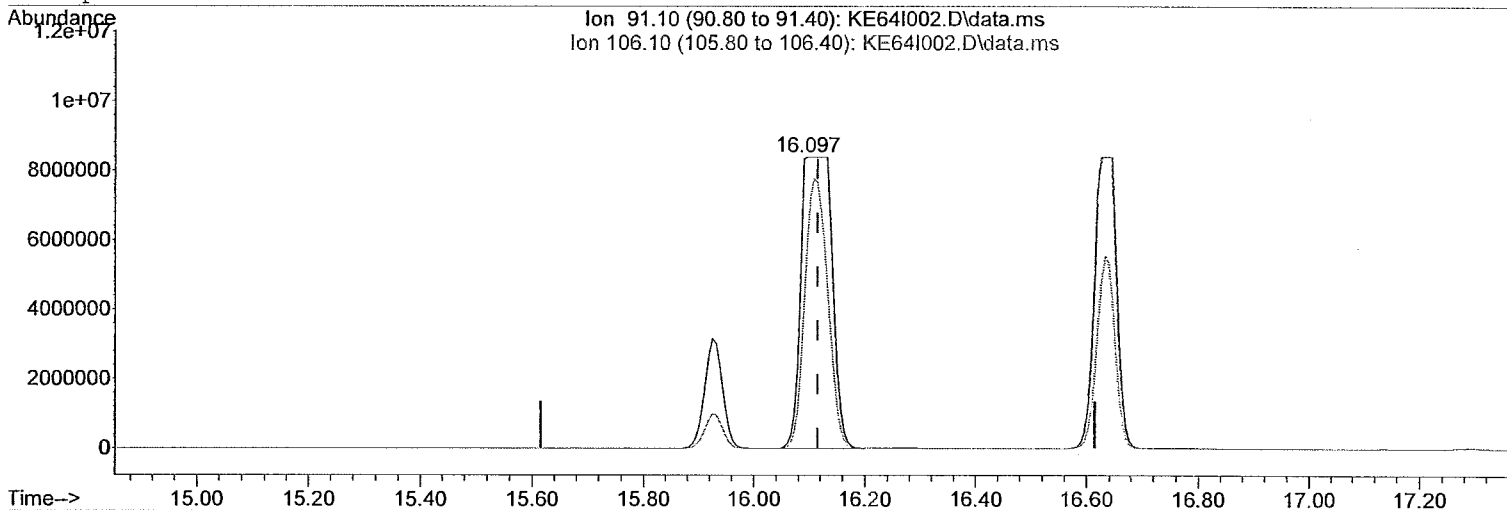
Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE64I002.D  
Acq On : 12/19/2018 22:24  
Operator : BB  
Sample : 1835290002  
Inst : 5975-K  
Misc :  
ALS Vial : 10 Sample Multiplier: 1

## MANUAL RE-INTEGRATION

- ☒ missed peak assignment  
☐ assigned incorrect name to peak  
☐ over-integrated peak's area  
☐ under-integrated peak's area  
☐ other

Quant Time: Dec 20 07:29:48 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration

initials JB date 12/20/18



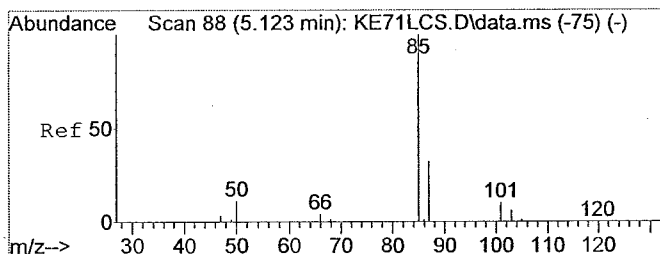
TIC: KE64I002.D\data.ms

(47) m,p-Xylene

16.097min (-0.018) 184.67 ppb m

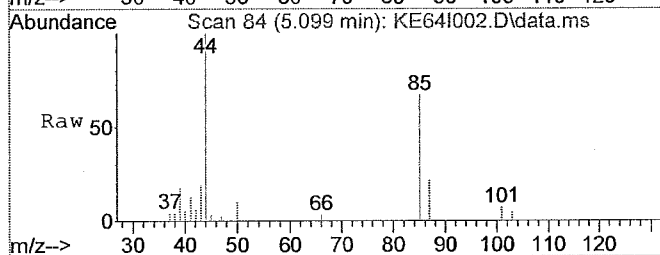
response 33009870

| Ion    | Exp%   | Act%   |
|--------|--------|--------|
| 91.10  | 100.00 | 100.00 |
| 106.10 | 50.60  | 6.86#  |
| 0.00   | 0.00   | 0.00   |
| 0.00   | 0.00   | 0.00   |

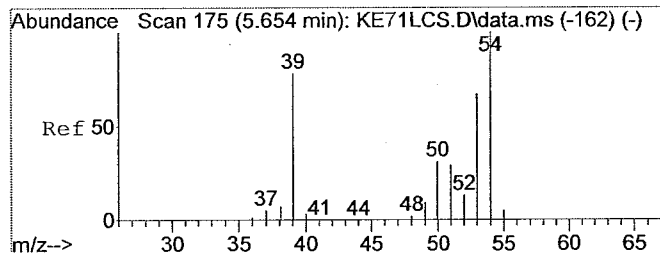
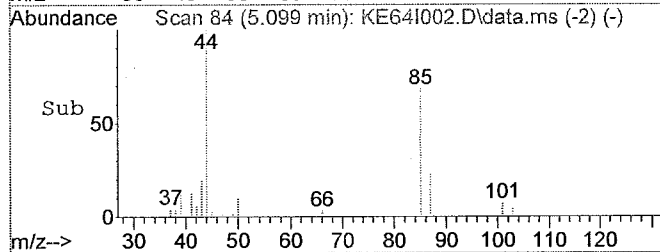
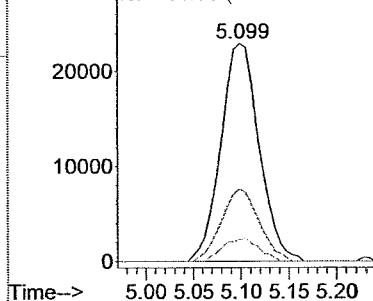


#2  
Dichlorodifluoromethane  
Concen: 0.43 ppb  
RT: 5.10 min Scan# 84  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 85      | 100   |       |       |
| 87      | 32.7  | 26.1  | 39.1  |
| 101     | 9.8   | 8.1   | 12.1  |
| 0       | 0.0   | 0.0   | 0.0   |

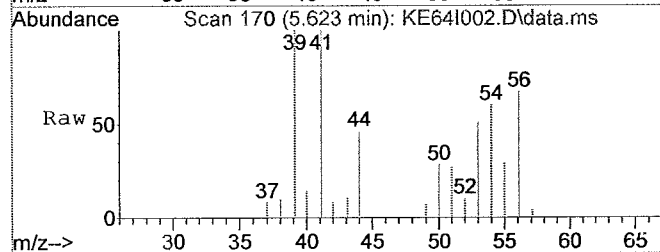


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30):

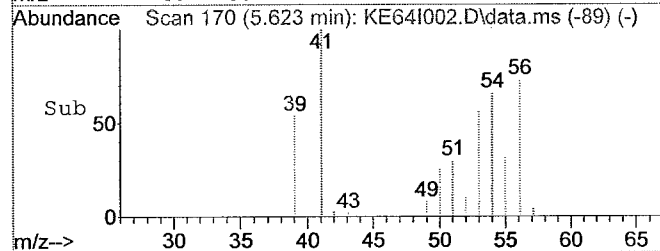
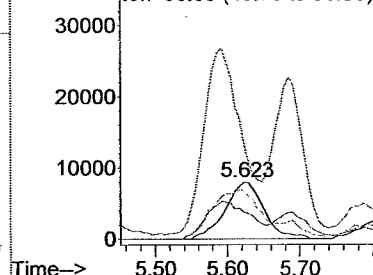


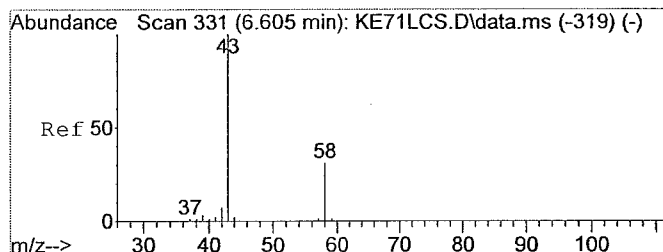
#6  
1,3-Butadiene  
Concen: 0.81 ppb  
RT: 5.62 min Scan# 170  
Delta R.T. -0.01 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 54      | 100   |       |       |
| 39      | 0.0   | 66.3  | 99.5# |
| 53      | 108.9 | 54.6  | 82.0# |
| 50      | 0.0   | 25.9  | 38.9# |



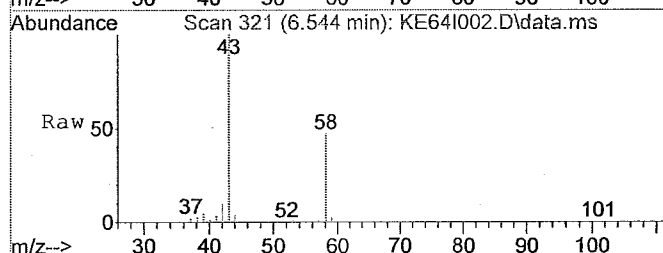
Abundance Ion 54.10 (53.80 to 54.40):  
Ion 39.10 (38.80 to 39.40):  
Ion 53.00 (52.70 to 53.30):  
Ion 50.00 (49.70 to 50.30):



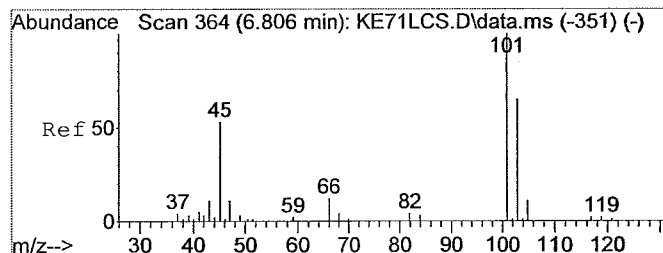
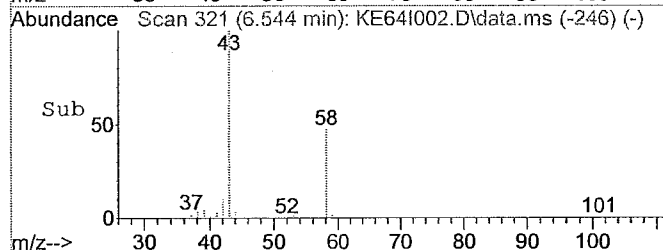
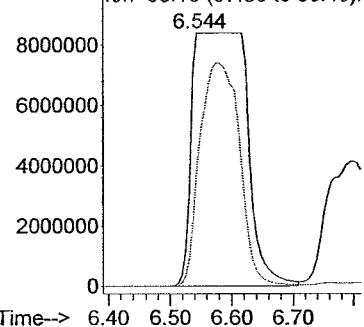


#9  
Acetone  
Concen: 625.59 ppb m  
RT: 6.54 min Scan# 321  
Delta R.T. -0.04 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion: 43.1 Resp: 51600985  
Ion Ratio Lower Upper  
43 100  
58 0.0 25.1 37.7#  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

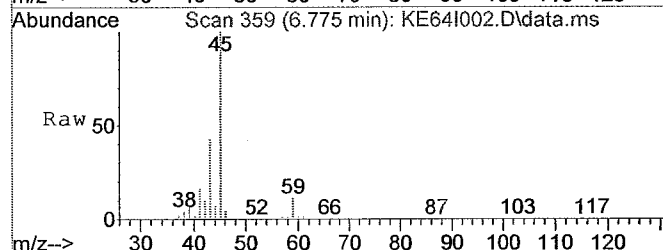


Abundance Ion 43.10 (42.80 to 43.40):  
Ion 58.10 (57.80 to 58.40):

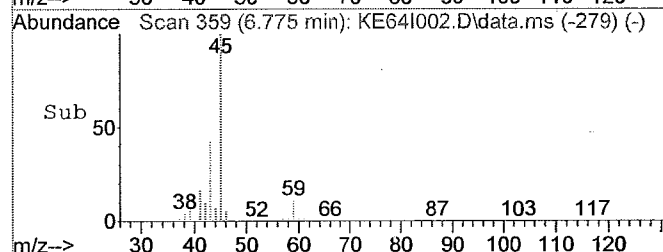
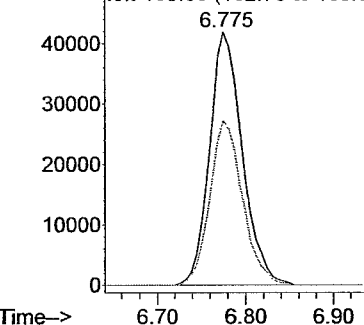


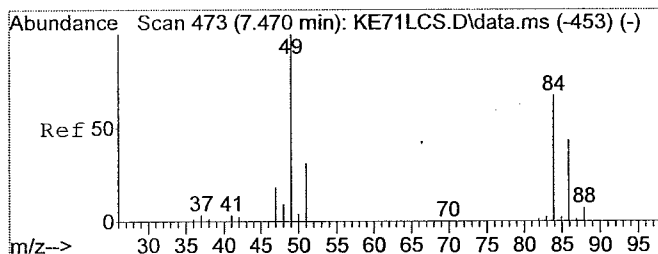
#10  
Trichlorofluoromethane  
Concen: 0.82 ppb  
RT: 6.78 min Scan# 359  
Delta R.T. -0.01 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion: 101 Resp: 107023  
Ion Ratio Lower Upper  
101 100  
103 65.0 51.6 77.4  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



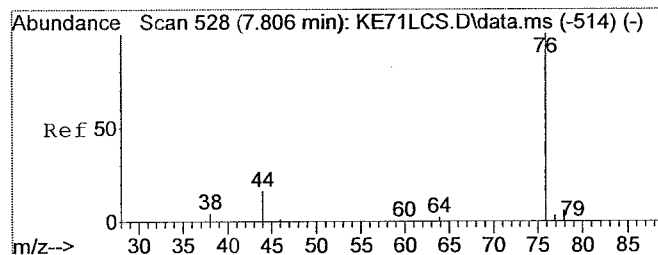
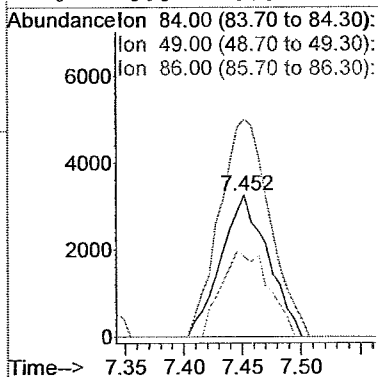
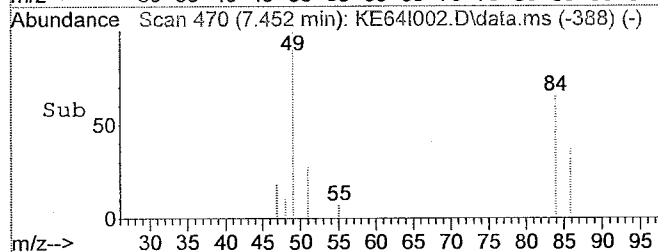
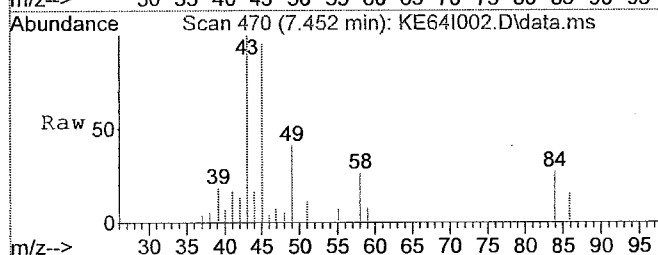
Abundance Ion 101.00 (100.70 to 101.3):  
Ion 103.00 (102.70 to 103.3):





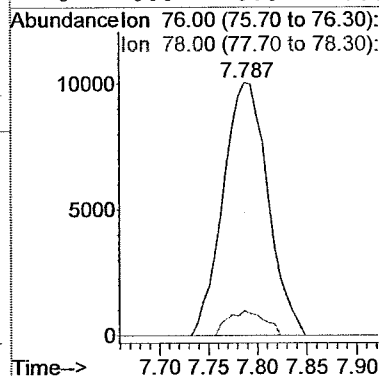
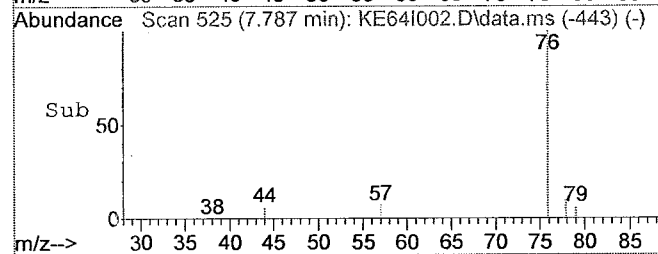
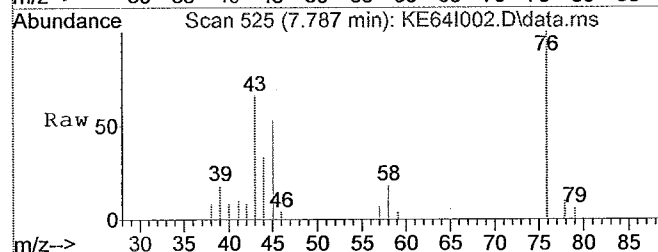
#12  
Methylene Chloride  
Concen: 0.21 ppb  
RT: 7.45 min Scan# 470  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

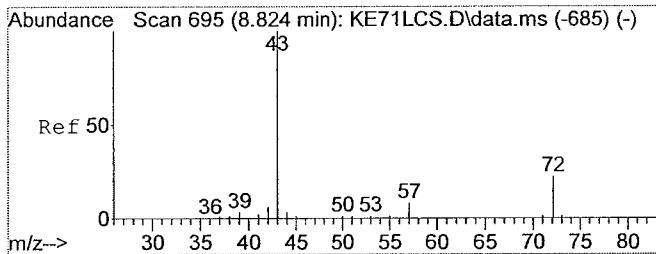
Tgt Ion:84 Resp: 9042  
Ion Ratio Lower Upper  
84 100  
49 165.5 119.1 178.7  
86 61.2 52.0 78.0  
0 0.0 0.0 0.0



#14  
Carbon Disulfide  
Concen: 0.30 ppb  
RT: 7.79 min Scan# 525  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion:76 Resp: 31929  
Ion Ratio Lower Upper  
76 100  
78 8.1 7.3 10.9  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

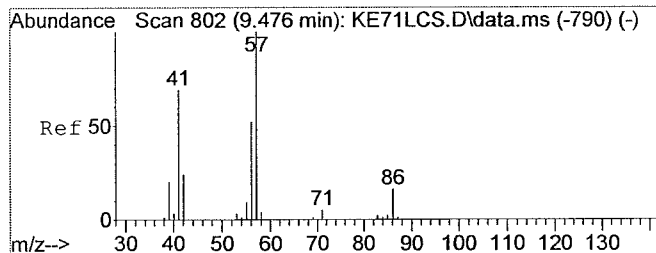
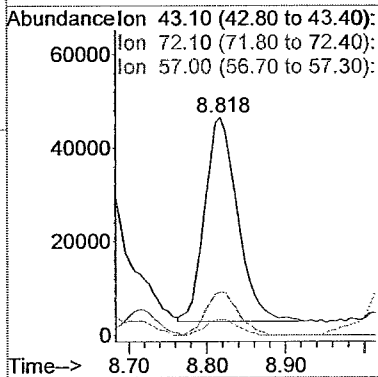
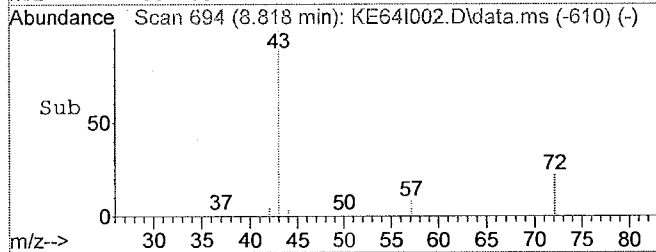
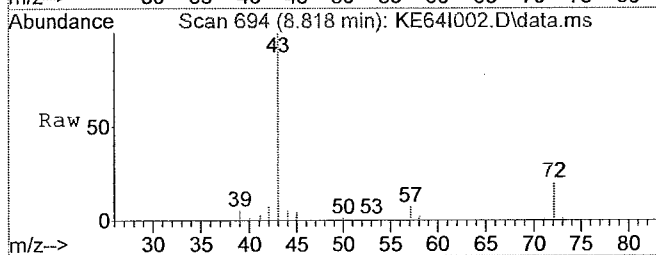




#19  
2-Butanone  
Concen: 1.20 ppb  
RT: 8.82 min Scan# 694  
Delta R.T. 0.01 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion: 43.1 Resp: 125918

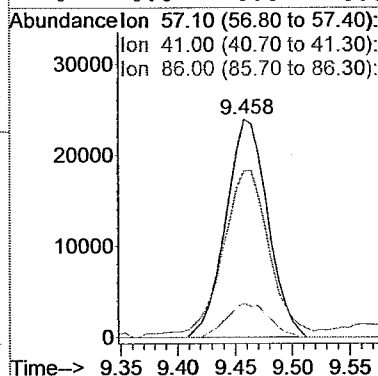
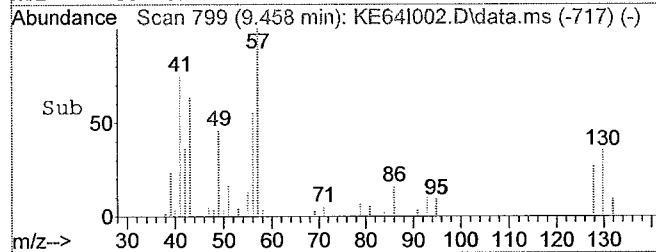
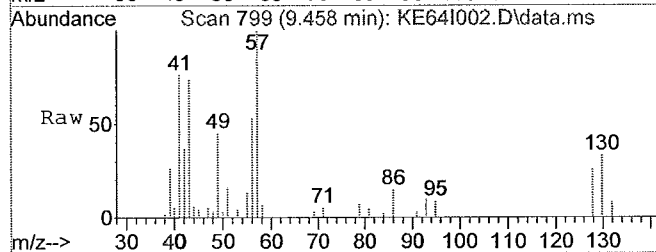
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 72  | 20.9  | 17.9  | 26.9  |
| 57  | 7.6   | 6.4   | 9.6   |
| 0   | 0.0   | 0.0   | 0.0   |



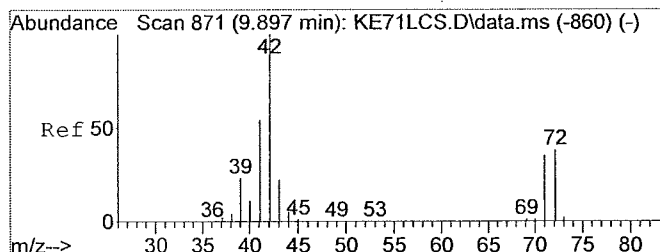
#23  
Hexane  
Concen: 0.68 ppb  
RT: 9.46 min Scan# 799  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion: 57.1 Resp: 60518

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 57  | 100   |       |       |
| 41  | 85.8  | 58.6  | 88.0  |
| 86  | 15.5  | 14.2  | 21.4  |
| 0   | 0.0   | 0.0   | 0.0   |

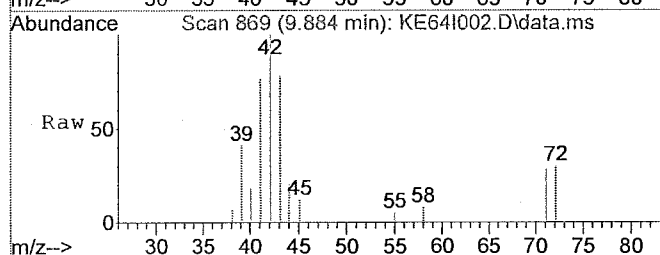




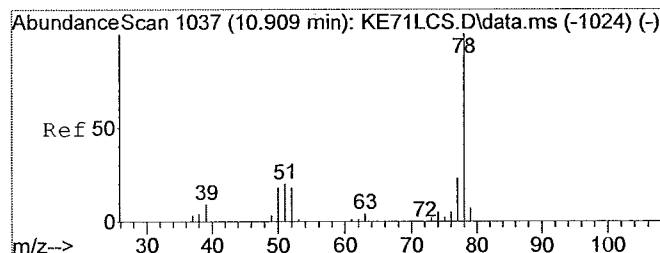
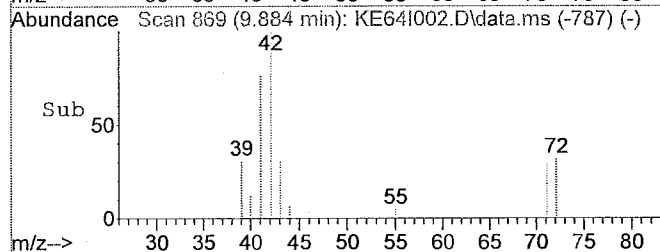
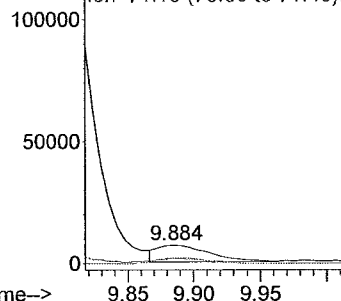


#25  
Tetrahydrofuran  
Concen: 0.32 ppb  
RT: 9.88 min Scan# 869  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

|          |       |       |       |
|----------|-------|-------|-------|
| Tgt Ion: | 42.1  | Resp: | 18971 |
| Ion      | Ratio | Lower | Upper |
| 42       | 100   |       |       |
| 72       | 35.1  | 29.7  | 44.5  |
| 71       | 27.2  | 28.1  | 42.1# |
| 0        | 0.0   | 0.0   | 0.0   |

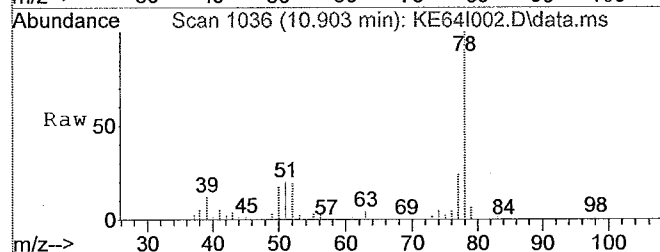


Abundance Ion 42.10 (41.80 to 42.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 71.10 (70.80 to 71.40):

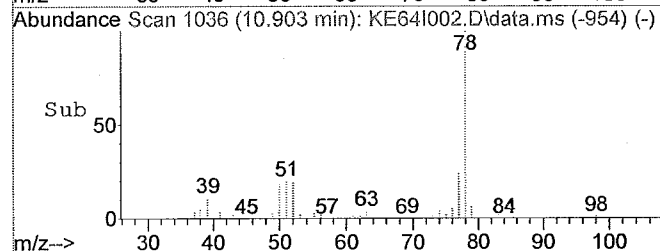
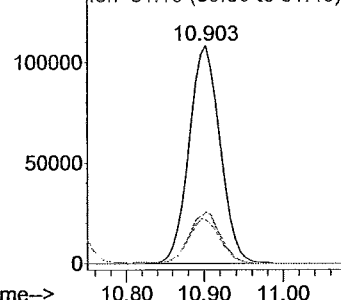


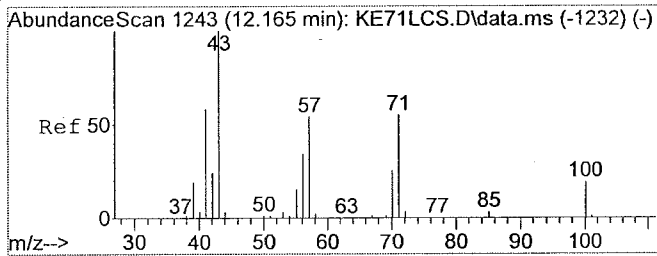
#28  
Benzene  
Concen: 2.00 ppb  
RT: 10.90 min Scan# 1036  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

|          |       |       |        |
|----------|-------|-------|--------|
| Tgt Ion: | 78.1  | Resp: | 293676 |
| Ion      | Ratio | Lower | Upper  |
| 78       | 100   |       |        |
| 77       | 23.6  | 18.6  | 28.0   |
| 51       | 21.5  | 15.7  | 23.5   |
| 0        | 0.0   | 0.0   | 0.0    |



Abundance Ion 78.10 (77.80 to 78.40):  
Ion 77.10 (76.80 to 77.40):  
Ion 51.10 (50.80 to 51.40):

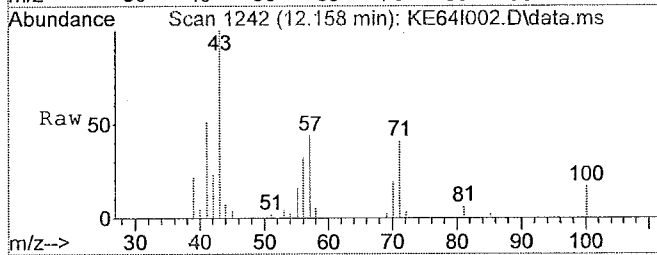




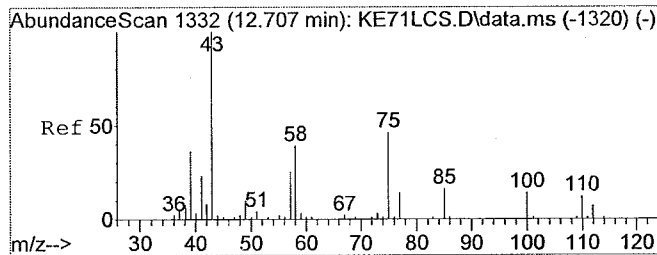
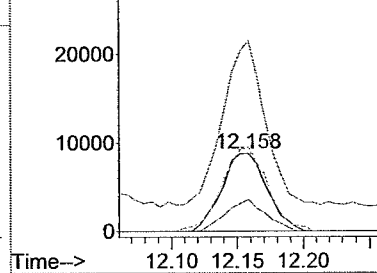
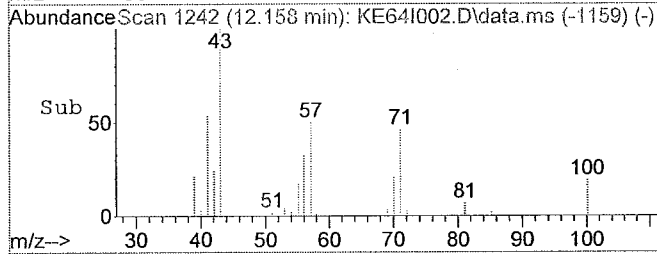
#34  
Heptane  
Concen: 0.37 ppb  
RT: 12.16 min Scan# 1242  
Delta R.T. 0.01 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion: 71.1 Resp: 20806

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 71  | 100   |       |       |
| 43  | 195.3 | 148.1 | 222.1 |
| 57  | 108.3 | 79.4  | 119.0 |
| 100 | 35.5  | 28.0  | 42.0  |



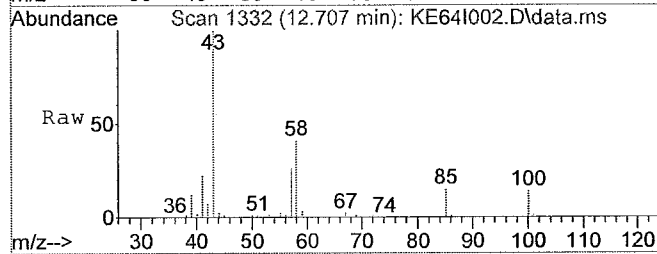
AbundanceIon 71.10 (70.80 to 71.40):  
Ion 43.10 (42.80 to 43.40):  
Ion 57.10 (56.80 to 57.40):  
Ion 100.10 (99.80 to 100.40):



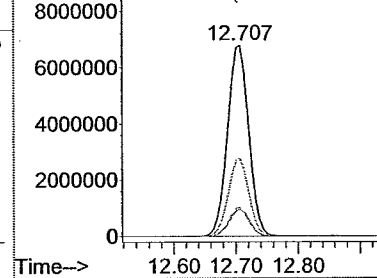
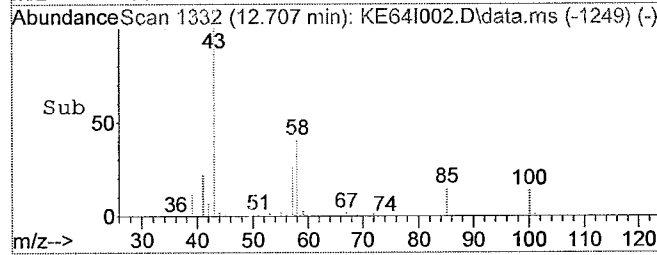
#36  
4-Methyl-2-Pentanone  
Concen: 113.88 ppb  
RT: 12.71 min Scan# 1332  
Delta R.T. 0.01 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

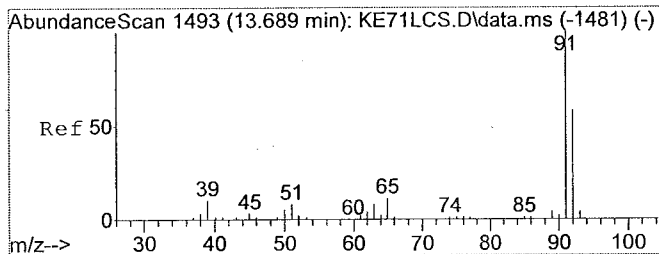
Tgt Ion: 43.1 Resp: 15828464

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 58  | 39.7  | 31.0  | 46.6  |
| 85  | 14.7  | 12.9  | 19.3  |
| 100 | 13.6  | 11.4  | 17.2  |

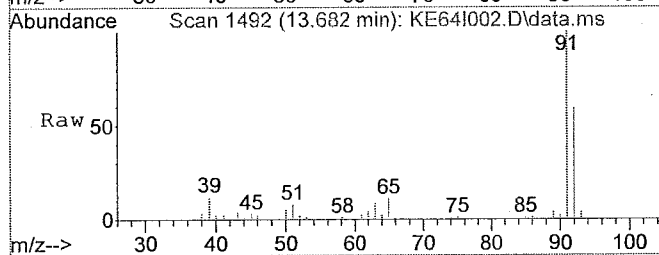


AbundanceIon 43.10 (42.80 to 43.40):  
Ion 58.10 (57.80 to 58.40):  
Ion 85.10 (84.80 to 85.40):  
Ion 100.10 (99.80 to 100.40):

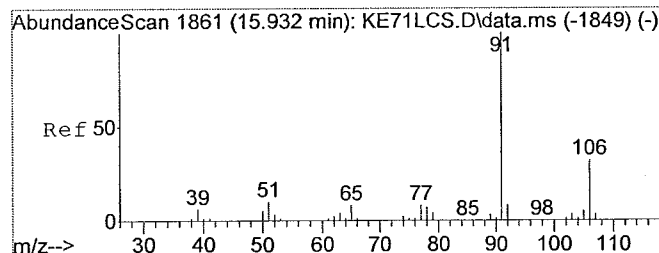
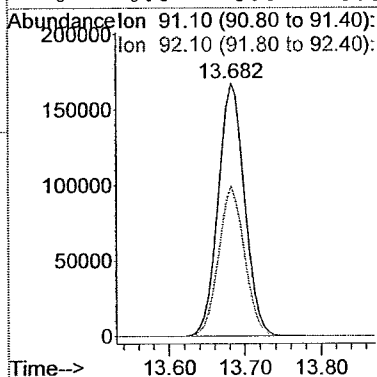
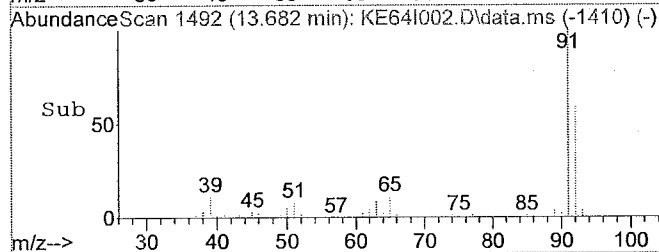




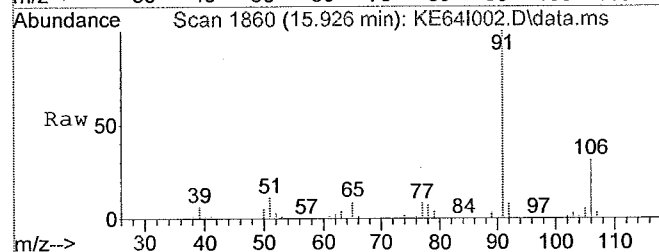
#39  
Toluene  
Concen: 2.34 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24



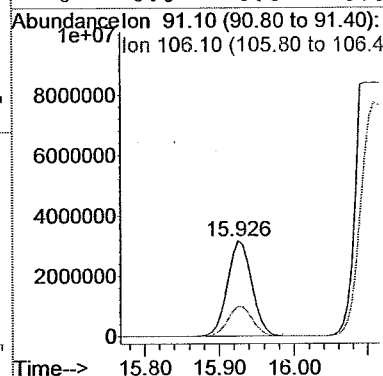
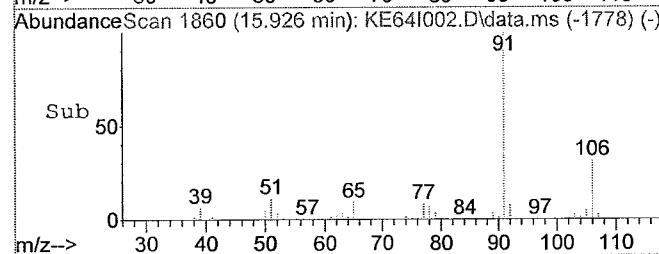
Tgt Ion: 91.1 Resp: 407322  
Ion Ratio Lower Upper  
91 100  
92 58.1 46.9 70.3  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

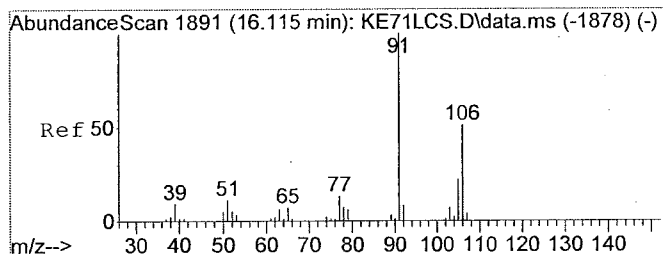


#46  
Ethylbenzene  
Concen: 31.75 ppb  
RT: 15.93 min Scan# 1860  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24



Tgt Ion: 91.1 Resp: 7155513  
Ion Ratio Lower Upper  
91 100  
106 31.6 25.8 38.8  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0





#47

m,p-Xylene

Concen: 184.67 ppb m

RT: 16.10 min Scan# 1888

Delta R.T. -0.02 min

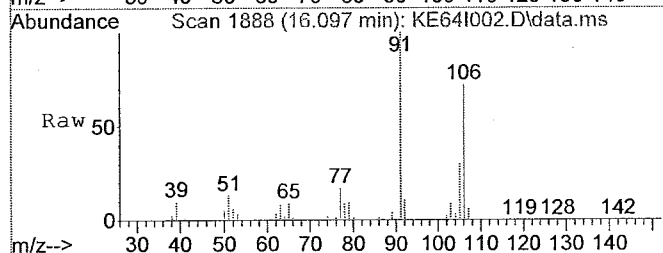
Lab File: KE64I002.D

Acq: 12/19/2018 22:24

Tgt Ion: 91.1 Resp: 33009870

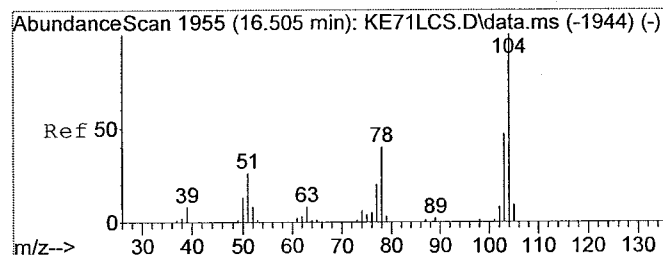
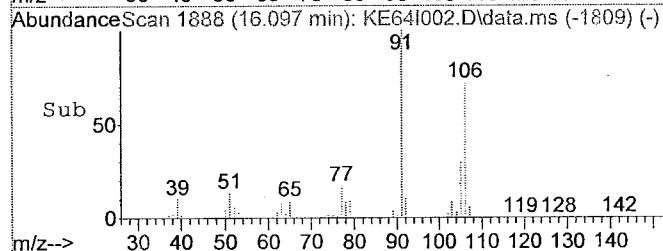
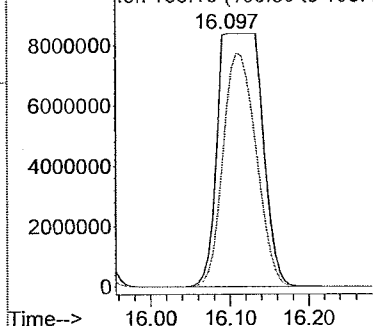
Ion Ratio Lower Upper

|     |     |      |       |
|-----|-----|------|-------|
| 91  | 100 |      |       |
| 106 | 6.9 | 40.5 | 60.7# |
| 0   | 0.0 | 0.0  | 0.0   |
| 0   | 0.0 | 0.0  | 0.0   |



Abundance Ion 91.10 (90.80 to 91.40):

Ion 106.10 (105.80 to 106.40):



#49

Styrene

Concen: 0.25 ppb

RT: 16.51 min Scan# 1955

Delta R.T. -0.00 min

Lab File: KE64I002.D

Acq: 12/19/2018 22:24

Tgt Ion: 104.1 Resp: 30032

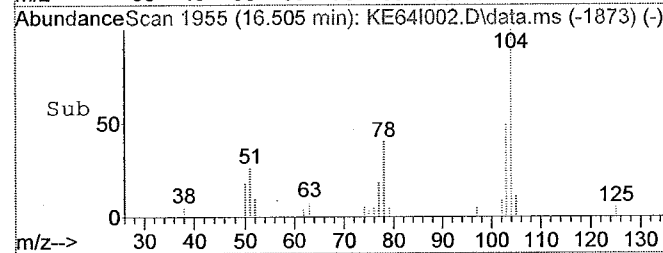
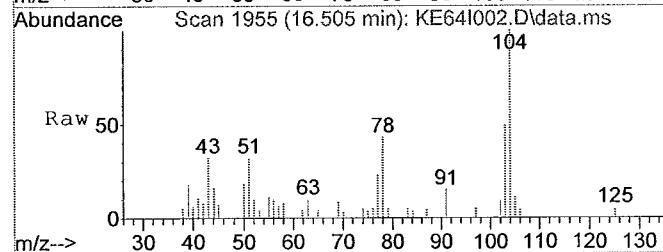
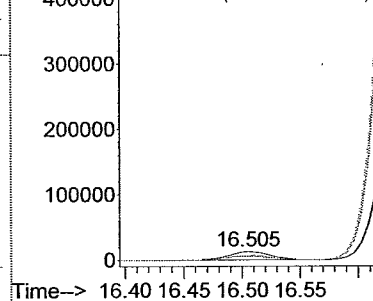
Ion Ratio Lower Upper

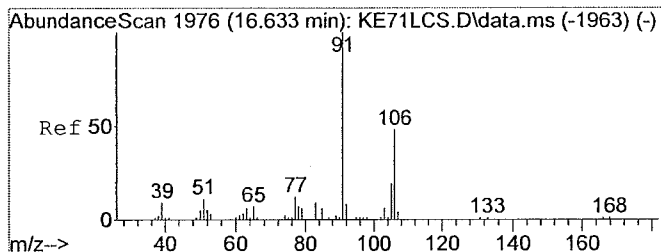
|     |      |      |      |
|-----|------|------|------|
| 104 | 100  |      |      |
| 103 | 52.8 | 37.6 | 56.4 |
| 78  | 45.2 | 32.3 | 48.5 |
| 0   | 0.0  | 0.0  | 0.0  |

Abundance Ion 104.10 (103.80 to 104.40):

Ion 103.10 (102.80 to 103.40):

Ion 78.10 (77.80 to 78.40):

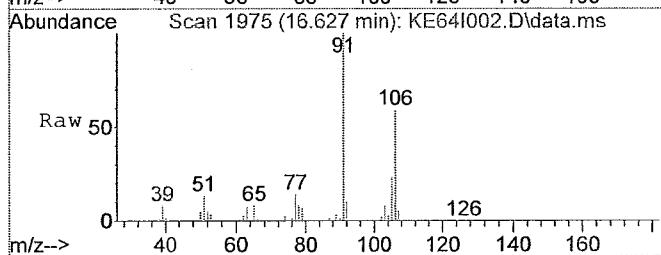




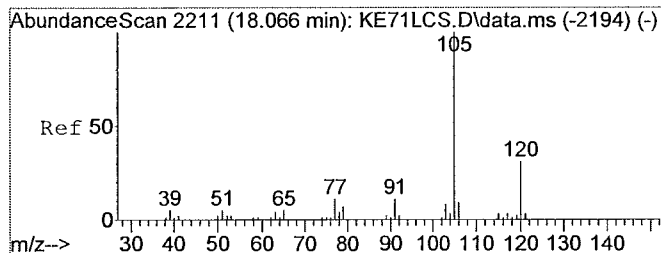
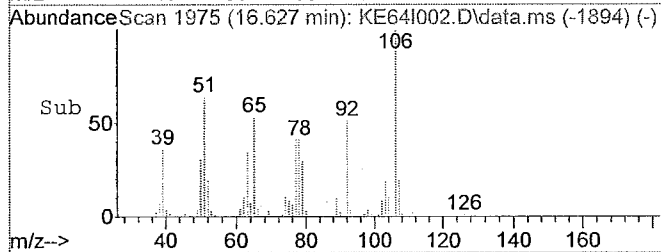
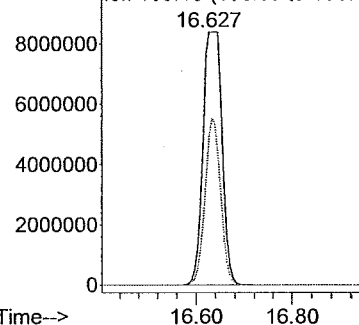
#51  
o-Xylene  
Concen: 130.95 ppb  
RT: 16.63 min Scan# 1975  
Delta R.T. -0.01 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion: 91.1 Resp: 22867470

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 106 | 54.2  | 38.2  | 57.4  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



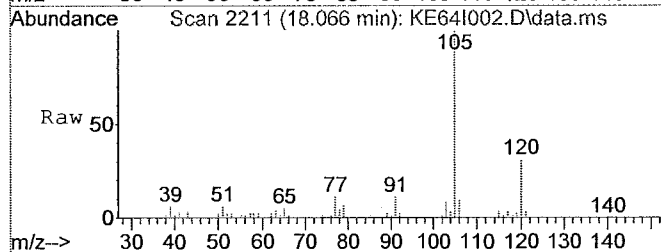
AbundanceIon 91.10 (90.80 to 91.40):  
Ion 106.10 (105.80 to 106.40):



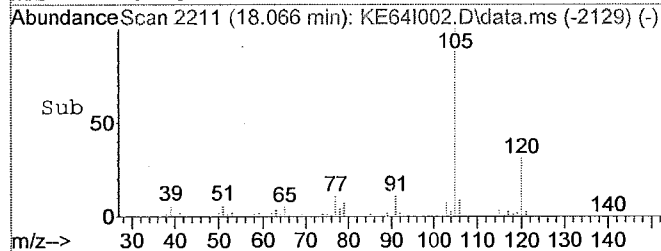
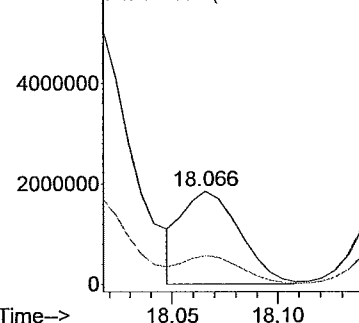
#53  
4-Ethyl Toluene  
Concen: 15.85 ppb  
RT: 18.07 min Scan# 2211  
Delta R.T. -0.00 min  
Lab File: KE64I002.D  
Acq: 12/19/2018 22:24

Tgt Ion: 105.1 Resp: 3524289

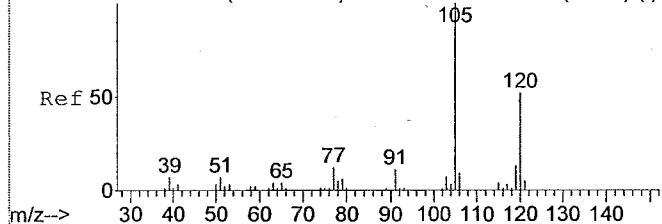
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 105 | 100   |       |       |
| 120 | 31.4  | 25.0  | 37.6  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



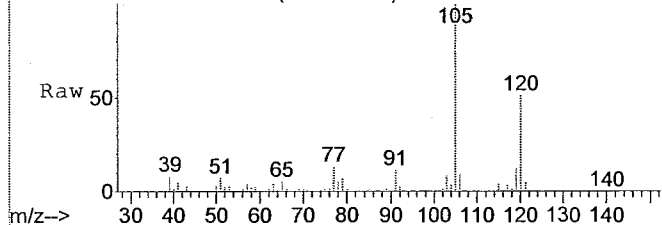
AbundanceIon 105.10 (104.80 to 105.40):  
Ion 120.10 (119.80 to 120.40):



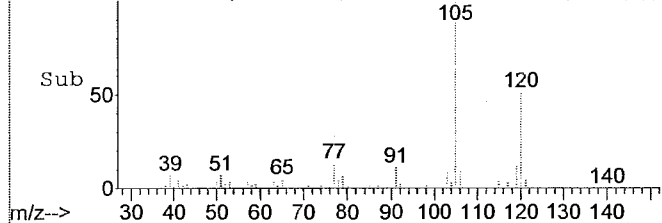
AbundanceScan 2226 (18.157 min): KE71LCS.D\data.ms (-2219) (-)



Scan 2226 (18.157 min): KE64I002.D\data.ms



AbundanceScan 2226 (18.157 min): KE64I002.D\data.ms (-2144) (-)



#54

1,3,5-Trimethylbenzene

Concen: 26.46 ppb

RT: 18.16 min Scan# 2226

Delta R.T. -0.00 min

Lab File: KE64I002.D

Acq: 12/19/2018 22:24

Tgt Ion:105.1 Resp: 5379475

Ion Ratio Lower Upper

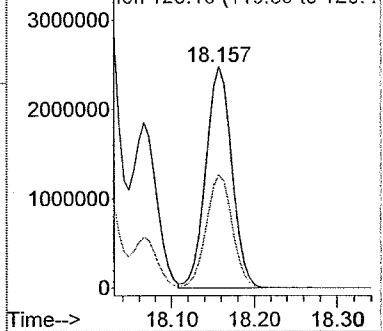
105 100

120 51.3 41.3 61.9

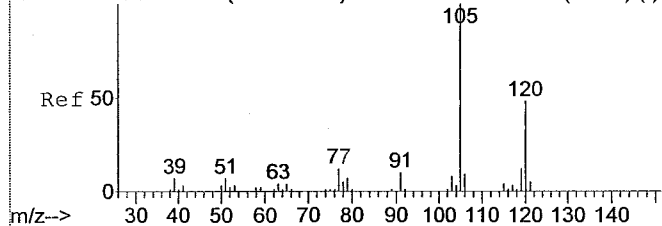
0 0.0 0.0 0.0

0 0.0 0.0 0.0

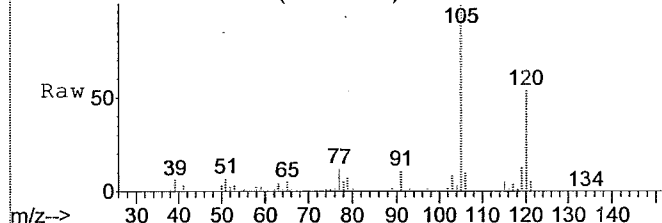
AbundanceIon 105.10 (104.80 to 105.4)



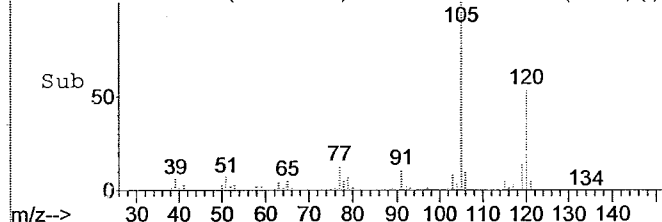
AbundanceScan 2312 (18.682 min): KE71LCS.D\data.ms (-2300) (-)



Scan 2312 (18.682 min): KE64I002.D\data.ms



AbundanceScan 2312 (18.682 min): KE64I002.D\data.ms (-2230) (-)



#55

1,2,4-Trimethylbenzene

Concen: 102.09 ppb

RT: 18.68 min Scan# 2312

Delta R.T. -0.00 min

Lab File: KE64I002.D

Acq: 12/19/2018 22:24

Tgt Ion:105.1 Resp:19197293

Ion Ratio Lower Upper

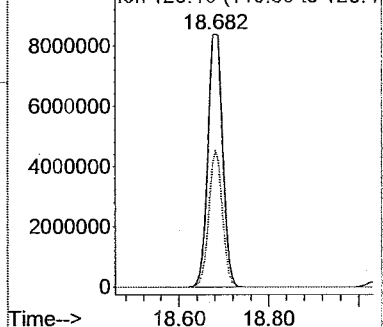
105 100

120 49.8 38.7 58.1

0 0.0 0.0 0.0

0 0.0 0.0 0.0

AbundanceIon 105.10 (104.80 to 105.4)



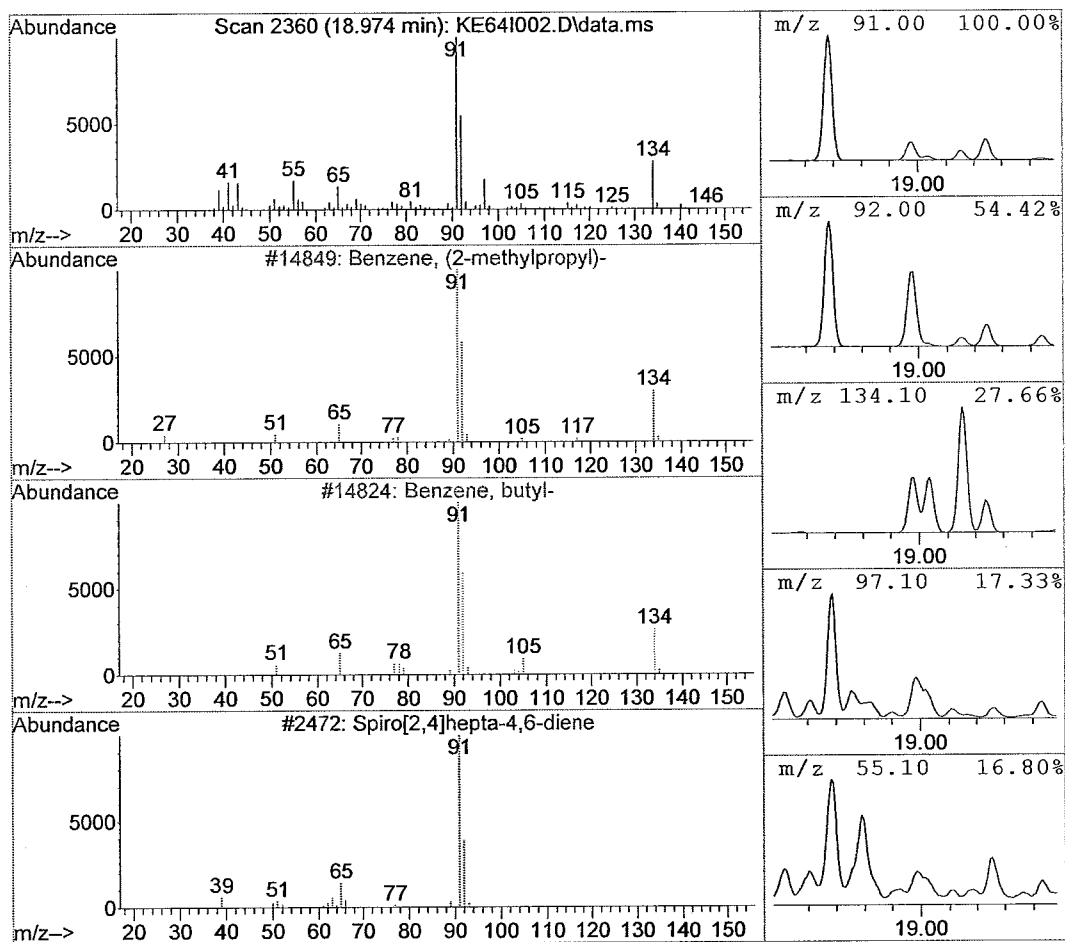
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 18.98 | 2.99 ppb | 1344520 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID               | Ref#  | CAS#        | Qual  |
|------------|----------------------------|-------|-------------|-------|
| 1          | Benzene, (2-methylpropyl)- | 14849 | 000538-93-2 | 87.00 |
| 2          | Benzene, butyl-            | 14824 | 000104-51-8 | 80.00 |
| 3          | Spiro[2,4]hepta-4,6-diene  | 2472  | 000765-46-8 | 52.00 |
| 4          | Benzene, (ethoxymethyl)-   | 16404 | 000539-30-0 | 50.00 |
| 5          | 1,3,5-Cycloheptatriene     | 2469  | 000544-25-2 | 50.00 |



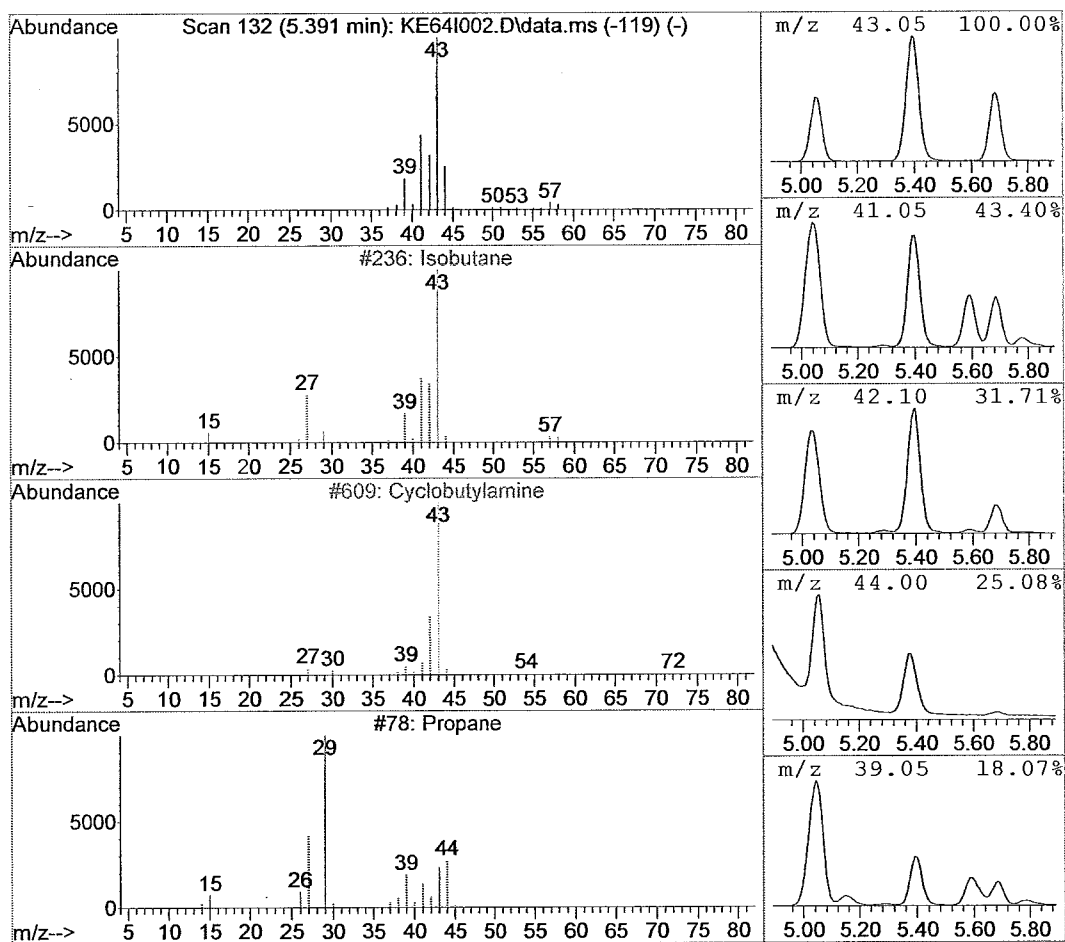
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 5.39 | 8.47 ppb | 1942290 | Bromochloromethane | 4584874   |

| Hit# of 20 | Tentative ID                | Ref#  | CAS#        | Qual  |
|------------|-----------------------------|-------|-------------|-------|
| 1          | Isobutane                   | 236   | 000075-28-5 | 53.00 |
| 2          | Cyclobutylamine             | 609   | 002516-34-9 | 9.00  |
| 3          | Propane                     | 78    | 000074-98-6 | 4.00  |
| 4          | Isopropylsulfonyl chloride  | 19275 | 010147-37-2 | 4.00  |
| 5          | Propane, 1-chloro-2-methyl- | 2437  | 000513-36-0 | 4.00  |





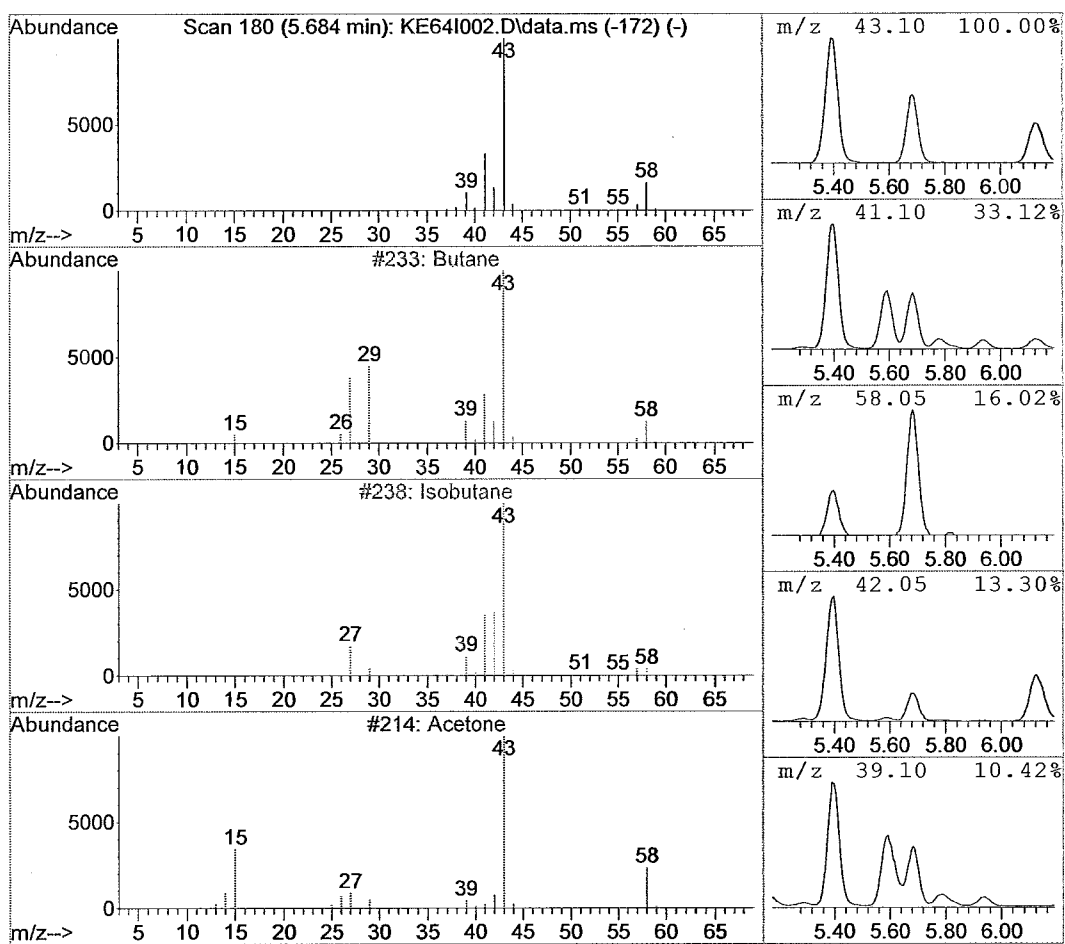
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 5.68 | 3.67 ppb | 841865 | Bromochloromethane | 4584874   |

| Hit# of 20 | Tentative ID    | Ref# | CAS#        | Qual  |
|------------|-----------------|------|-------------|-------|
| 1          | Butane          | 233  | 000106-97-8 | 78.00 |
| 2          | Isobutane       | 238  | 000075-28-5 | 9.00  |
| 3          | Acetone         | 214  | 000067-64-1 | 5.00  |
| 4          | Propylene oxide | 225  | 000075-56-9 | 4.00  |
| 5          | Propanal        | 221  | 000123-38-6 | 4.00  |



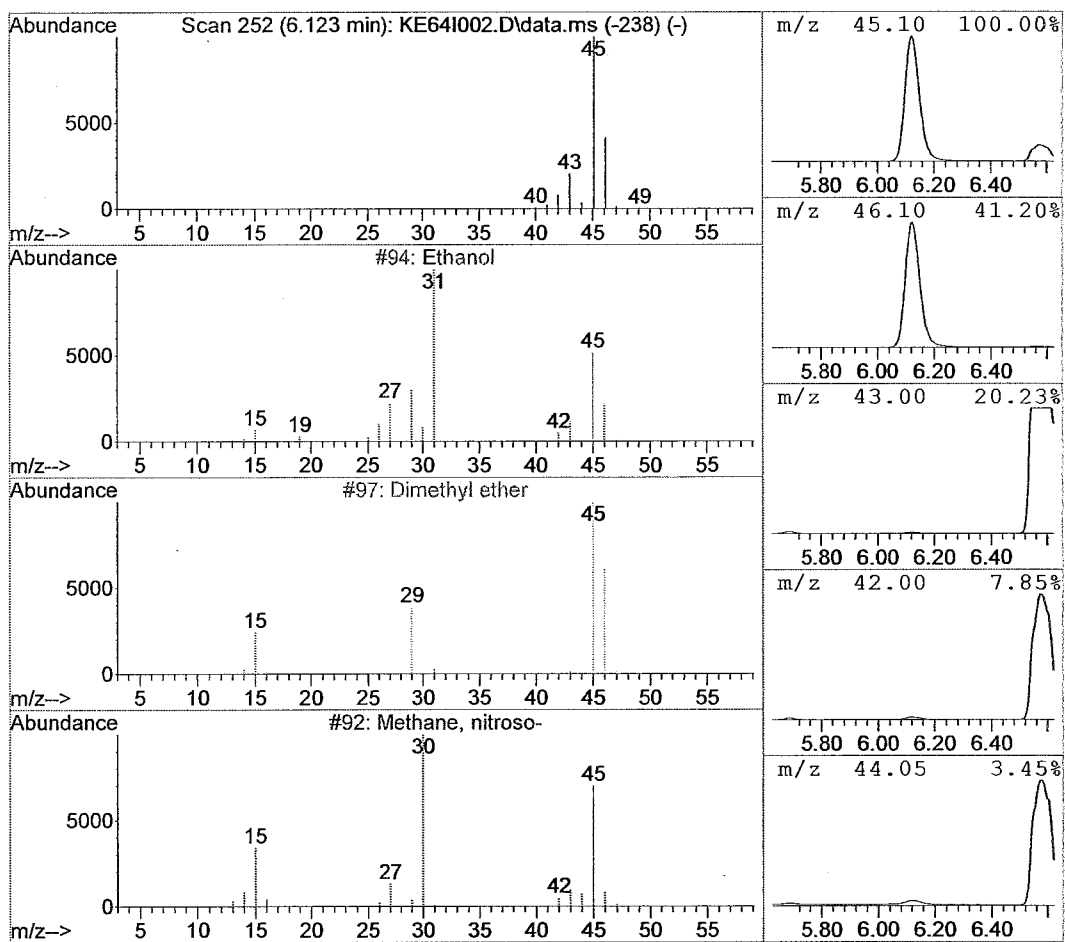
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc      | Area    | Relative to ISTD   | ISTD Area |
|------|-----------|---------|--------------------|-----------|
| 6.12 | 10.98 ppb | 2517828 | Bromochloromethane | 4584874   |

| Hit# of 20 | Tentative ID      | Ref# | CAS#        | Qual  |
|------------|-------------------|------|-------------|-------|
| 1          | Ethanol           | 94   | 000064-17-5 | 74.00 |
| 2          | Dimethyl ether    | 97   | 000115-10-6 | 9.00  |
| 3          | Methane, nitroso- | 92   | 000865-40-7 | 4.00  |
| 4          | Formic acid       | 100  | 000064-18-6 | 4.00  |
| 5          | Oxalic acid       | 2224 | 000144-62-7 | 4.00  |



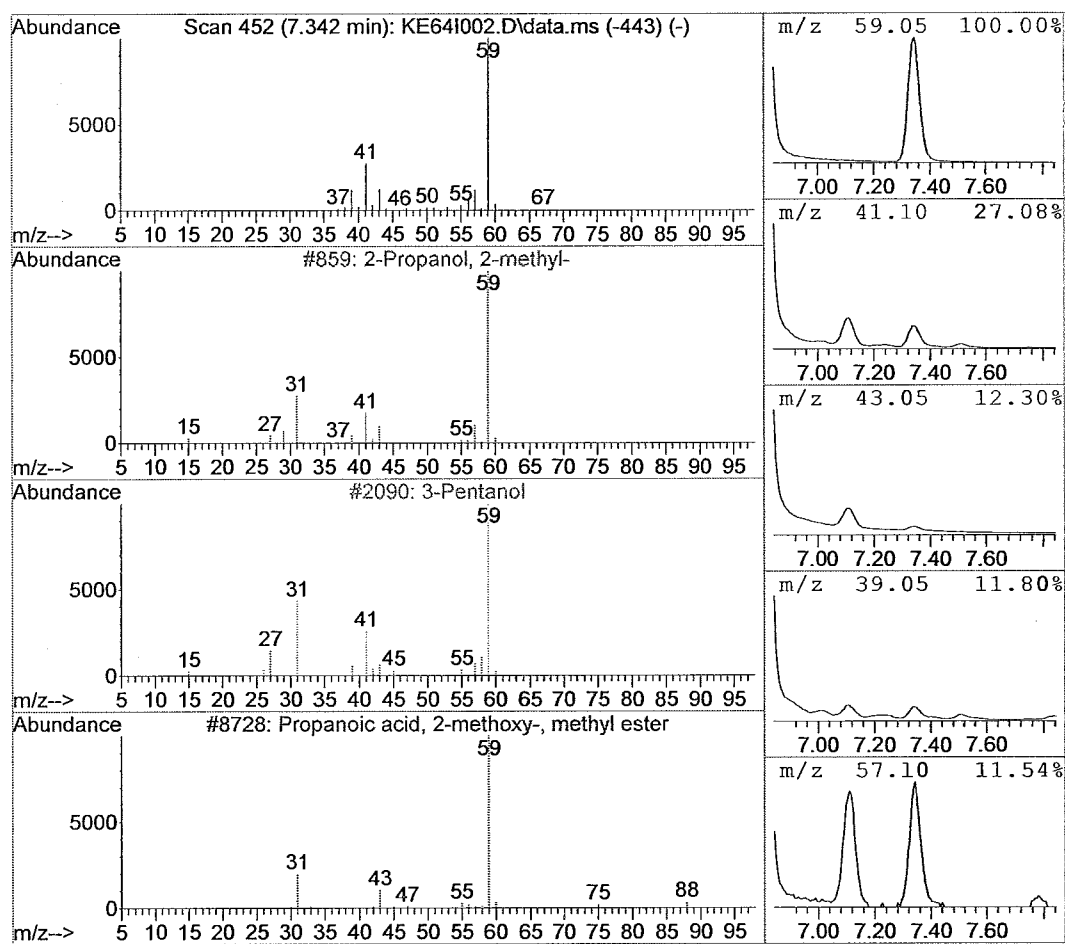
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 7.34 | 2.79 ppb | 640134 | Bromochloromethane | 4584874   |

| Hit# of 20 | Tentative ID                       | Ref# | CAS#        | Qual  |
|------------|------------------------------------|------|-------------|-------|
| 1          | 2-Propanol, 2-methyl-              | 859  | 000075-65-0 | 72.00 |
| 2          | 3-Pentanol                         | 2090 | 000584-02-1 | 40.00 |
| 3          | Propanoic acid, 2-methoxy-, methyl | 8728 | 017639-76-8 | 9.00  |
| 4          | 1,2-Butanediol                     | 2295 | 000584-03-2 | 9.00  |
| 5          | Formamide, N-methyl-               | 245  | 000123-39-7 | 4.00  |



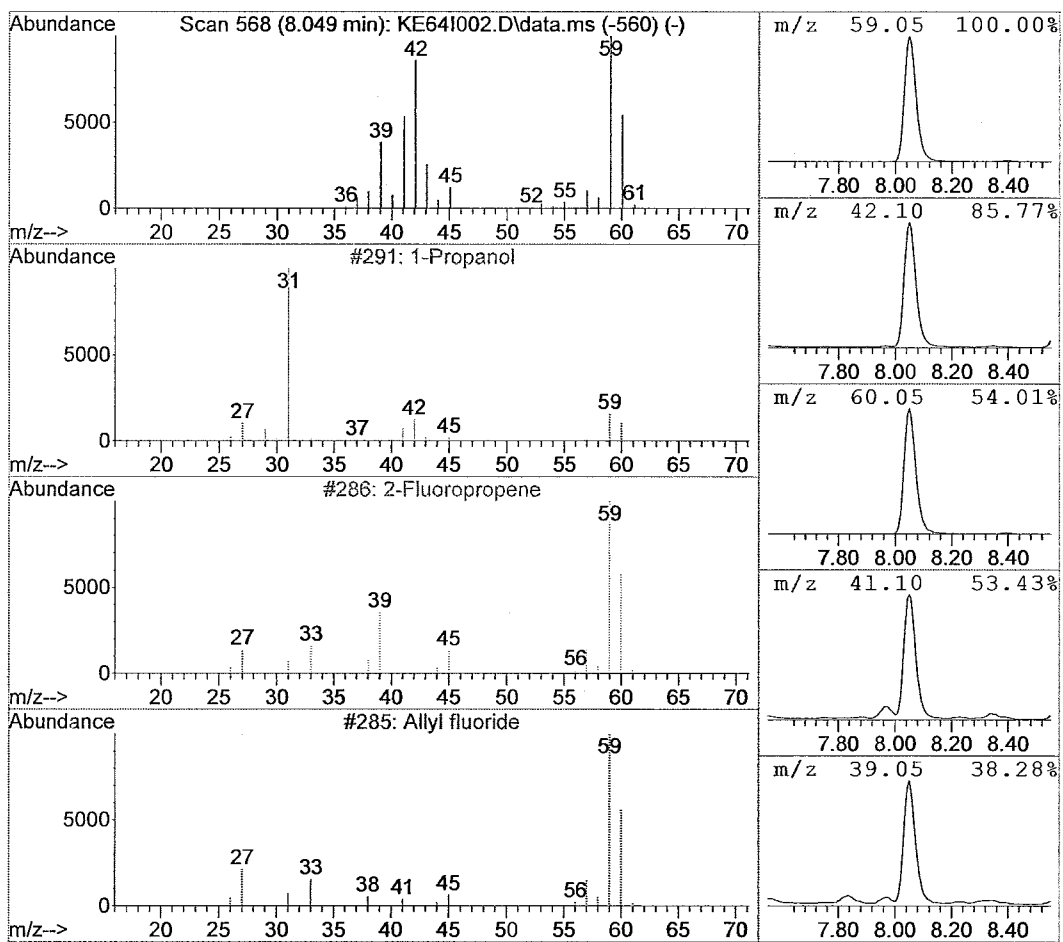
## Library Search Compound Report

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Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 8.05 | 7.64 ppb | 1750727 | Bromochloromethane | 4584874   |

| Hit# of 20 | Tentative ID                     | Ref# | CAS#        | Qual  |
|------------|----------------------------------|------|-------------|-------|
| 1          | 1-Propanol                       | 291  | 000071-23-8 | 59.00 |
| 2          | 2-Fluoropropene                  | 286  | 001184-60-7 | 52.00 |
| 3          | Allyl fluoride                   | 285  | 000818-92-8 | 38.00 |
| 4          | Methanamine, N-hydroxy-N-methyl- | 311  | 005725-96-2 | 12.00 |
| 5          | 2-Butanol, 3-methoxy-            | 4771 | 053778-72-6 | 10.00 |



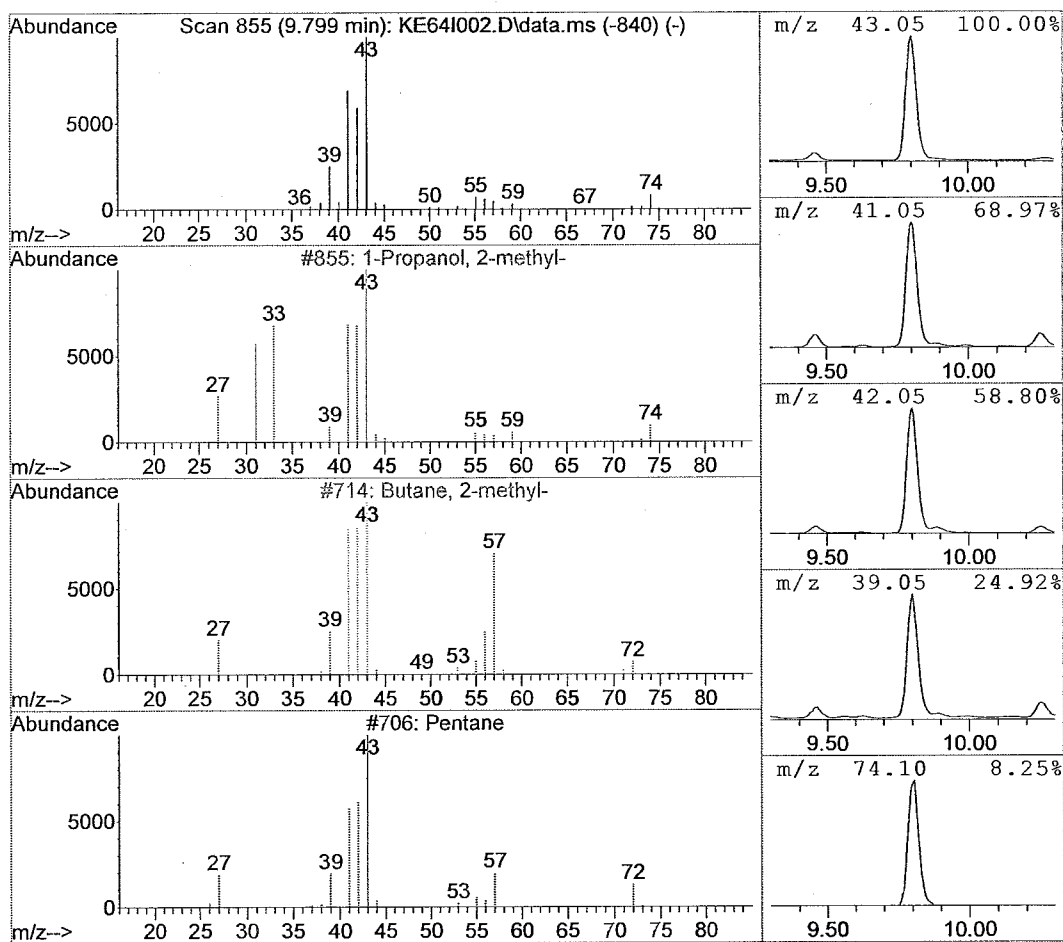
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 9.80 | 9.39 ppb | 2153354 | Bromochloromethane | 4584874   |

| Hit# of 20 | Tentative ID                      | Ref# | CAS#        | Qual  |
|------------|-----------------------------------|------|-------------|-------|
| 1          | 1-Propanol, 2-methyl-             | 855  | 000078-83-1 | 86.00 |
| 2          | Butane, 2-methyl-                 | 714  | 000078-78-4 | 59.00 |
| 3          | Pentane                           | 706  | 000109-66-0 | 59.00 |
| 4          | Isobutylene epoxide               | 687  | 000558-30-5 | 25.00 |
| 5          | 2(3H)-Furanone, dihydro-4-methyl- | 3732 | 001679-49-8 | 25.00 |



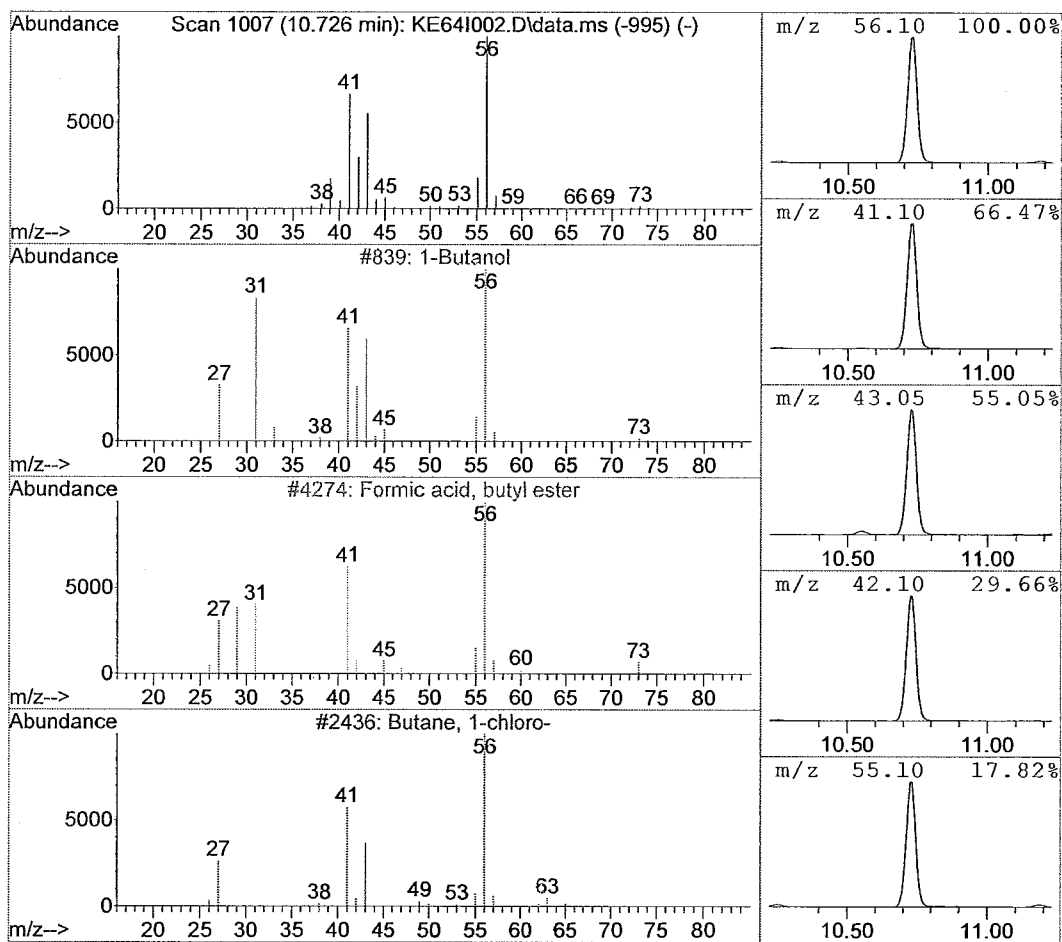
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc      | Area     | Relative to ISTD    | ISTD Area |
|-------|-----------|----------|---------------------|-----------|
| 10.73 | 54.52 ppb | 22500942 | 1,4-Difluorobenzene | 8254726   |

| Hit# of 20 | Tentative ID                        | Ref# | CAS#        | Qual  |
|------------|-------------------------------------|------|-------------|-------|
| 1          | 1-Butanol                           | 839  | 000071-36-3 | 91.00 |
| 2          | Formic acid, butyl ester            | 4274 | 000592-84-7 | 9.00  |
| 3          | Butane, 1-chloro-                   | 2436 | 000109-69-3 | 9.00  |
| 4          | Oxetane, 3,3-dimethyl-              | 1773 | 006921-35-3 | 9.00  |
| 5          | Oxetane, 2,3,4-trimethyl-, (2.alpha | 3967 | 032347-12-9 | 9.00  |



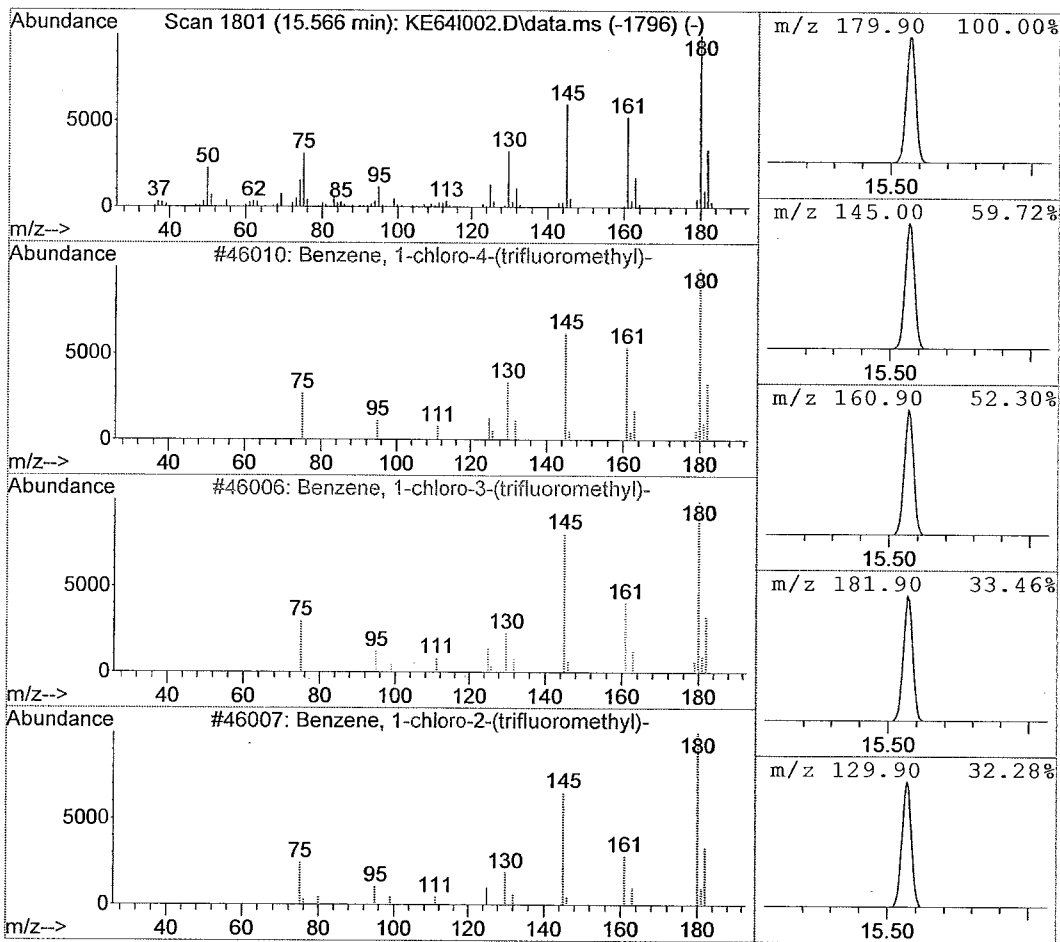
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 15.57 | 3.08 ppb | 1383058 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID                           | Ref#  | CAS#        | Qual  |
|------------|----------------------------------------|-------|-------------|-------|
| 1          | Benzene, 1-chloro-4-(trifluoromethyl)- | 46010 | 000098-56-6 | 95.00 |
| 2          | Benzene, 1-chloro-3-(trifluoromethyl)- | 46006 | 000098-15-7 | 91.00 |
| 3          | Benzene, 1-chloro-2-(trifluoromethyl)- | 46007 | 000088-16-4 | 91.00 |
| 4          | Phenylamine, N,4,5-trimethyl-2-nitr    | 46177 | 017978-54-0 | 25.00 |
| 5          | 1,3-Benzenedicarboxaldehyde, 2,4-di    | 46284 | 010209-57-1 | 22.00 |



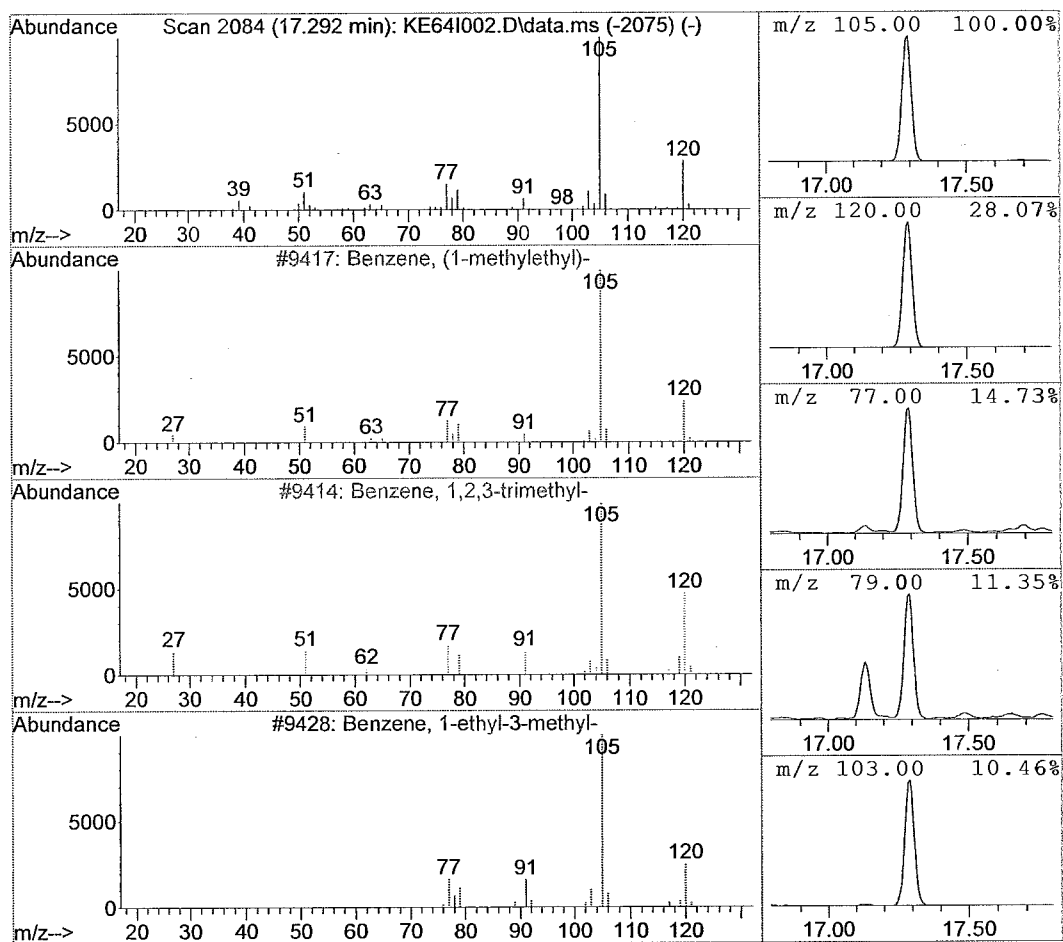
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 17.29 | 5.36 ppb | 2409305 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID               | Ref# | CAS#        | Qual  |
|------------|----------------------------|------|-------------|-------|
| 1          | Benzene, (1-methylethyl)-  | 9417 | 000098-82-8 | 94.00 |
| 2          | Benzene, 1,2,3-trimethyl-  | 9414 | 000526-73-8 | 91.00 |
| 3          | Benzene, 1-ethyl-3-methyl- | 9428 | 000620-14-4 | 80.00 |
| 4          | Benzene, 1-ethyl-4-methyl- | 9424 | 000622-96-8 | 80.00 |
| 5          | Benzene, 1,2,4-trimethyl-  | 9410 | 000095-63-6 | 80.00 |





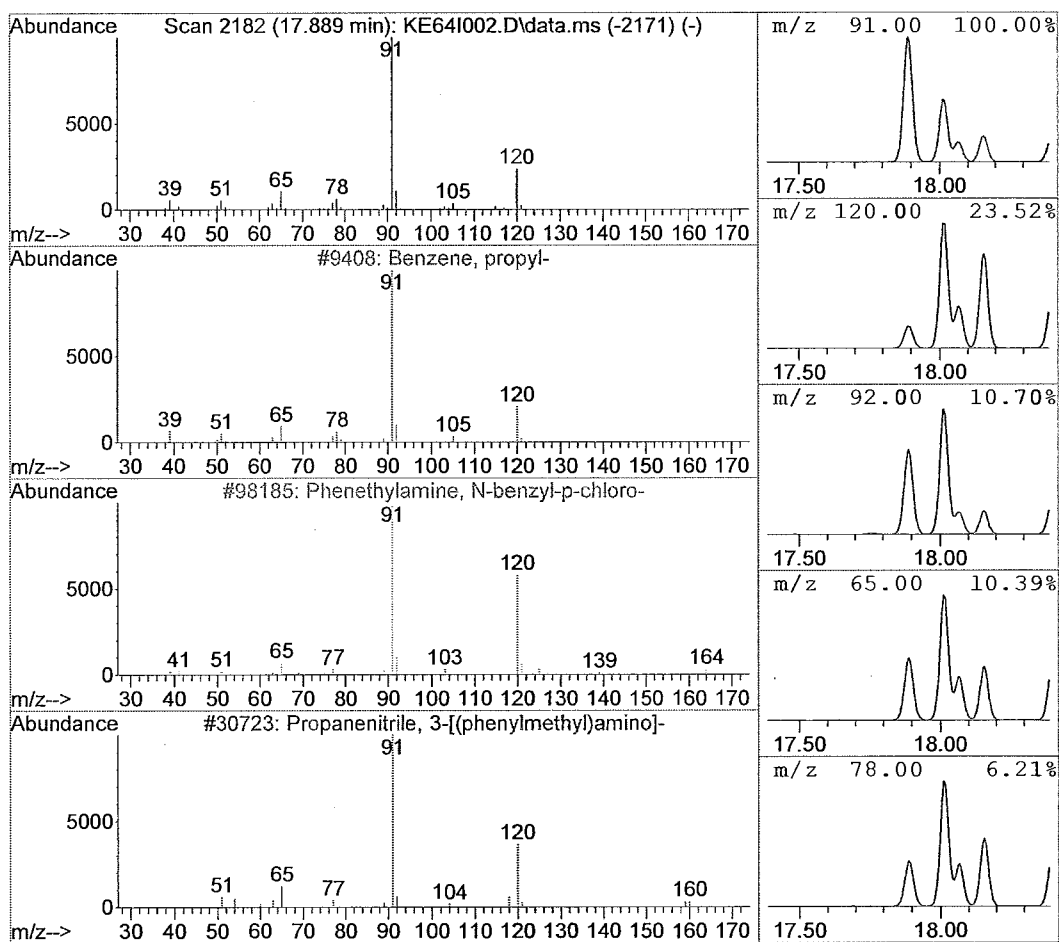
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc      | Area    | Relative to ISTD | ISTD Area |
|-------|-----------|---------|------------------|-----------|
| 17.89 | 12.86 ppb | 5776644 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID                        | Ref#  | CAS#        | Qual  |
|------------|-------------------------------------|-------|-------------|-------|
| 1          | Benzene, propyl-                    | 9408  | 000103-65-1 | 91.00 |
| 2          | Phenethylamine, N-benzyl-p-chloro-  | 98185 | 013622-43-0 | 72.00 |
| 3          | Propanenitrile, 3-[(phenylmethyl)am | 30723 | 000706-03-6 | 72.00 |
| 4          | 1,2-Ethanediamine, N,N'-bis(phenylm | 94288 | 000140-28-3 | 64.00 |
| 5          | N-Benzyl-2-phenethylamine           | 70357 | 003647-71-0 | 59.00 |



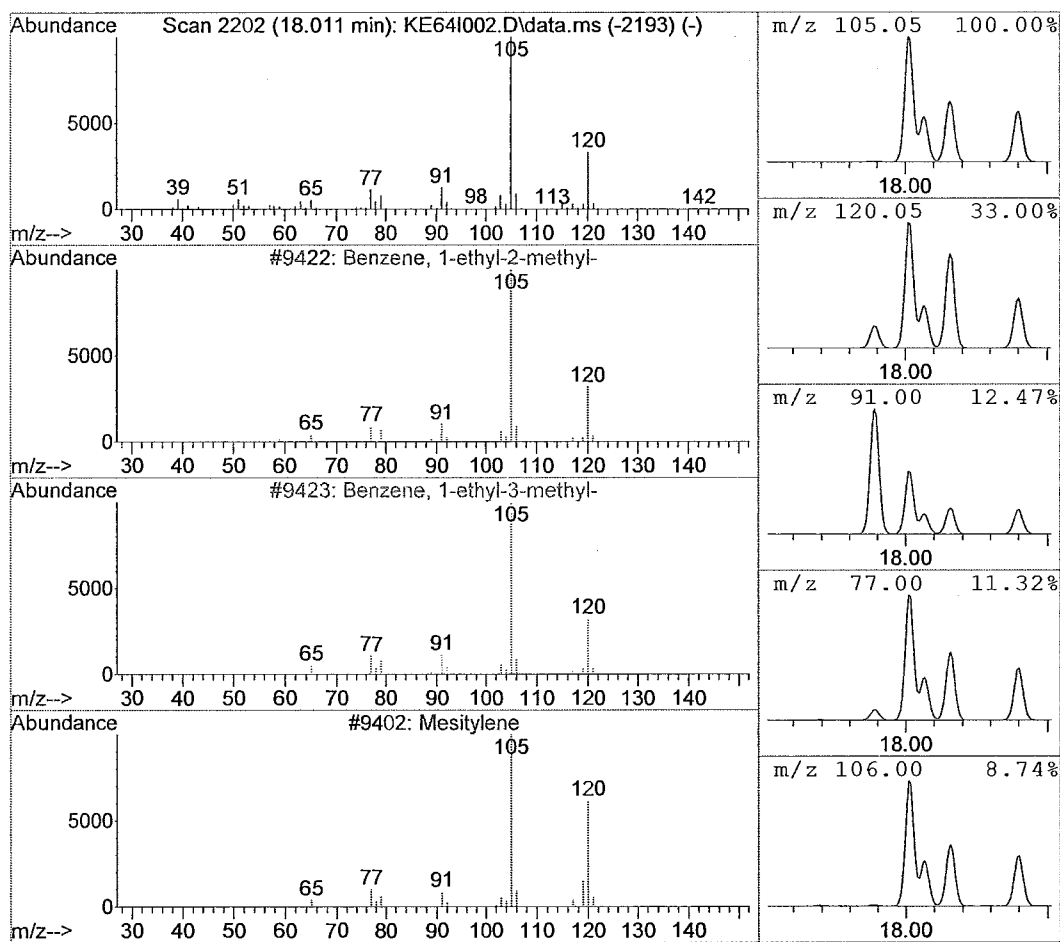
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc      | Area     | Relative to ISTD | ISTD Area |
|-------|-----------|----------|------------------|-----------|
| 18.01 | 65.33 ppb | 29349659 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID               | Ref# | CAS#        | Qual  |
|------------|----------------------------|------|-------------|-------|
| 1          | Benzene, 1-ethyl-2-methyl- | 9422 | 000611-14-3 | 95.00 |
| 2          | Benzene, 1-ethyl-3-methyl- | 9423 | 000620-14-4 | 95.00 |
| 3          | Mesitylene                 | 9402 | 000108-67-8 | 91.00 |
| 4          | Benzene, 1-ethyl-4-methyl- | 9430 | 000622-96-8 | 91.00 |
| 5          | Benzene, 1,2,3-trimethyl-  | 9412 | 000526-73-8 | 90.00 |



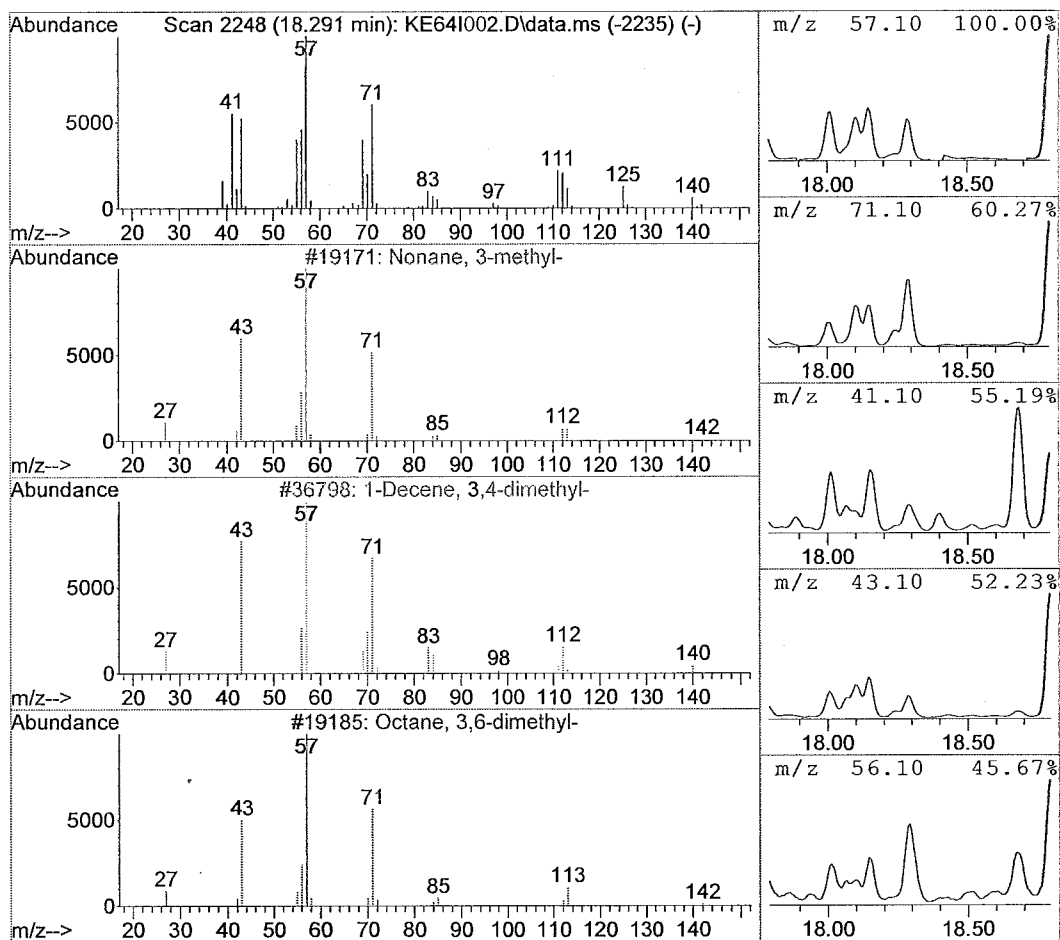
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 18.29 | 3.53 ppb | 1584079 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID                 | Ref#  | CAS#        | Qual  |
|------------|------------------------------|-------|-------------|-------|
| 1          | Nonane, 3-methyl-            | 19171 | 005911-04-6 | 43.00 |
| 2          | 1-Decene, 3,4-dimethyl-      | 36798 | 050871-03-9 | 43.00 |
| 3          | Octane, 3,6-dimethyl-        | 19185 | 015869-94-0 | 43.00 |
| 4          | Tridecane, 7-methyl-         | 59891 | 026730-14-3 | 43.00 |
| 5          | 2-Ethylhexyl mercaptoacetate | 63704 | 007659-86-1 | 38.00 |



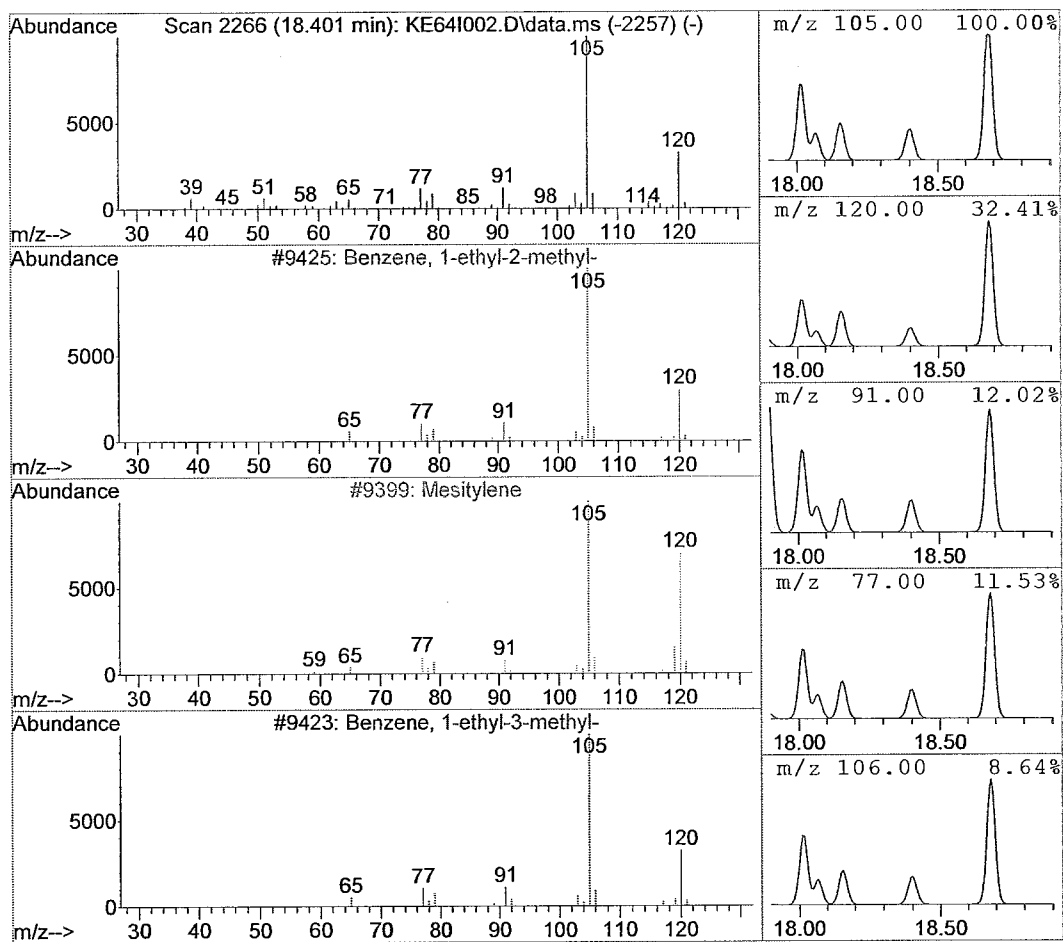
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc      | Area     | Relative to ISTD | ISTD Area |
|-------|-----------|----------|------------------|-----------|
| 18.40 | 25.46 ppb | 11437072 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID               | Ref# | CAS#        | Qual  |
|------------|----------------------------|------|-------------|-------|
| 1          | Benzene, 1-ethyl-2-methyl- | 9425 | 000611-14-3 | 93.00 |
| 2          | Mesitylene                 | 9399 | 000108-67-8 | 90.00 |
| 3          | Benzene, 1-ethyl-3-methyl- | 9423 | 000620-14-4 | 90.00 |
| 4          | Benzene, 1,2,4-trimethyl-  | 9420 | 000095-63-6 | 90.00 |
| 5          | Benzene, 1-ethyl-4-methyl- | 9424 | 000622-96-8 | 90.00 |



## Library Search Compound Report

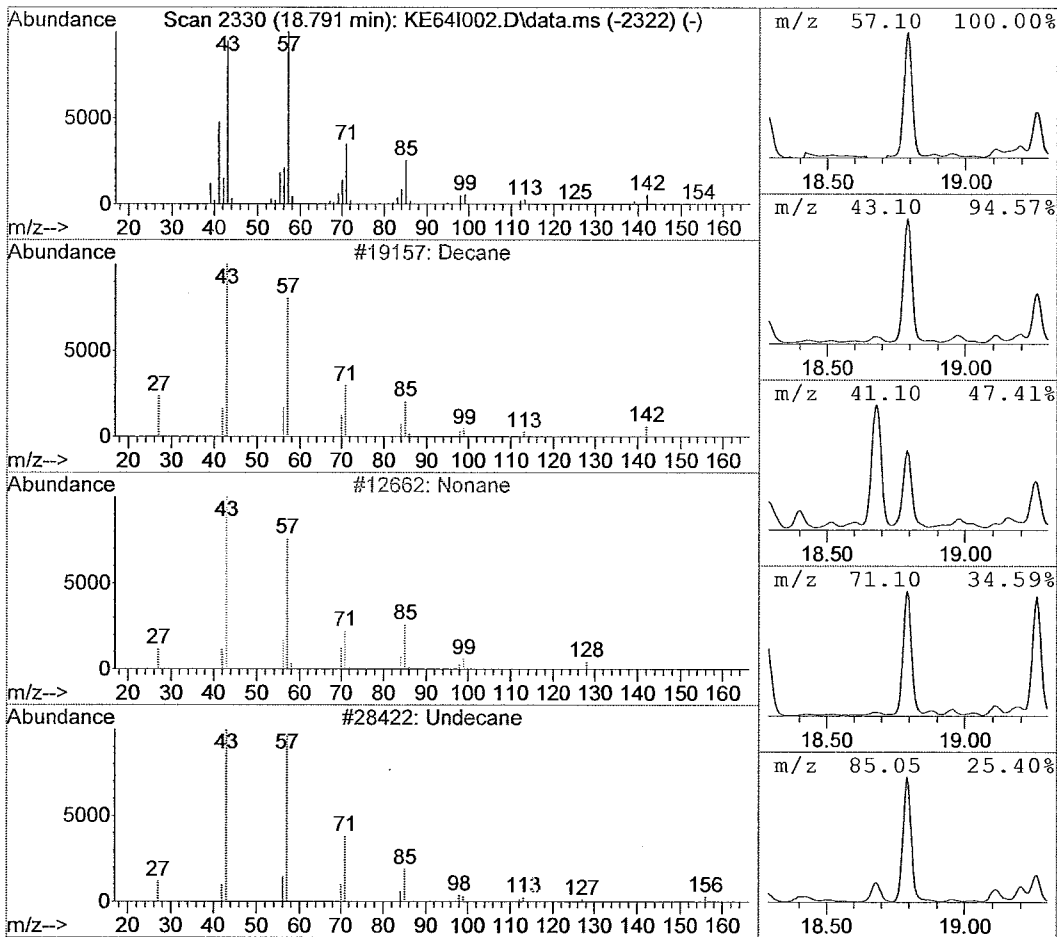
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Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 18.79 | 7.32 ppb | 3290234 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID            | Ref#  | CAS#        | Qual  |
|------------|-------------------------|-------|-------------|-------|
| 1          | Decane                  | 19157 | 000124-18-5 | 97.00 |
| 2          | Nonane                  | 12662 | 000111-84-2 | 90.00 |
| 3          | Undecane                | 28422 | 001120-21-4 | 72.00 |
| 4          | Octane                  | 7618  | 000111-65-9 | 64.00 |
| 5          | Undecane, 2,7-dimethyl- | 48861 | 017301-24-5 | 59.00 |

*CH 12/20/18*



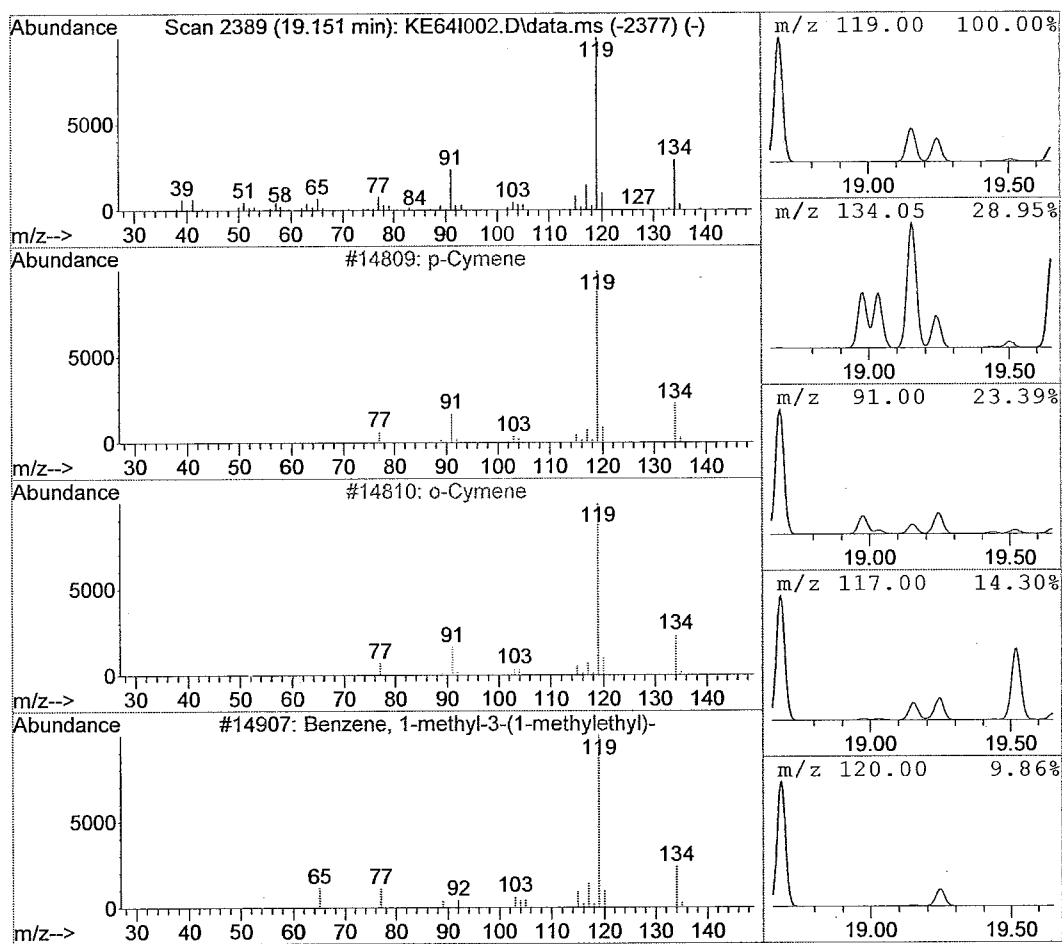
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 19.15 | 4.96 ppb | 2228605 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID                         | Ref#  | CAS#        | Qual  |
|------------|--------------------------------------|-------|-------------|-------|
| 1          | p-Cymene                             | 14809 | 000099-87-6 | 97.00 |
| 2          | o-Cymene                             | 14810 | 000527-84-4 | 97.00 |
| 3          | Benzene, 1-methyl-3-(1-methylethyl)- | 14907 | 000535-77-3 | 95.00 |
| 4          | Benzene, 1-ethyl-2,3-dimethyl-       | 14880 | 000933-98-2 | 91.00 |
| 5          | Benzene, 4-ethyl-1,2-dimethyl-       | 14888 | 000934-80-5 | 91.00 |



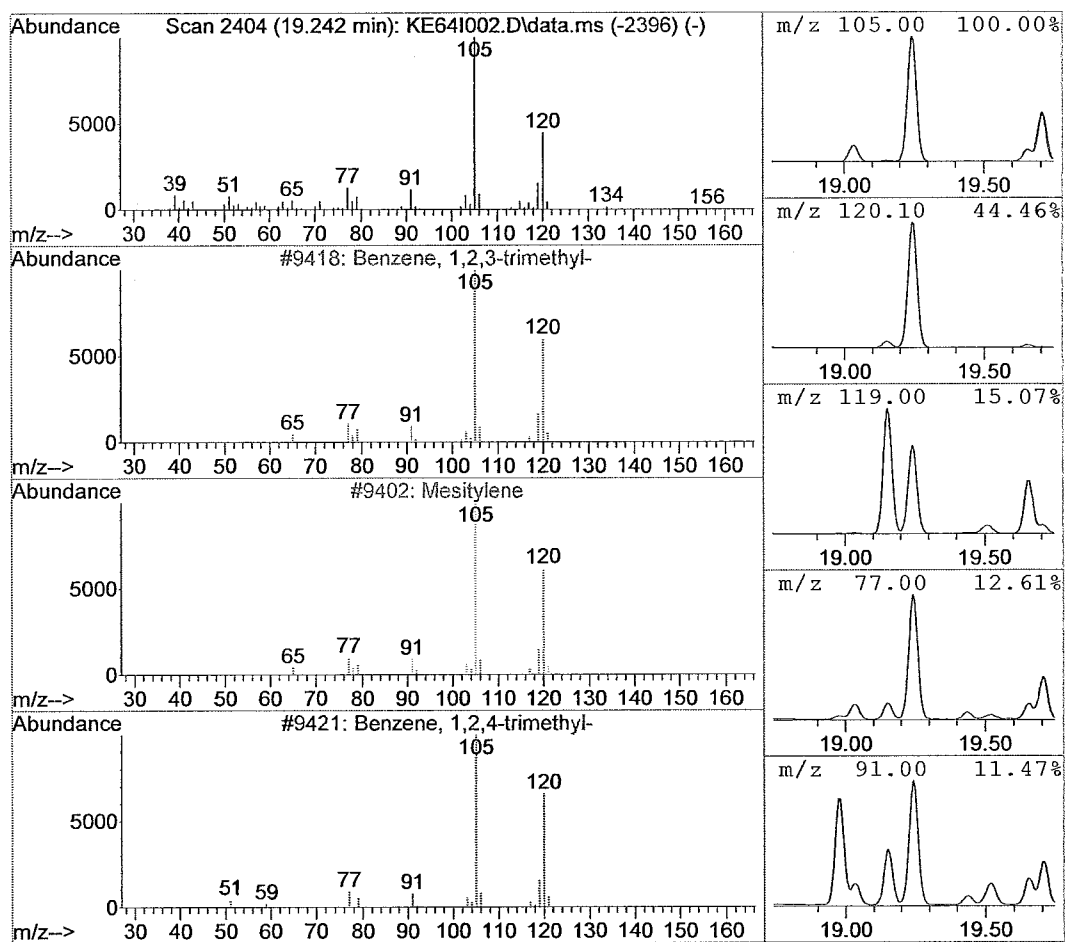
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc      | Area     | Relative to ISTD | ISTD Area |
|-------|-----------|----------|------------------|-----------|
| 19.24 | 23.41 ppb | 10518843 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID               | Ref# | CAS#        | Qual  |
|------------|----------------------------|------|-------------|-------|
| 1          | Benzene, 1,2,3-trimethyl-  | 9418 | 000526-73-8 | 97.00 |
| 2          | Mesitylene                 | 9402 | 000108-67-8 | 97.00 |
| 3          | Benzene, 1,2,4-trimethyl-  | 9421 | 000095-63-6 | 94.00 |
| 4          | Benzene, 1-ethyl-2-methyl- | 9422 | 000611-14-3 | 90.00 |
| 5          | Benzene, 1-ethyl-4-methyl- | 9430 | 000622-96-8 | 90.00 |



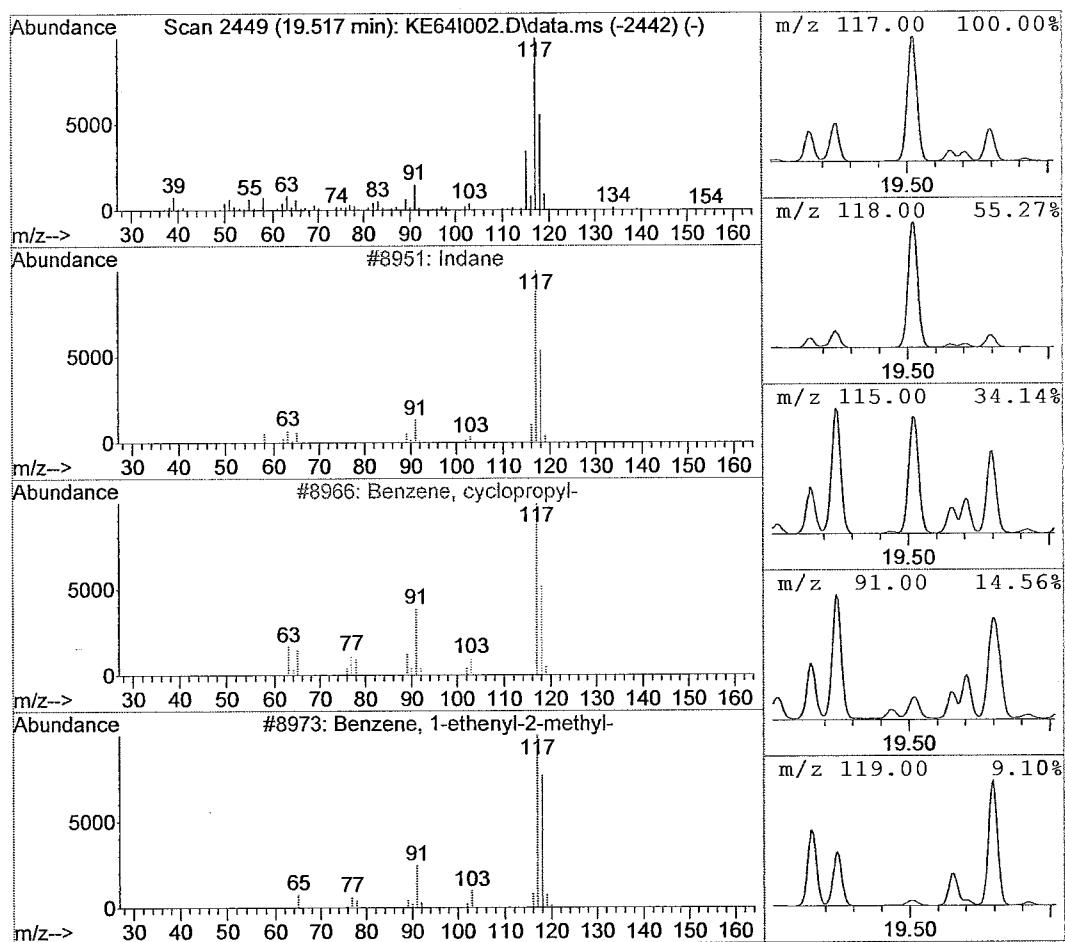
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 19.52 | 2.78 ppb | 1250381 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID                        | Ref# | CAS#         | Qual  |
|------------|-------------------------------------|------|--------------|-------|
| 1          | Indane                              | 8951 | 000496-11-7  | 94.00 |
| 2          | Benzene, cyclopropyl-               | 8966 | 000873-49-4  | 74.00 |
| 3          | Benzene, 1-ethenyl-2-methyl-        | 8973 | 000611-15-4  | 72.00 |
| 4          | Benzene, 2-propenyl-                | 8961 | 000300-57-2  | 64.00 |
| 5          | Tetracyclo[3.3.1.0(2,8).0(4,6)]-non | 8982 | 1000191-13-7 | 64.00 |





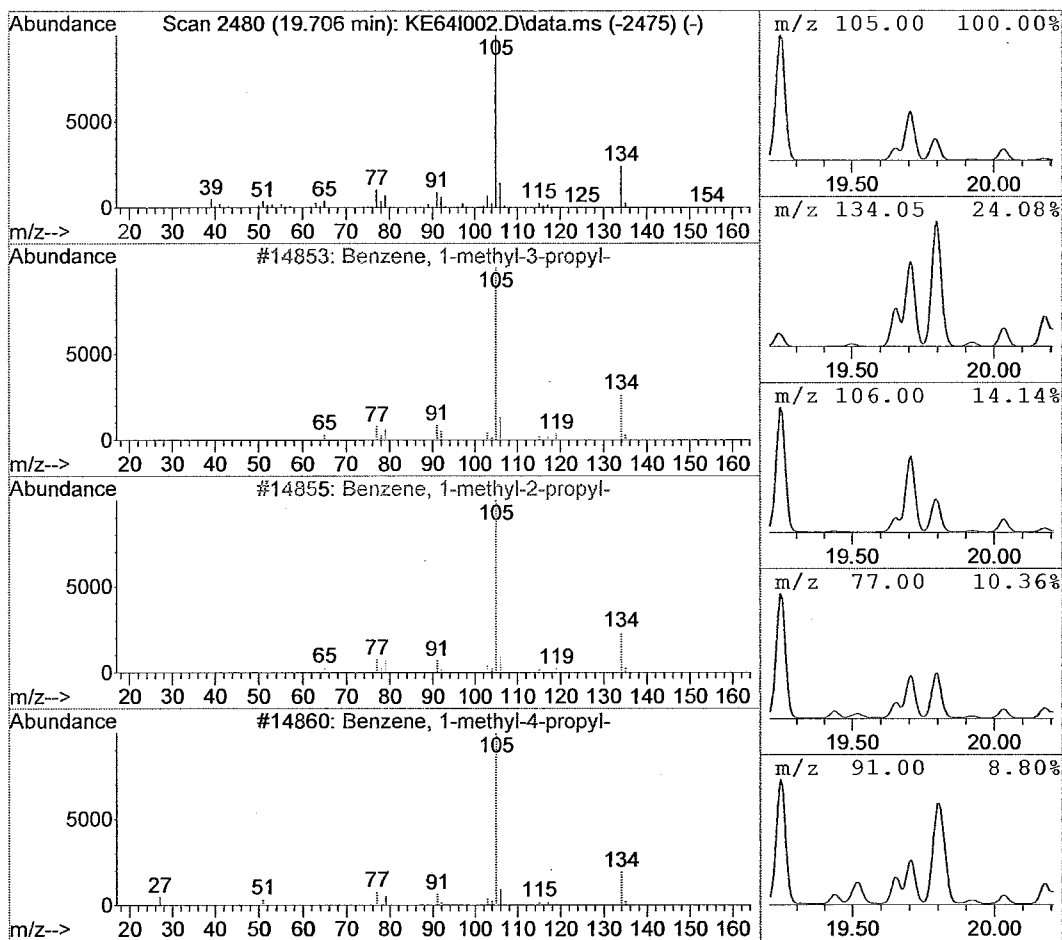
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 19.71 | 6.14 ppb | 2759992 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID                        | Ref#  | CAS#        | Qual  |
|------------|-------------------------------------|-------|-------------|-------|
| 1          | Benzene, 1-methyl-3-propyl-         | 14853 | 001074-43-7 | 91.00 |
| 2          | Benzene, 1-methyl-2-propyl-         | 14855 | 001074-17-5 | 90.00 |
| 3          | Benzene, 1-methyl-4-propyl-         | 14860 | 001074-55-1 | 90.00 |
| 4          | Benzene, (1-methylpropyl)-          | 14848 | 000135-98-8 | 90.00 |
| 5          | Benzeneacetaldehyde, .alpha.-methyl | 15355 | 000093-53-8 | 72.00 |



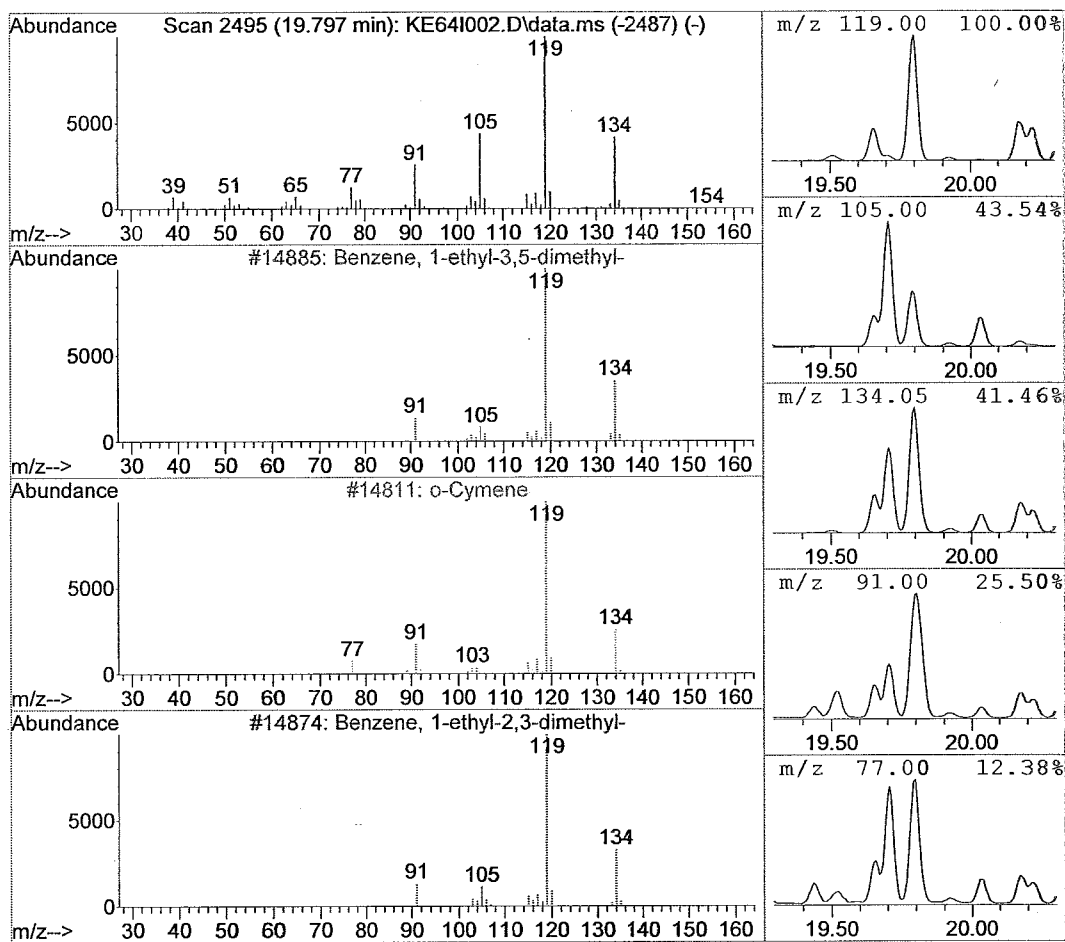
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE64I002.D Vial: 10  
Acq Time : 12/19/2018 22:24 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 19.80 | 9.66 ppb | 4339908 | Chlorobenzene d5 | 8984912   |

| Hit# of 20 | Tentative ID                   | Ref#  | CAS#        | Qual  |
|------------|--------------------------------|-------|-------------|-------|
| 1          | Benzene, 1-ethyl-3,5-dimethyl- | 14885 | 000934-74-7 | 94.00 |
| 2          | o-Cymene                       | 14811 | 000527-84-4 | 93.00 |
| 3          | Benzene, 1-ethyl-2,3-dimethyl- | 14874 | 000933-98-2 | 91.00 |
| 4          | Benzene, 4-ethyl-1,2-dimethyl- | 14888 | 000934-80-5 | 91.00 |
| 5          | Benzene, 1,2,3,4-tetramethyl-  | 14864 | 000488-23-3 | 91.00 |



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE66I002.D Vial: 10  
 Acq Time : 12/19/2018 23:42 Operator: BB  
 Sample : 1835290002 Inst : 5975-K  
 Misc : 1:20 dil 10ml Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:45:12 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area%  |
|-------------------------|-------|------|----------|-------|-------|--------|
| 1) Bromochloromethane   | 9.41  | 130  | 267520   | 20.00 | ppb   | 88.65  |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3519239  | 20.00 | ppb   | 93.50  |
| 44) Chlorobenzene d5    | 15.49 | 117  | 3013585  | 20.00 | ppb   | 107.33 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1747870  | 20.64 | ppb   | 103.21%   |

| Target Compounds              | R.T.  | QIon | Response | Conc     | Units        | Qvalue |
|-------------------------------|-------|------|----------|----------|--------------|--------|
| 2) Dichlorodifluoromethane    | 0.00  | 85   |          |          | Not Detected |        |
| 3) Chloromethane              | 0.00  | 50   |          |          | Not Detected |        |
| 4) Freon 114                  | 0.00  | 135  |          |          | Not Detected |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          |          | Not Detected |        |
| 6) 1,3-Butadiene              | 0.00  | 54   |          |          | Not Detected |        |
| 7) Bromomethane               | 0.00  | 94   |          |          | Not Detected |        |
| 8) Chloroethane               | 0.00  | 64   |          |          | Not Detected |        |
| 9) Acetone                    | 6.59  | 43   | 10075842 | 121.1615 | ppb          | 100    |
| 10) Trichlorofluoromethane    | 0.00  | 101  |          |          | Not Detected |        |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          |          | Not Detected |        |
| 12) Methylene Chloride        | 0.00  | 84   |          |          | Not Detected |        |
| 13) Freon 113                 | 0.00  | 151  |          |          | Not Detected |        |
| 14) Carbon Disulfide          | 0.00  | 76   |          |          | Not Detected |        |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          |          | Not Detected |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          |          | Not Detected |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          |          | Not Detected |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          |          | Not Detected |        |
| 19) 2-Butanone                | 0.00  | 43   |          |          | Not Detected |        |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          |          | Not Detected |        |
| 22) Ethyl Acetate             | 0.00  | 61   |          |          | Not Detected |        |
| 23) Hexane                    | 0.00  | 57   |          |          | Not Detected |        |
| 24) Chloroform                | 0.00  | 83   |          |          | Not Detected |        |
| 25) Tetrahydrofuran           | 0.00  | 42   |          |          | Not Detected |        |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          |          | Not Detected |        |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          |          | Not Detected |        |
| 28) Benzene                   | 0.00  | 78   |          |          | Not Detected |        |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          |          | Not Detected |        |
| 30) Cyclohexane               | 0.00  | 84   |          |          | Not Detected |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          |          | Not Detected |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          |          | Not Detected |        |
| 33) Trichloroethene           | 0.00  | 130  |          |          | Not Detected |        |
| 34) Heptane                   | 0.00  | 71   |          |          | Not Detected |        |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          |          | Not Detected |        |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 752171   | 5.4141   | ppb          | 97     |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          |          | Not Detected |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          |          | Not Detected |        |
| 39) Toluene                   | 0.00  | 91   |          |          | Not Detected |        |
| 40) 2-Hexanone                | 0.00  | 43   |          |          | Not Detected |        |
| 41) Dibromochloromethane      | 0.00  | 129  |          |          | Not Detected |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          |          | Not Detected |        |
| 43) Tetrachloroethene         | 0.00  | 166  |          |          | Not Detected |        |
| 45) Chlorobenzene             | 0.00  | 112  |          |          | Not Detected |        |
| 46) Ethylbenzene              | 15.93 | 91   | 374589   | 1.5628   | ppb          | 98     |
| 47) m,p-Xylene                | 16.10 | 91   | 2030103  | 10.6771  | ppb          | 99     |
| 48) Bromoform                 | 0.00  | 173  |          |          | Not Detected |        |
| 49) Styrene                   | 0.00  | 104  |          |          | Not Detected |        |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          |          | Not Detected |        |

(#) = qualifier out of range (m) = manual integration

KE66I002.D TO15KH18.m

Thu Dec 20 14:54:09 2018

*only*  
*Acetone*  
*4-methyl-2-Pentanone*  
*m,p-xylene*  
*o-xylene*  
*1,2,4-Trimethylbenzene*  
*only*  
*evaluated*

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE66I002.D Vial: 10  
Acq Time : 12/19/2018 23:42 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : 1:20 dil 10ml Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:45:12 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc   | Unit         | Qvalue |
|------------------------------|-------|------|----------|--------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 1196391  | 6.4410 | ppb          | 99     |
| 53) 4-Ethyl Toluene          | 18.07 | 105  | 218498   | 0.9237 | ppb          | 100    |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 394906   | 1.8264 | ppb          | 99     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 1239863  | 6.1988 | ppb          | 99     |
| 56) Benzyl Chloride          | 0.00  | 91   |          |        | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          |        | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          |        | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          |        | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          |        | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          |        | Not Detected |        |

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(#) = qualifier out of range (m) = manual integration

KE66I002.D TO15KH18.m Thu Dec 20 14:54:09 2018

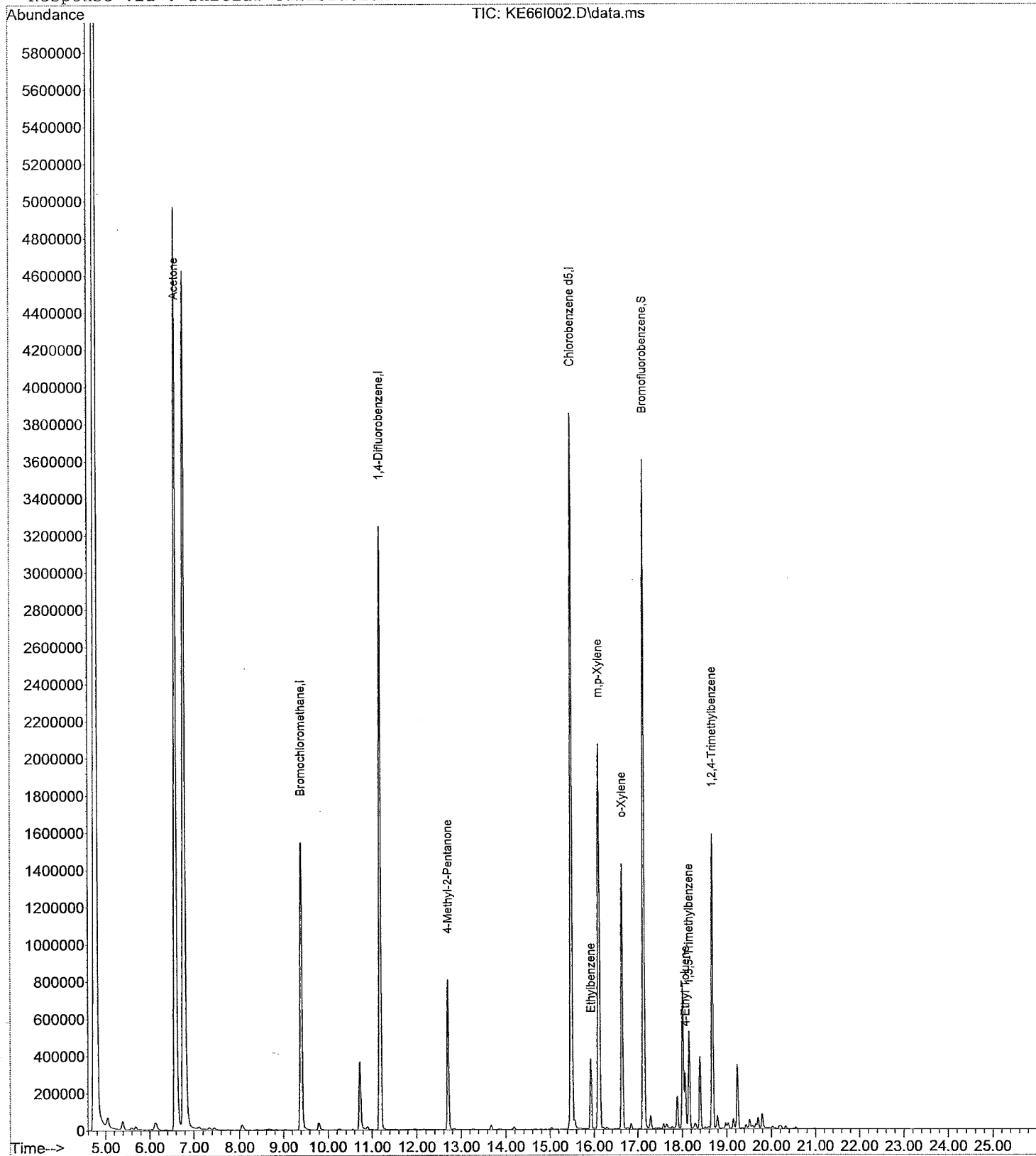
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE66I002.D Vial: 10  
Acq Time : 12/19/2018 23:42 Operator: BB  
Sample : 1835290002 Inst : 5975-K  
Misc : 1:20 dil 10ml Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:45:12 2018

Results File: TO15KH18.RES

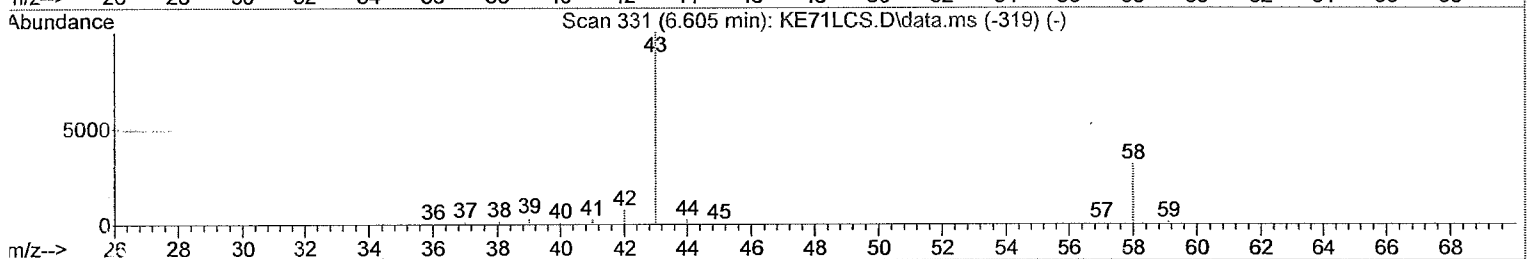
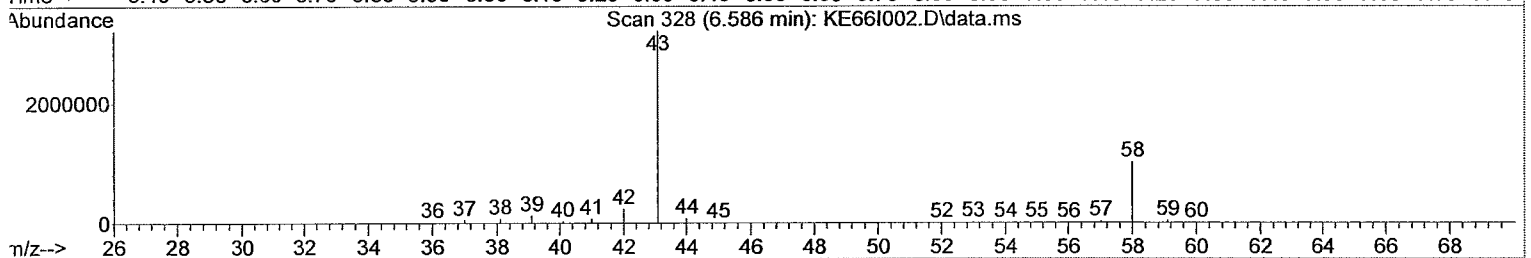
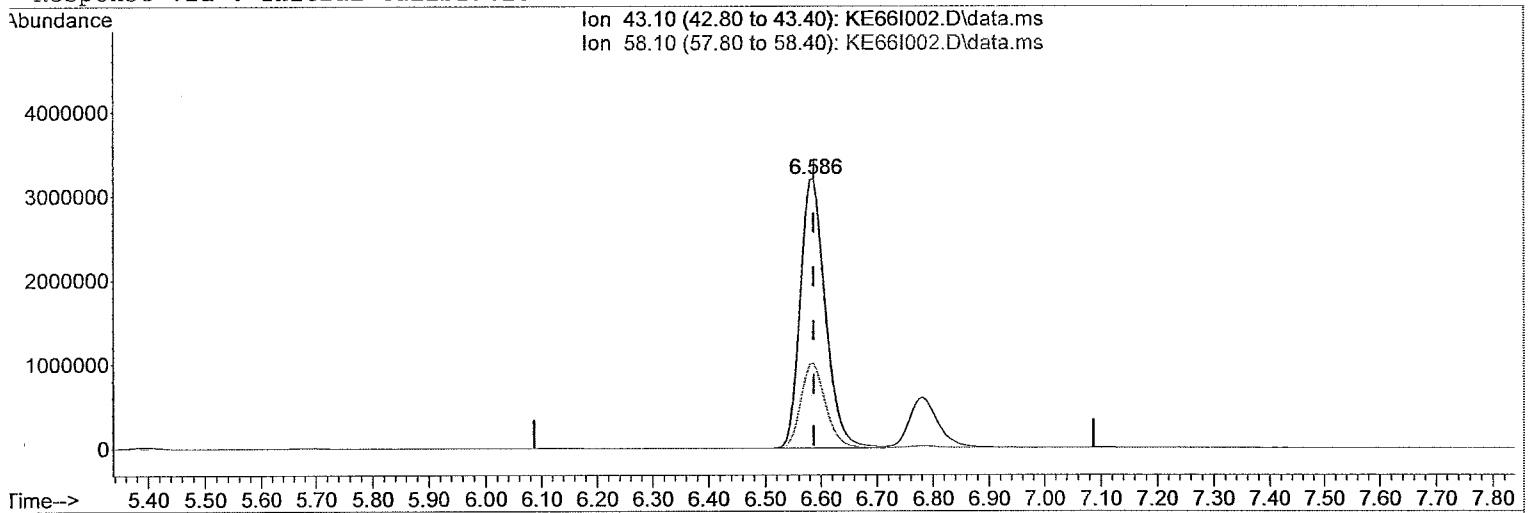
Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



# Quantitation Report (Qedit)

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
 Data File : KE66I002.D  
 Acq On : 12/19/2018 23:42  
 Operator : BB  
 Sample : 1835290002  
 Inst : 5975-K  
 Misc : 1:20 dil 10ml  
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 20 07:34:21 2018  
 Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
 Quant Title : TO-15  
 QLast Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration



TIC: KE66I002.D\data.ms

## (9) Acetone

6.586min (-0.000) 121.16 ppb

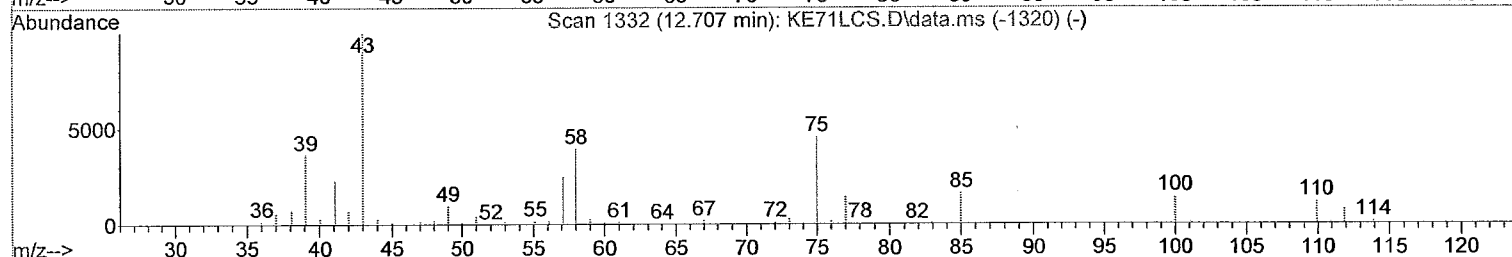
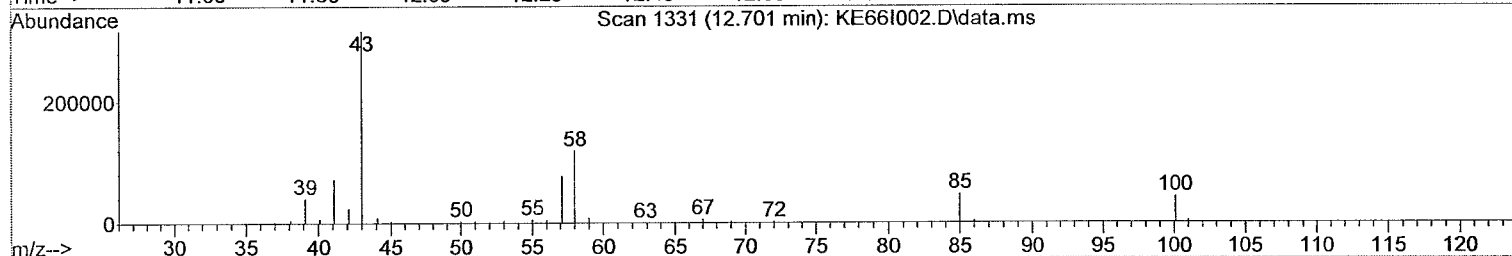
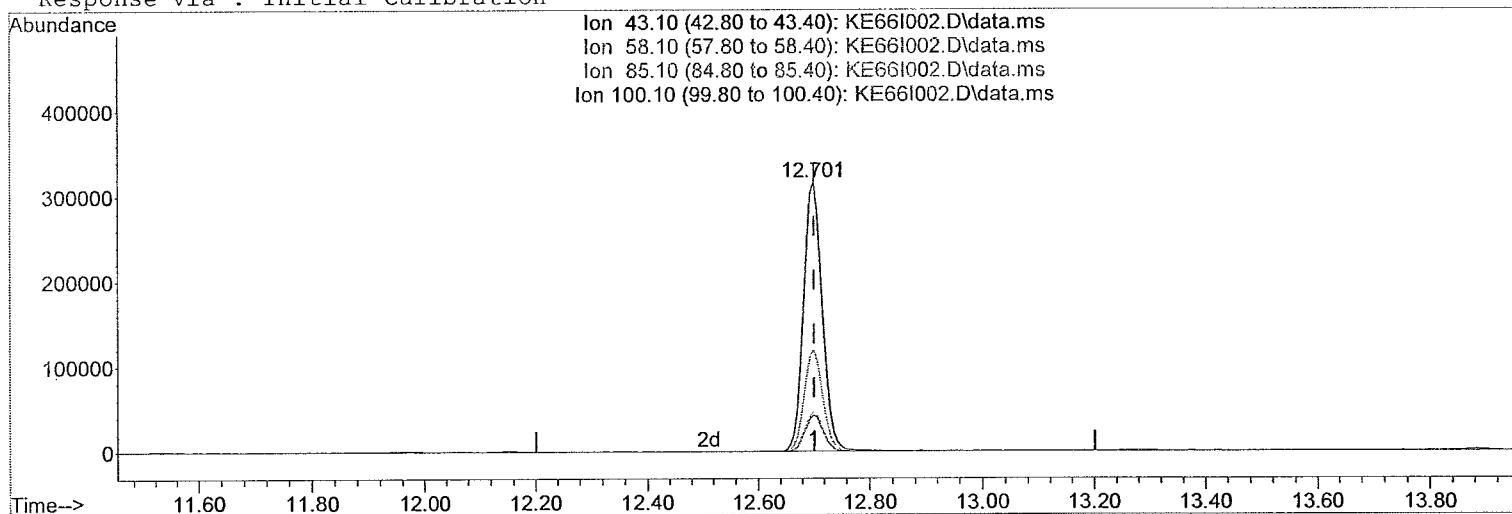
response 10075842

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 43.10 | 100.00 | 100.00 |
| 58.10 | 31.40  | 31.14  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

## Quantitation Report (Qedit)

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE66I002.D  
Acq On : 12/19/2018 23:42  
Operator : BB  
Sample : 1835290002  
Inst : 5975-K  
Misc : 1:20 dil 10ml  
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 20 07:34:21 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



TIC: KE66I002.D\data.ms

(36) 4-Methyl-2-Pentanone

12.701min (-0.000) 5.41 ppb

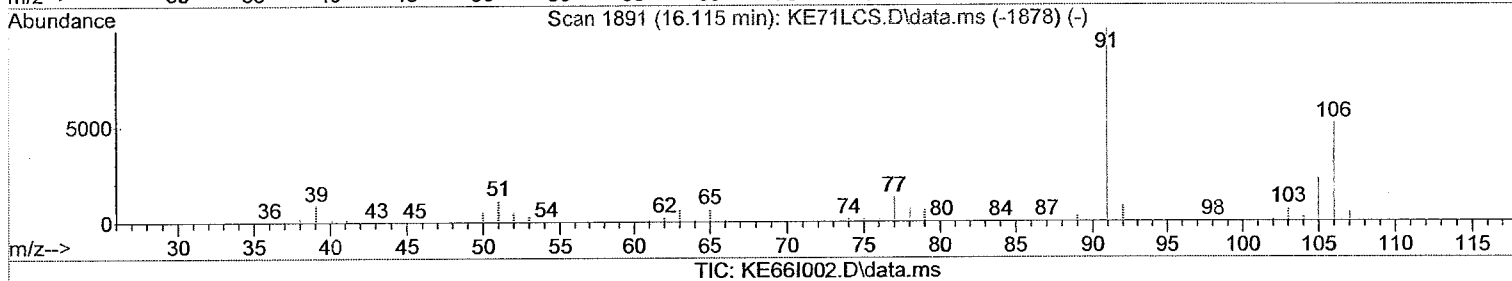
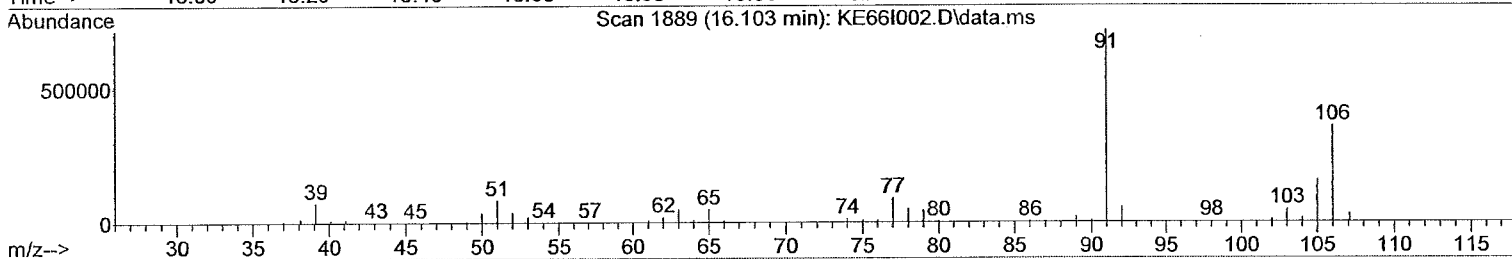
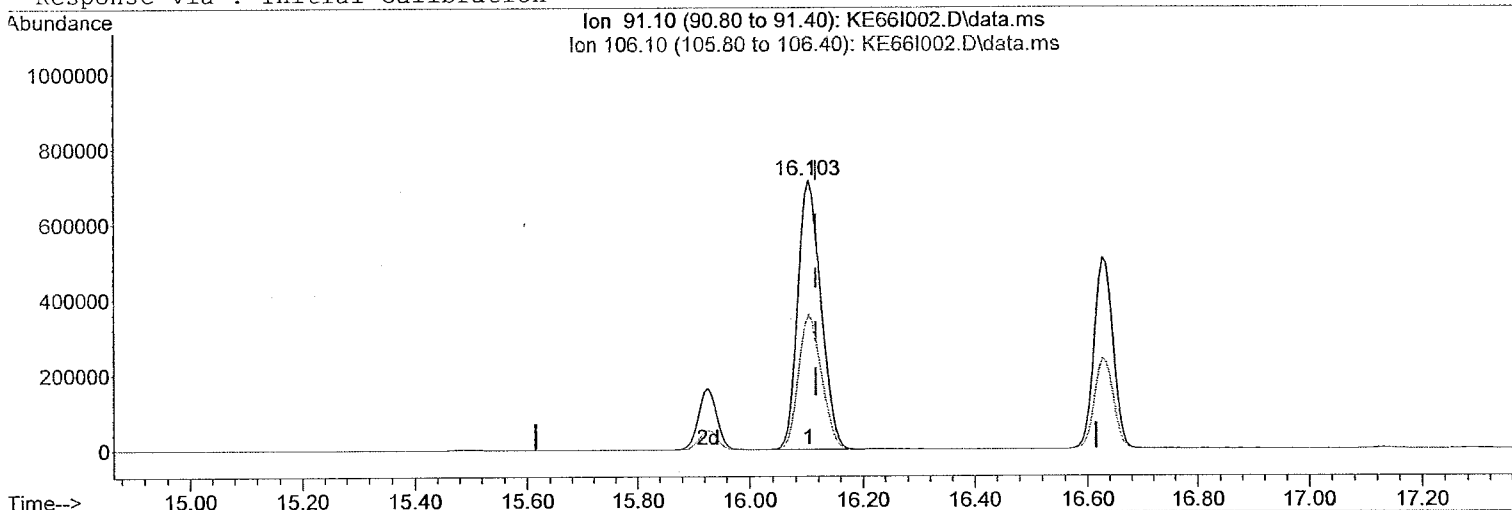
response 752171

| Ion    | Exp%   | Act%   |
|--------|--------|--------|
| 43.10  | 100.00 | 100.00 |
| 58.10  | 38.80  | 37.41  |
| 85.10  | 16.10  | 14.56  |
| 100.10 | 14.30  | 13.21  |

## Quantitation Report (Qedit)

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE66I002.D  
Acq On : 12/19/2018 23:42  
Operator : BB  
Sample : 1835290002  
Inst : 5975-K  
Misc : 1:20 dil 10ml  
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 20 07:34:21 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



(47) m,p-Xylene

16.103min (-0.012) 10.68 ppb

response 2030103

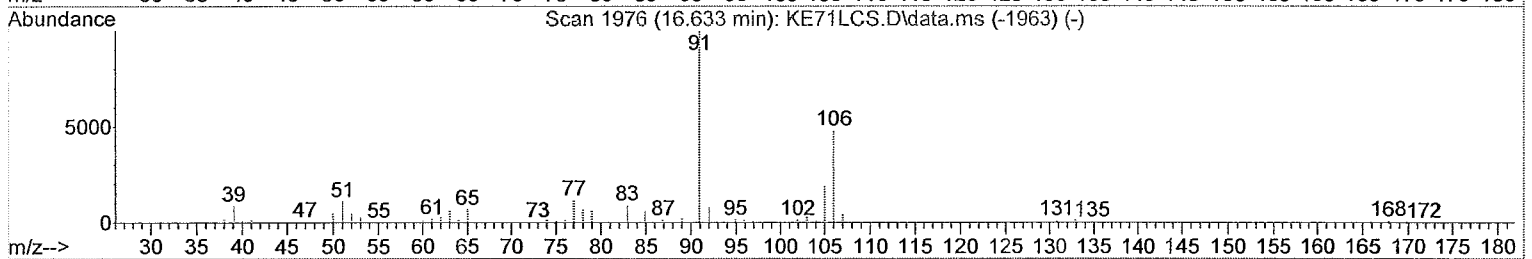
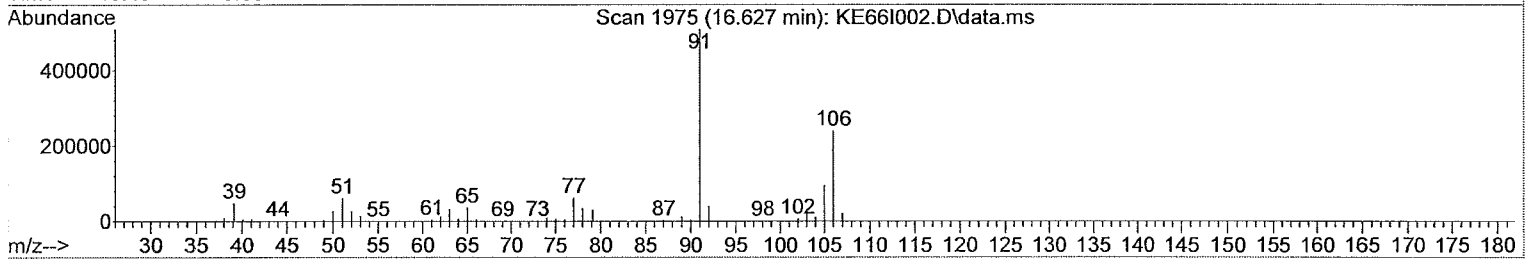
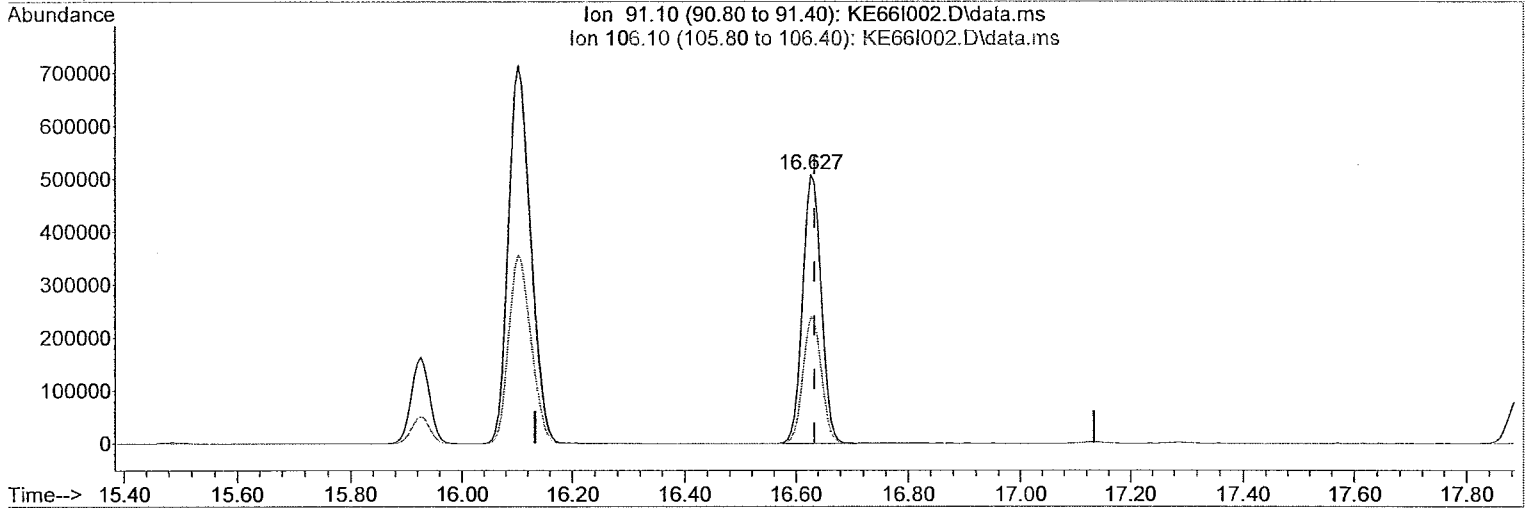
| Ion    | Exp%   | Act%   |
|--------|--------|--------|
| 91.10  | 100.00 | 100.00 |
| 106.10 | 50.60  | 50.03  |
| 0.00   | 0.00   | 0.00   |
| 0.00   | 0.00   | 0.00   |



# Quantitation Report (Qedit)

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
 Data File : KE66I002.D  
 Acq On : 12/19/2018 23:42  
 Operator : BB  
 Sample : 1835290002  
 Inst : 5975-K  
 Misc : 1:20 dil 10ml  
 ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 20 07:34:21 2018  
 Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
 Quant Title : TO-15  
 QLast Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration



TIC: KE66I002.D\data.ms

(51) o-Xylene

16.627min (-0.006) 6.44 ppb

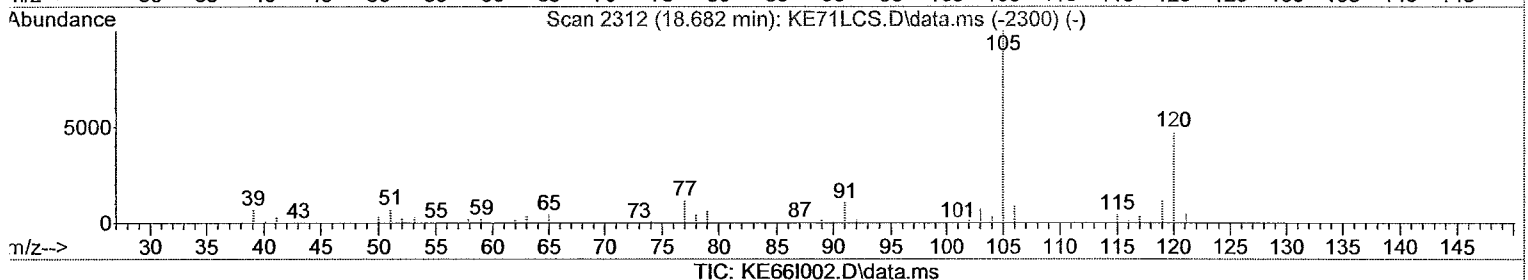
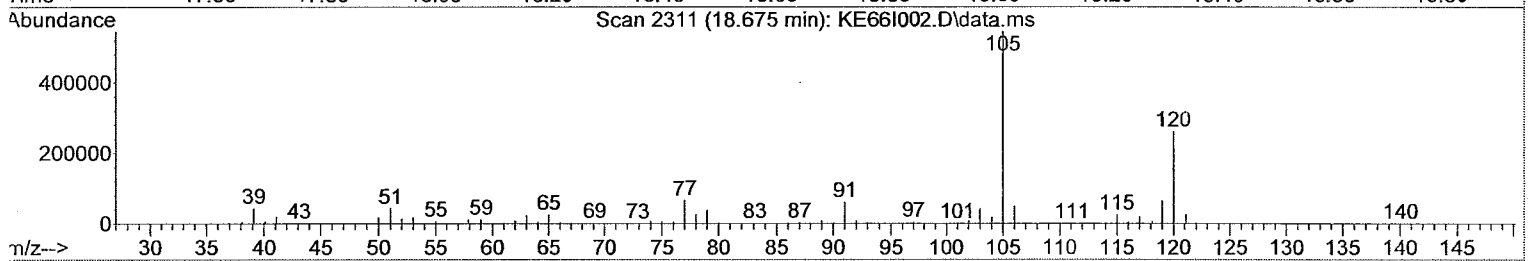
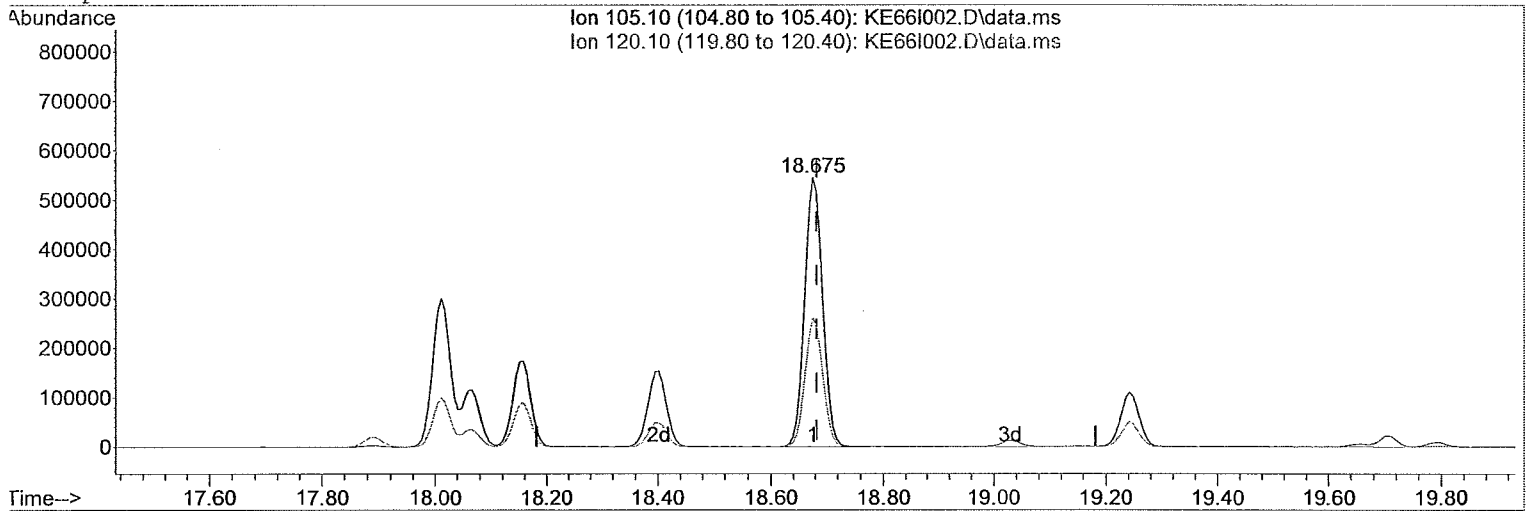
response 1196391

| Ion    | Exp%   | Act%   |
|--------|--------|--------|
| 91.10  | 100.00 | 100.00 |
| 106.10 | 47.80  | 47.11  |
| 0.00   | 0.00   | 0.00   |
| 0.00   | 0.00   | 0.00   |

## Quantitation Report (Qedit)

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE66I002.D  
Acq On : 12/19/2018 23:42  
Operator : BB  
Sample : 1835290002  
Inst : 5975-K  
Misc : 1:20 dil 10ml  
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Dec 20 07:34:21 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



(55) 1,2,4-Trimethylbenzene

18.675min (-0.006) 6.20 ppb

response 1239863

| Ion    | Exp%   | Act%   |
|--------|--------|--------|
| 105.10 | 100.00 | 100.00 |
| 120.10 | 48.40  | 47.63  |
| 0.00   | 0.00   | 0.00   |
| 0.00   | 0.00   | 0.00   |

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
 Acq Time : 12/19/2018 23:04 Operator: BB  
 Sample : 1835290003 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:44:11 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area%  |
|-------------------------|-------|------|----------|-------|-------|--------|
| 1) Bromochloromethane   | 9.41  | 130  | 287232   | 20.00 | ppb   | 95.19  |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3820246  | 20.00 | ppb   | 101.49 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 3166860  | 20.00 | ppb   | 112.79 |

| System Monitoring Compounds |       |    |         |       | %Recovery  |
|-----------------------------|-------|----|---------|-------|------------|
| 52) Bromofluorobenzene      | 17.13 | 95 | 1731283 | 19.46 | ppb 97.28% |

| Target Compounds              |       |     |          |              | Qvalue   |
|-------------------------------|-------|-----|----------|--------------|----------|
| 2) Dichlorodifluoromethane    | 5.10  | 85  | 71123    | 0.4495       | ppb 99   |
| 3) Chloromethane              | 0.00  | 50  |          | Not Detected |          |
| 4) Freon 114                  | 0.00  | 135 |          | Not Detected |          |
| 5) Vinyl Chloride             | 0.00  | 62  |          | Not Detected |          |
| 6) 1,3-Butadiene              | 5.63  | 54  | 54978    | 1.4042       | ppb # 30 |
| 7) Bromomethane               | 0.00  | 94  |          | Not Detected |          |
| 8) Chloroethane               | 0.00  | 64  |          | Not Detected |          |
| 9) Acetone                    | 6.58  | 43  | 15504072 | 173.6410     | ppb 100  |
| 10) Trichlorofluoromethane    | 6.79  | 101 | 27912    | 0.1980       | ppb 98   |
| 11) 1,1-Dichloroethene        | 0.00  | 61  |          | Not Detected |          |
| 12) Methylene Chloride        | 7.45  | 84  | 9278     | 0.1959       | ppb 92   |
| 13) Freon 113                 | 0.00  | 151 |          | Not Detected |          |
| 14) Carbon Disulfide          | 7.79  | 76  | 93208    | 0.8015       | ppb 100  |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96  |          | Not Detected |          |
| 16) 1,1-Dichloroethane        | 0.00  | 63  |          | Not Detected |          |
| 17) methyl t-butyl ether      | 0.00  | 73  |          | Not Detected |          |
| 18) Vinyl Acetate             | 0.00  | 86  |          | Not Detected |          |
| 19) 2-Butanone                | 8.81  | 43  | 1405896  | 12.3370      | ppb 98   |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96  |          | Not Detected |          |
| 22) Ethyl Acetate             | 0.00  | 61  |          | Not Detected |          |
| 23) Hexane                    | 9.46  | 57  | 123923   | 1.2925       | ppb 92   |
| 24) Chloroform                | 0.00  | 83  |          | Not Detected |          |
| 25) Tetrahydrofuran           | 9.90  | 42  | 15469    | 0.2439       | ppb 92   |
| 26) 1,2-Dichloroethane        | 0.00  | 62  |          | Not Detected |          |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97  |          | Not Detected |          |
| 28) Benzene                   | 10.90 | 78  | 171546   | 1.0793       | ppb 97   |
| 29) Carbon Tetrachloride      | 0.00  | 117 |          | Not Detected |          |
| 30) Cyclohexane               | 0.00  | 84  |          | Not Detected |          |
| 31) 1,2-Dichloropropane       | 0.00  | 63  |          | Not Detected |          |
| 32) Bromodichloromethane      | 0.00  | 83  |          | Not Detected |          |
| 33) Trichloroethene           | 0.00  | 130 |          | Not Detected |          |
| 34) Heptane                   | 12.16 | 71  | 48578    | 0.7936       | ppb 95   |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75  |          | Not Detected |          |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43  | 169393   | 1.1232       | ppb 97   |
| 37) trans-1,3-Dichloropropene | 0.00  | 75  |          | Not Detected |          |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97  |          | Not Detected |          |
| 39) Toluene                   | 13.68 | 91  | 284966   | 1.5075       | ppb 100  |
| 40) 2-Hexanone                | 13.88 | 43  | 1157222  | 8.7537       | ppb 98   |
| 41) Dibromochloromethane      | 0.00  | 129 |          | Not Detected |          |
| 42) 1,2-Dibromoethane         | 0.00  | 107 |          | Not Detected |          |
| 43) Tetrachloroethene         | 0.00  | 166 |          | Not Detected |          |
| 45) Chlorobenzene             | 0.00  | 112 |          | Not Detected |          |
| 46) Ethylbenzene              | 15.93 | 91  | 66453    | 0.2638       | ppb 99   |
| 47) m,p-Xylene                | 16.10 | 91  | 238734   | 1.1948       | ppb 98   |
| 48) Bromoform                 | 0.00  | 173 |          | Not Detected |          |
| 49) Styrene                   | 16.51 | 104 | 34688    | 0.2580       | ppb 99   |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83  |          | Not Detected |          |

(#)=qualifier out of range (m)=manual integration

KE65I003.D TO15KH18.m Thu Dec 20 14:55:18 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:44:11 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc Unit    | Qvalue |
|------------------------------|-------|------|----------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 109149   | 0.5592 ppb   | 98     |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 84715    | 0.3728 ppb   | 98     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 265830   | 1.2647 ppb   | 98     |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |        |

(#) = qualifier out of range (m) = manual integration

KE65I003.D TO15KH18.m Thu Dec 20 14:55:19 2018

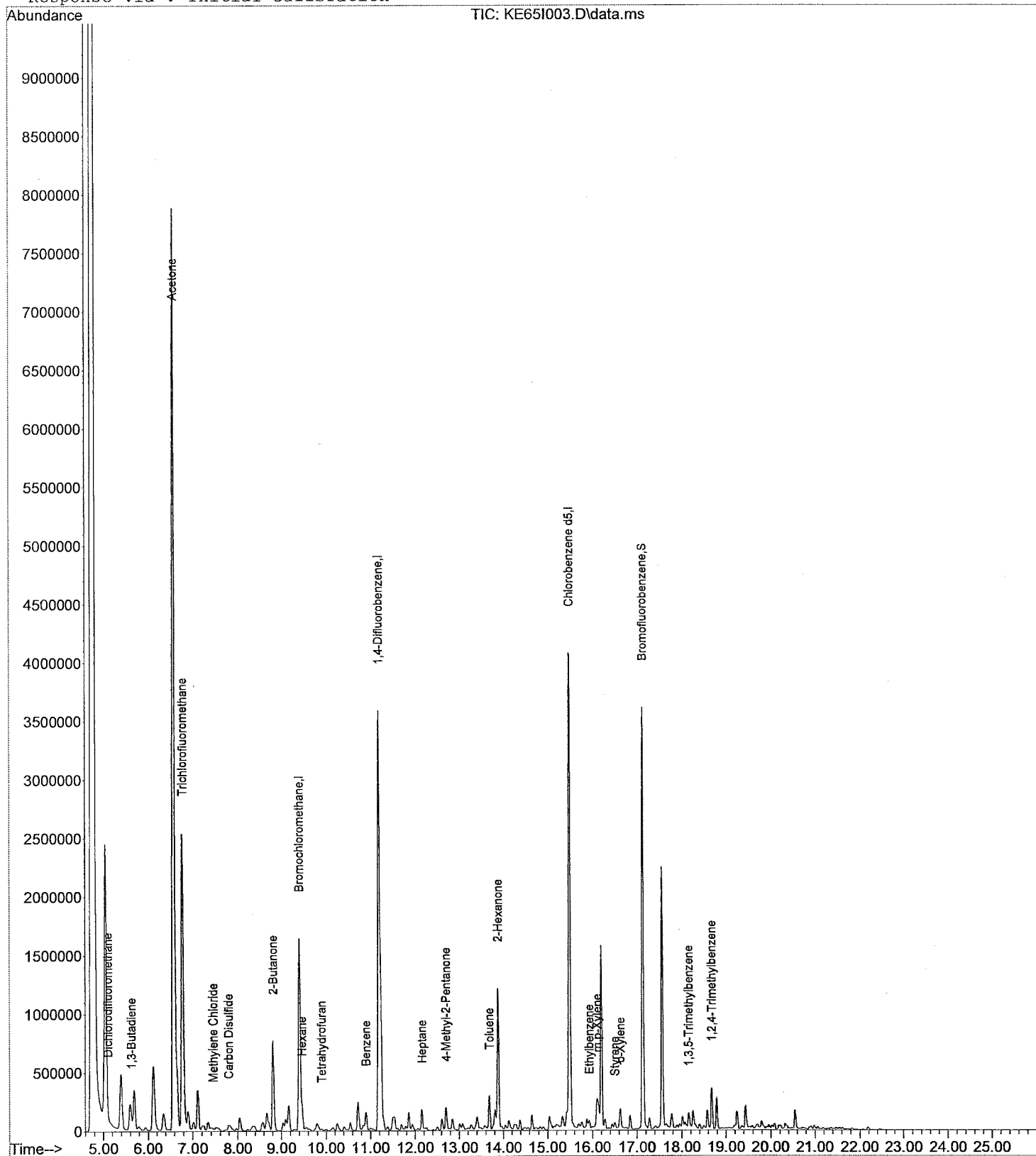
## Quantitation Report

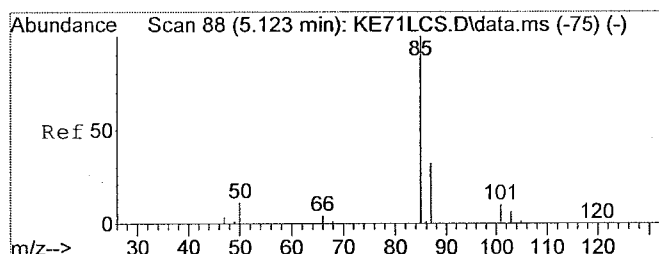
Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:44:11 2018

Results File: T015KH18.RES

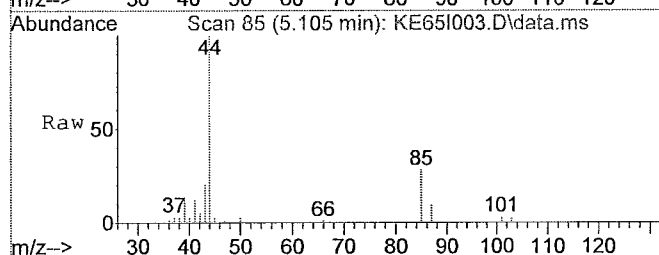
Method : P:\K-5975-K\METHODS\T015KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



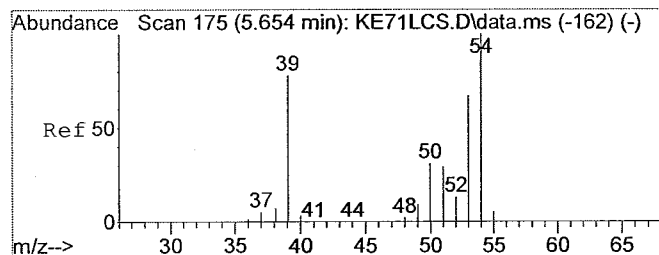
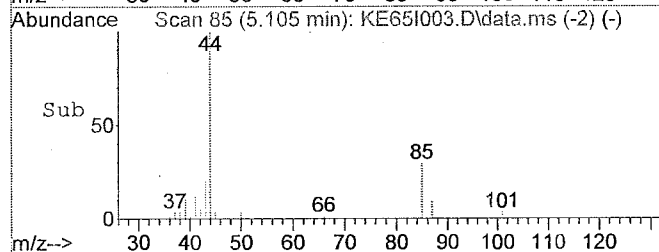
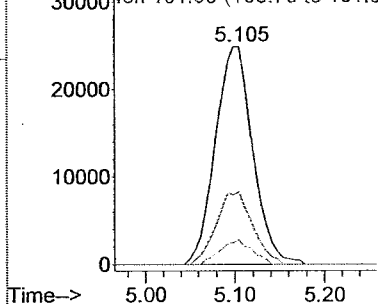


#2  
Dichlorodifluoromethane  
Concen: 0.45 ppb  
RT: 5.10 min Scan# 85  
Delta R.T. 0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion: 85 Resp: 71123  
Ion Ratio Lower Upper  
85 100  
87 32.4 26.1 39.1  
101 9.6 8.1 12.1  
0 0.0 0.0 0.0

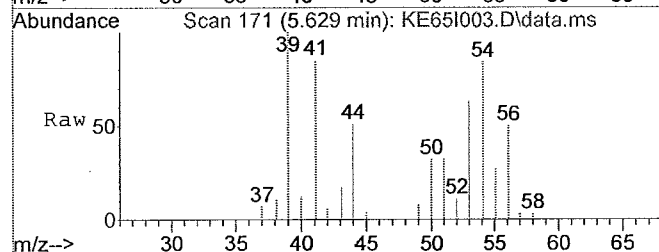


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30):

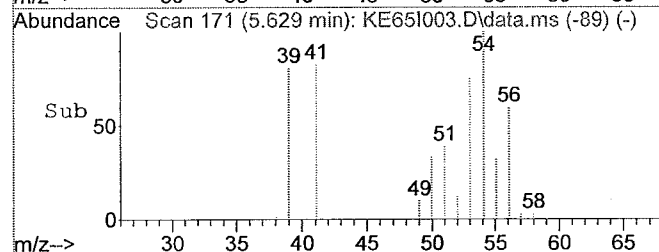
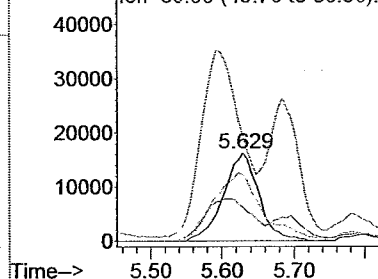


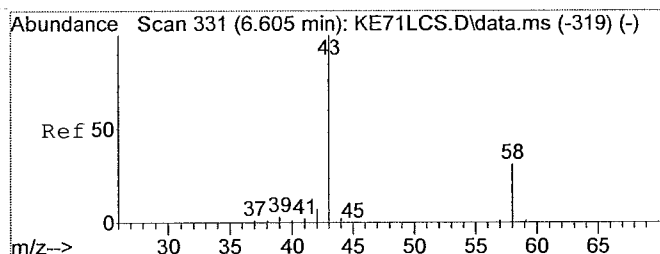
#6  
1,3-Butadiene  
Concen: 1.40 ppb  
RT: 5.63 min Scan# 171  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion: 54.1 Resp: 54978  
Ion Ratio Lower Upper  
54 100  
39 0.0 66.3 99.5#  
53 107.6 54.6 82.0#  
50 0.0 25.9 38.9#



Abundance Ion 54.10 (53.80 to 54.40):  
Ion 39.10 (38.80 to 39.40):  
Ion 53.00 (52.70 to 53.30):  
Ion 50.00 (49.70 to 50.30):

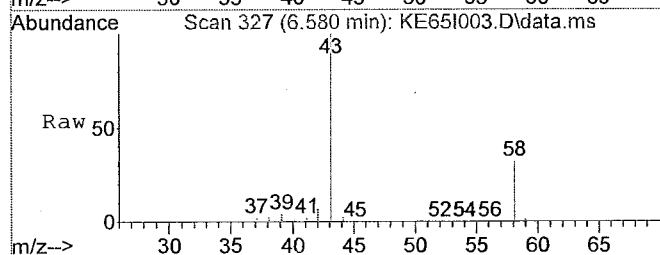




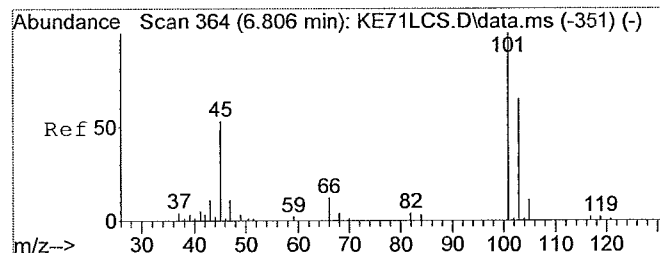
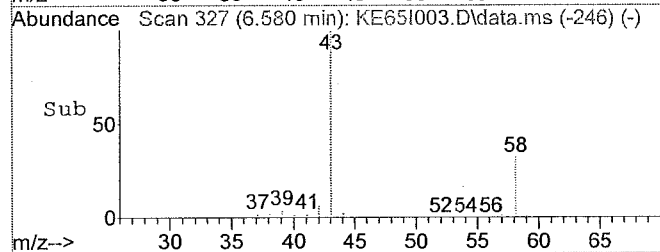
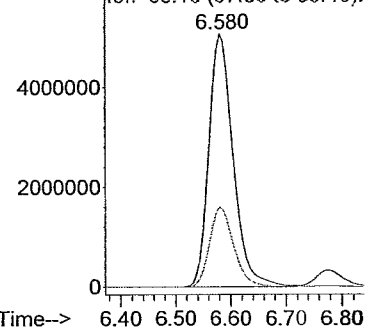
#9  
Acetone  
Concen: 173.64 ppb  
RT: 6.58 min Scan# 327  
Delta R.T. -0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion: 43.1 Resp: 15504072

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 58  | 31.5  | 25.1  | 37.7  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



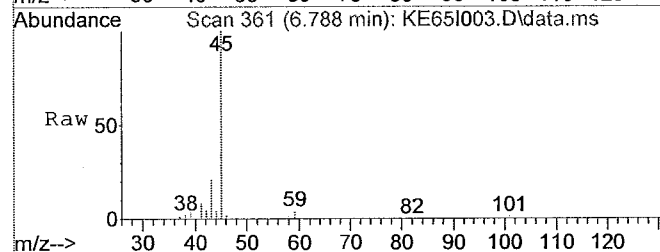
Abundance Ion 43.10 (42.80 to 43.40):  
Ion 58.10 (57.80 to 58.40):



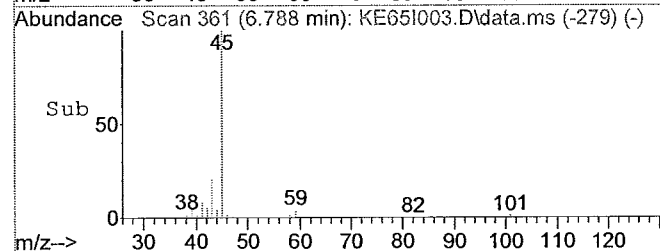
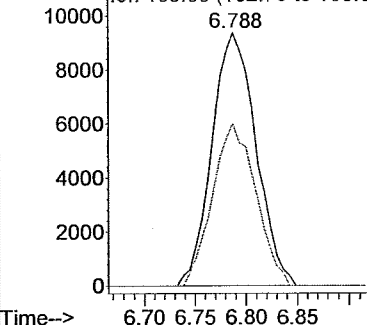
#10  
Trichlorofluoromethane  
Concen: 0.20 ppb  
RT: 6.79 min Scan# 361  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

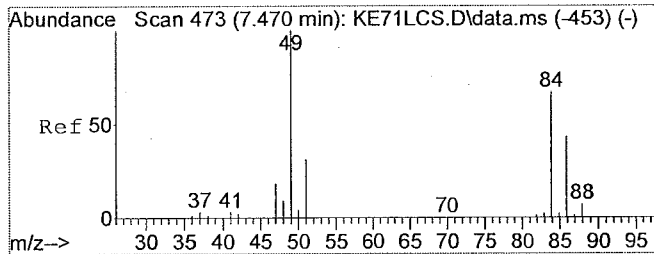
Tgt Ion: 101 Resp: 27912

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 101 | 100   |       |       |
| 103 | 63.3  | 51.6  | 77.4  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



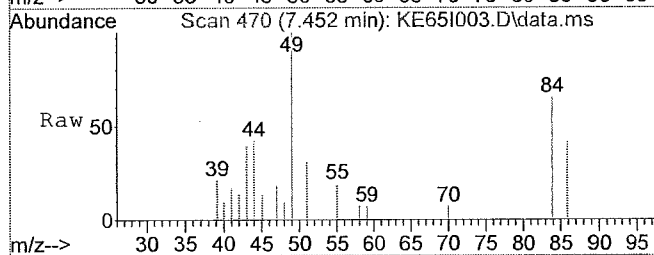
Abundance Ion 101.00 (100.70 to 101.3)  
Ion 103.00 (102.70 to 103.3)



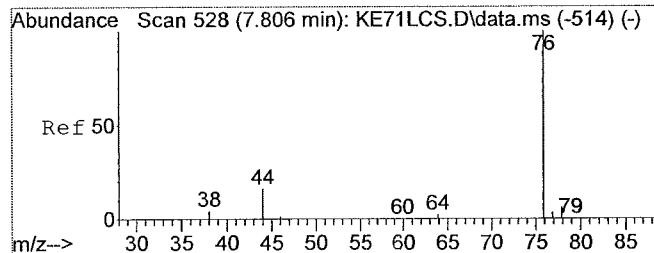
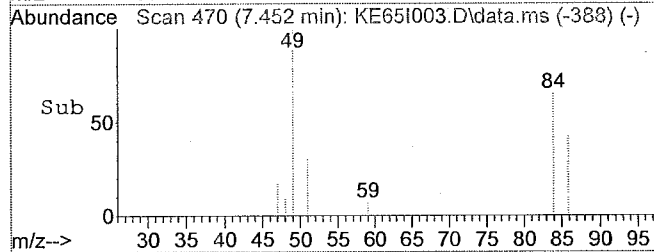
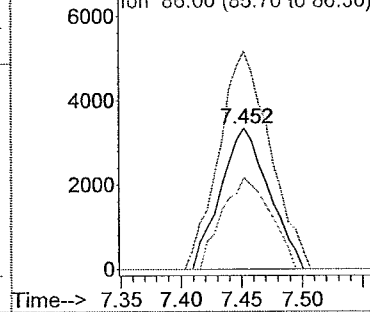


#12  
Methylene Chloride  
Concen: 0.20 ppb  
RT: 7.45 min Scan# 470  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

|           |     |       |             |
|-----------|-----|-------|-------------|
| Tgt Ion:  | 84  | Resp: | 9278        |
| Ion Ratio | 84  | Lower | Upper       |
|           | 100 |       |             |
|           | 49  | 163.2 | 119.1 178.7 |
|           | 86  | 64.7  | 52.0 78.0   |
|           | 0   | 0.0   | 0.0 0.0     |

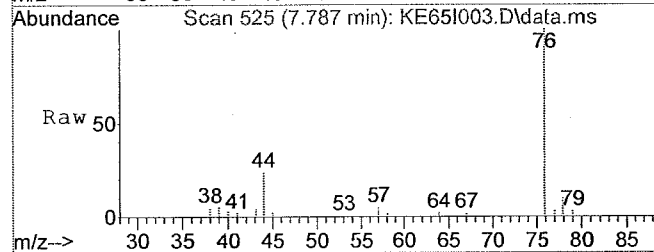


Abundance Ion 84.00 (83.70 to 84.30):  
Ion 49.00 (48.70 to 49.30):  
Ion 86.00 (85.70 to 86.30):

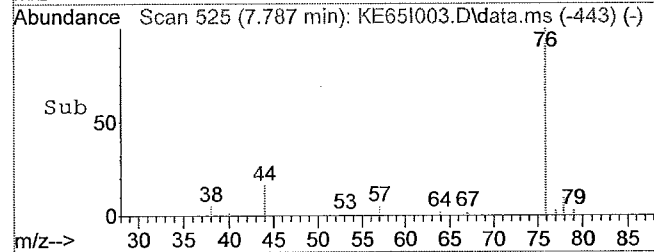
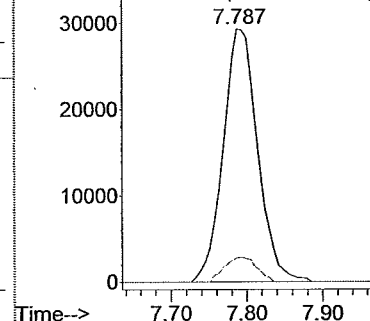


#14  
Carbon Disulfide  
Concen: 0.80 ppb  
RT: 7.79 min Scan# 525  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

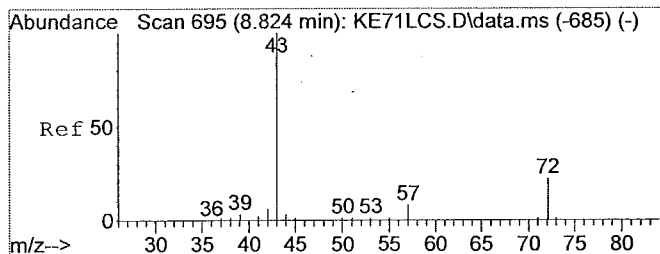
|           |     |       |          |
|-----------|-----|-------|----------|
| Tgt Ion:  | 76  | Resp: | 93208    |
| Ion Ratio | 76  | Lower | Upper    |
|           | 100 |       |          |
|           | 78  | 9.2   | 7.3 10.9 |
|           | 0   | 0.0   | 0.0 0.0  |
|           | 0   | 0.0   | 0.0 0.0  |



Abundance Ion 76.00 (75.70 to 76.30):  
Ion 78.00 (77.70 to 78.30):

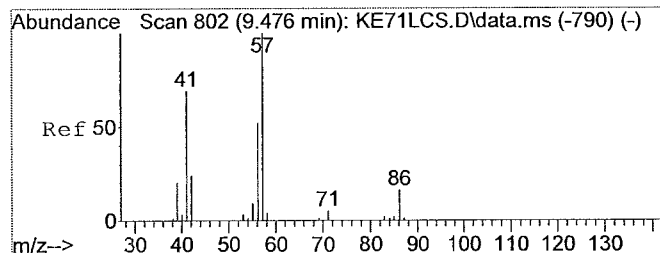
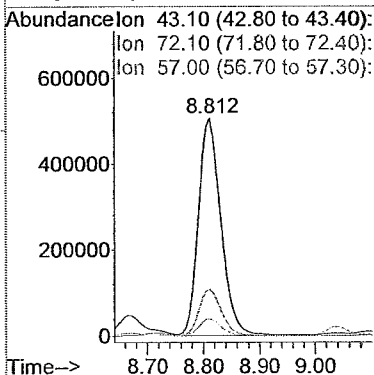
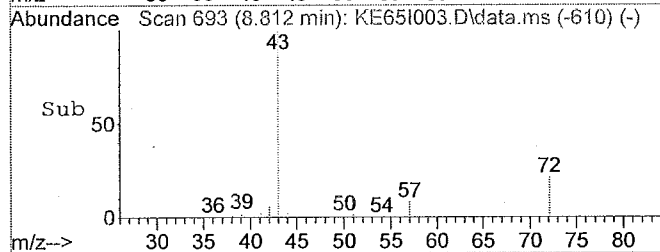
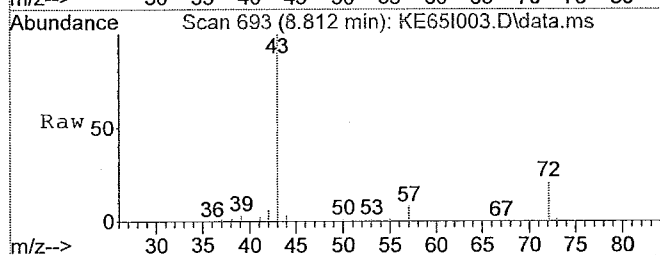






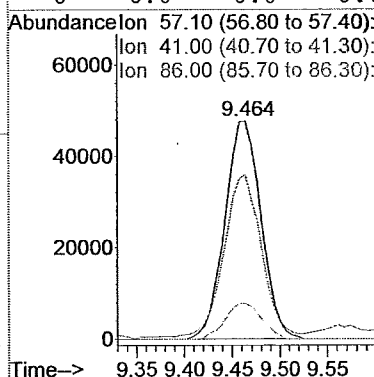
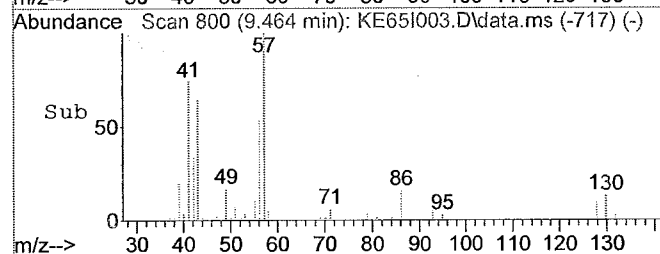
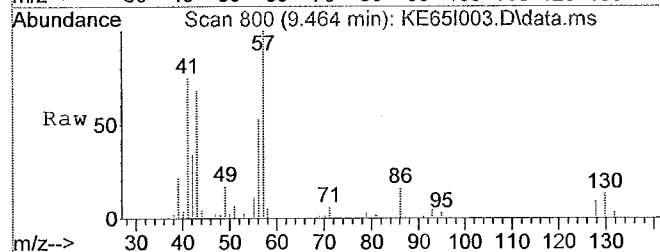
#19  
2-Butanone  
Concen: 12.34 ppb  
RT: 8.81 min Scan# 693  
Delta R.T. 0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

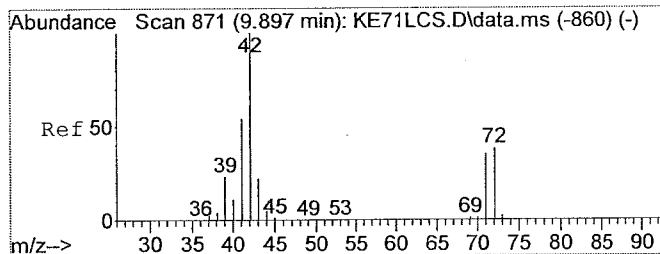
Tgt Ion: 43.1 Resp: 1405896  
Ion Ratio Lower Upper  
43 100  
72 21.2 17.9 26.9  
57 7.9 6.4 9.6  
0 0.0 0.0 0.0



#23  
Hexane  
Concen: 1.29 ppb  
RT: 9.46 min Scan# 800  
Delta R.T. 0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

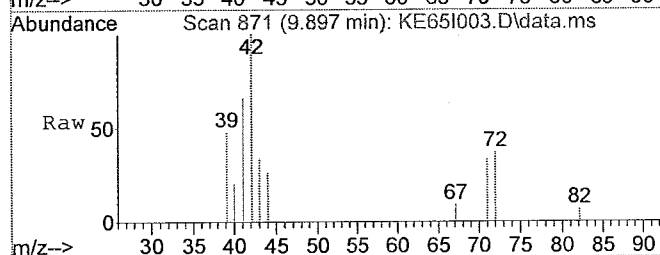
Tgt Ion: 57.1 Resp: 123923  
Ion Ratio Lower Upper  
57 100  
41 80.6 58.6 88.0  
86 16.4 14.2 21.4  
0 0.0 0.0 0.0



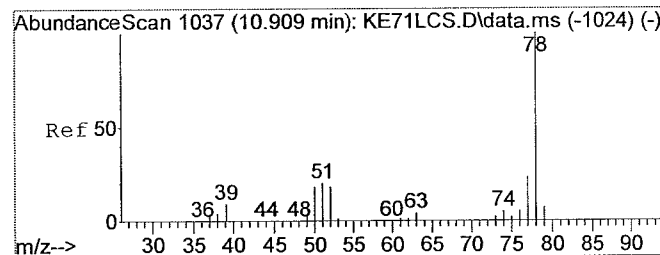
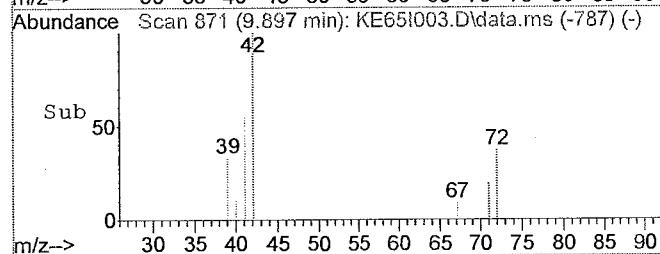
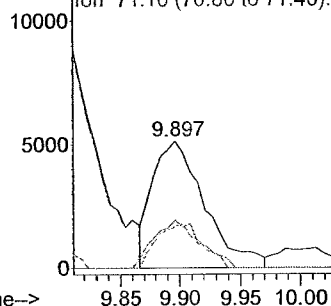


#25  
Tetrahydrofuran  
Concen: 0.24 ppb  
RT: 9.90 min Scan# 871  
Delta R.T. 0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

|          |       |       |       |
|----------|-------|-------|-------|
| Tgt Ion: | 42.1  | Resp: | 15469 |
| Ion      | Ratio | Lower | Upper |
| 42       | 100   |       |       |
| 72       | 33.0  | 29.7  | 44.5  |
| 71       | 30.1  | 28.1  | 42.1  |
| 0        | 0.0   | 0.0   | 0.0   |

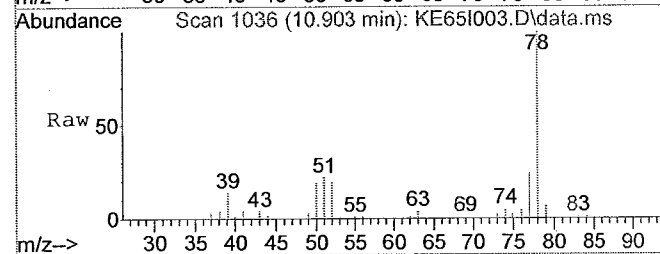


Abundance Ion 42.10 (41.80 to 42.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 71.10 (70.80 to 71.40):

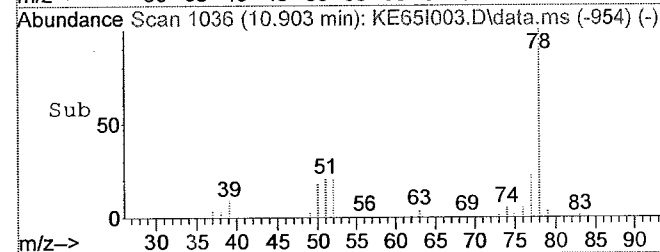
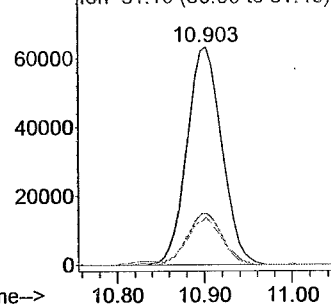


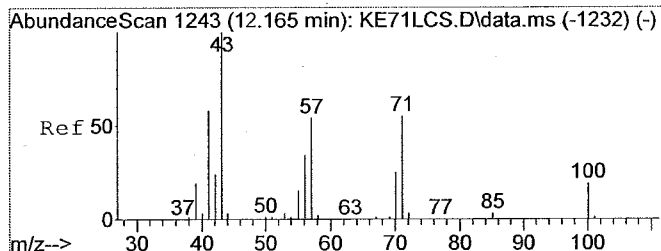
#28  
Benzene  
Concen: 1.08 ppb  
RT: 10.90 min Scan# 1036  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

|          |       |       |        |
|----------|-------|-------|--------|
| Tgt Ion: | 78.1  | Resp: | 171546 |
| Ion      | Ratio | Lower | Upper  |
| 78       | 100   |       |        |
| 77       | 24.2  | 18.6  | 28.0   |
| 51       | 21.4  | 15.7  | 23.5   |
| 0        | 0.0   | 0.0   | 0.0    |



Abundance Ion 78.10 (77.80 to 78.40):  
Ion 77.10 (76.80 to 77.40):  
Ion 51.10 (50.80 to 51.40):

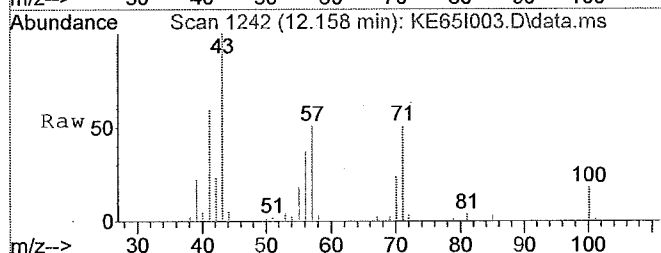




#34  
Heptane  
Concen: 0.79 ppb  
RT: 12.16 min Scan# 1242  
Delta R.T. 0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion: 71.1 Resp: 48578

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 71  | 100   |       |       |
| 43  | 194.4 | 148.1 | 222.1 |
| 57  | 100.3 | 79.4  | 119.0 |
| 100 | 32.7  | 28.0  | 42.0  |

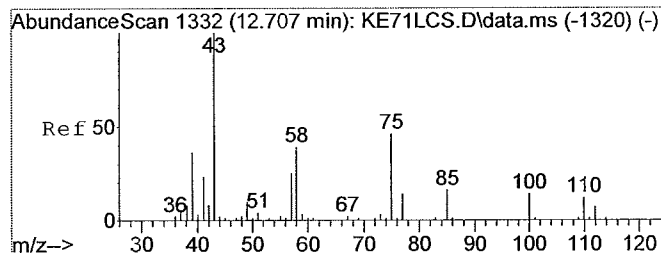
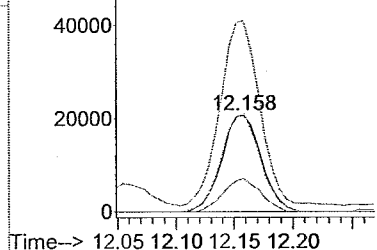
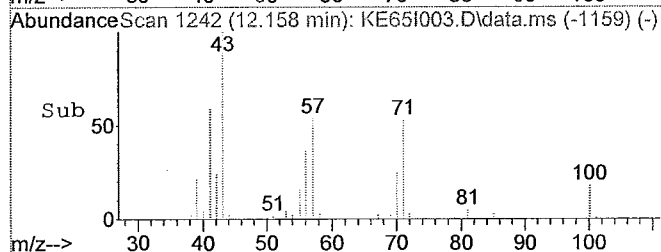


AbundanceIon 71.10 (70.80 to 71.40):

Ion 43.10 (42.80 to 43.40):

Ion 57.10 (56.80 to 57.40):

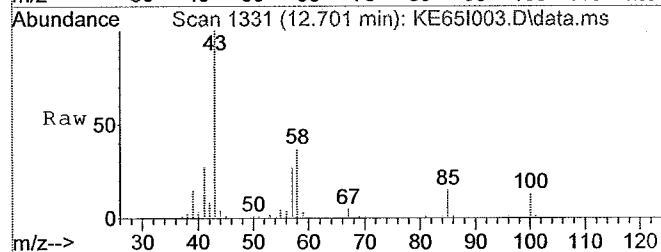
Ion 100.10 (99.80 to 100.40):



#36  
4-Methyl-2-Pentanone  
Concen: 1.12 ppb  
RT: 12.70 min Scan# 1331  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion: 43.1 Resp: 169393

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 58  | 38.0  | 31.0  | 46.6  |
| 85  | 14.3  | 12.9  | 19.3  |
| 100 | 12.7  | 11.4  | 17.2  |

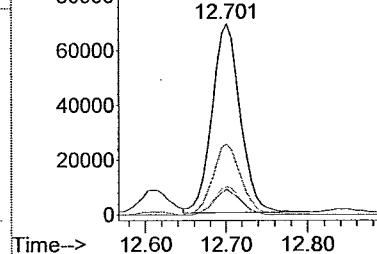
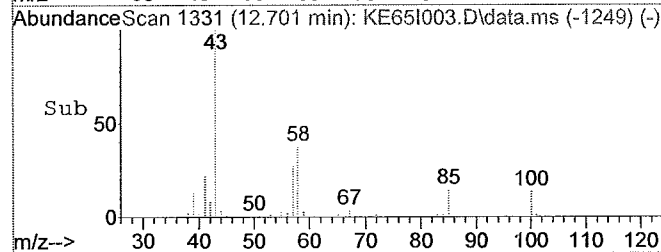


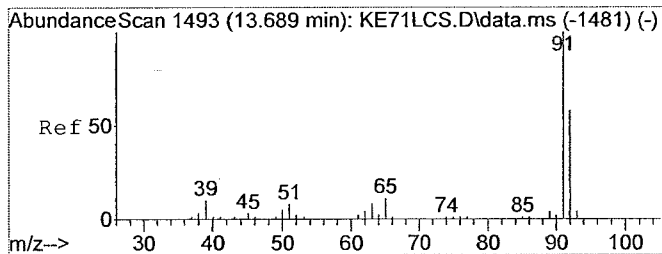
AbundanceIon 43.10 (42.80 to 43.40):

Ion 58.10 (57.80 to 58.40):

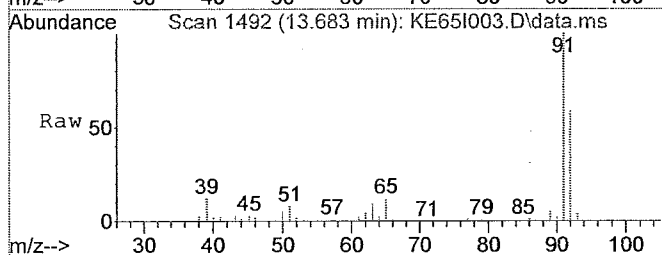
Ion 85.10 (84.80 to 85.40):

Ion 100.10 (99.80 to 100.40):



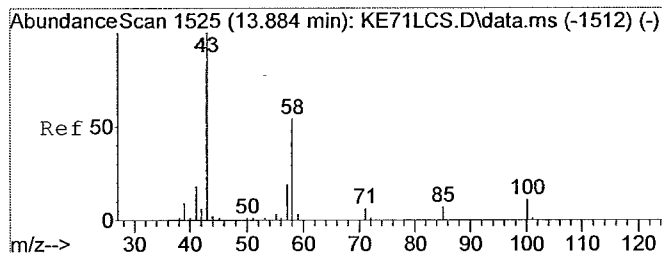
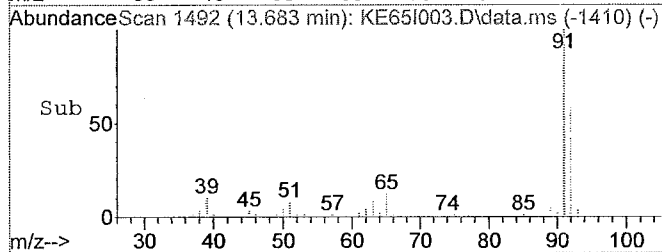
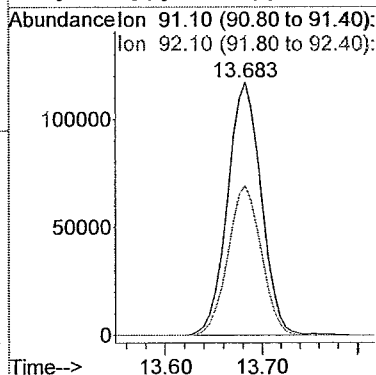


#39  
Toluene  
Concen: 1.51 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

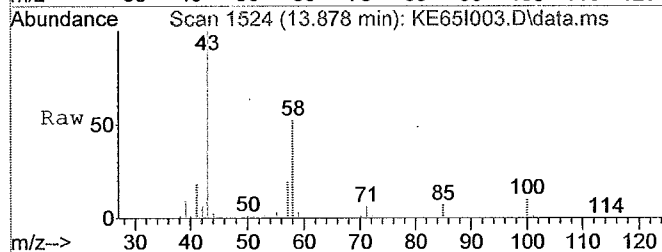


Tgt Ion: 91.1 Resp: 284966

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 92  | 58.5  | 46.9  | 70.3  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |

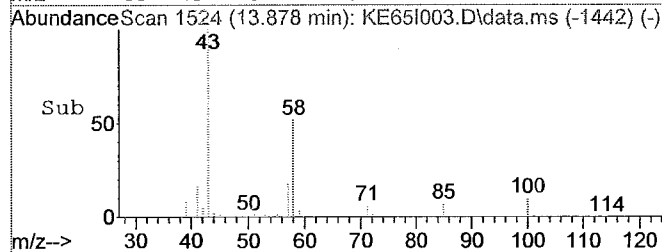
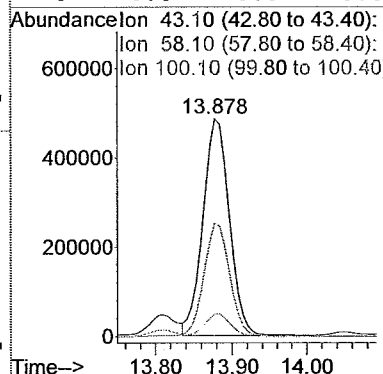


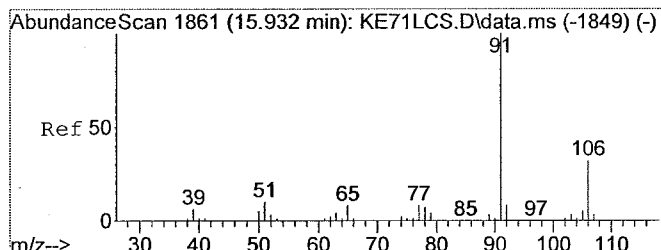
#40  
2-Hexanone  
Concen: 8.75 ppb  
RT: 13.88 min Scan# 1524  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04



Tgt Ion: 43.1 Resp: 1157222

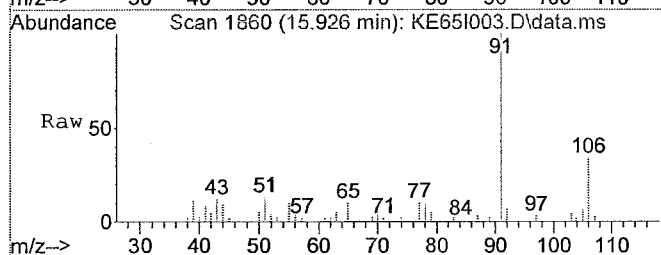
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 58  | 51.3  | 42.5  | 63.7  |
| 100 | 9.9   | 8.6   | 13.0  |
| 0   | 0.0   | 0.0   | 0.0   |



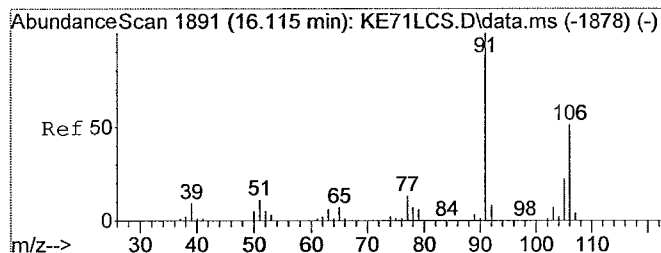
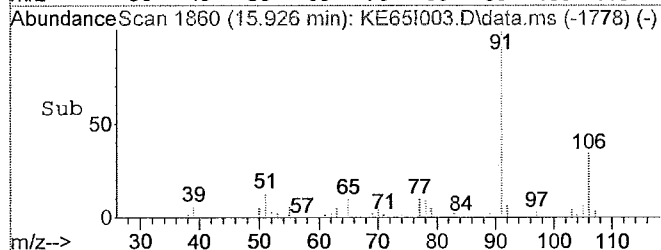
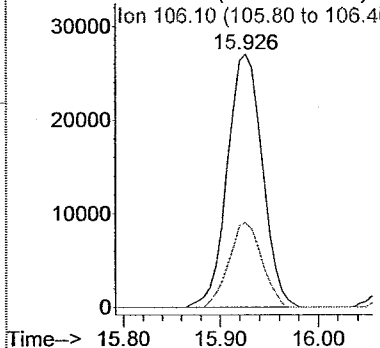


#46  
Ethylbenzene  
Concen: 0.26 ppb  
RT: 15.93 min Scan# 1860  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion: 91.1 Resp: 66453  
Ion Ratio Lower Upper  
91 100  
106 31.6 25.8 38.8  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

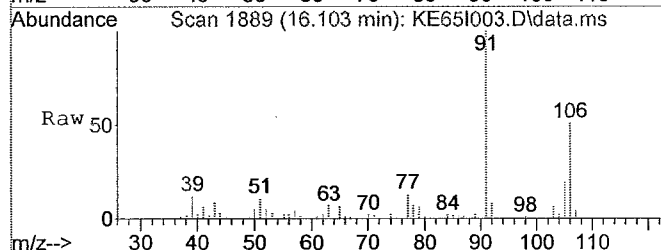


AbundanceIon 91.10 (90.80 to 91.40):

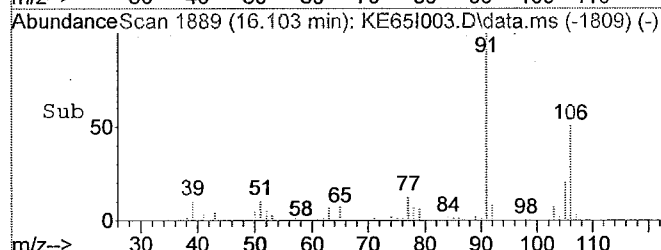
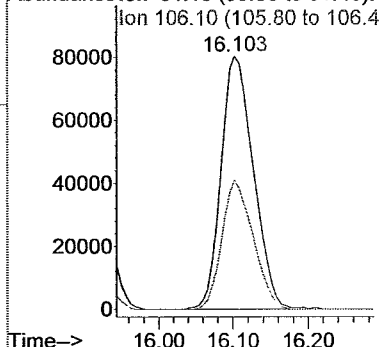


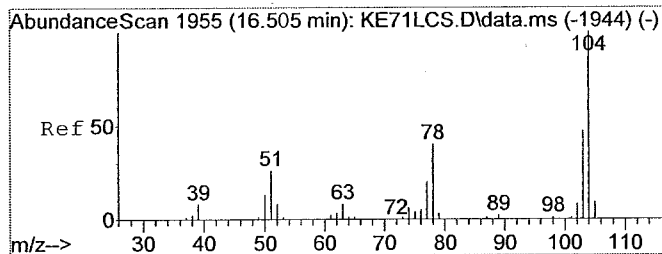
#47  
m,p-Xylene  
Concen: 1.19 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion: 91.1 Resp: 238734  
Ion Ratio Lower Upper  
91 100  
106 49.1 40.5 60.7  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



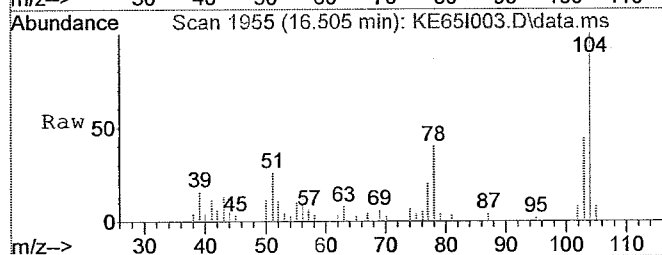
AbundanceIon 91.10 (90.80 to 91.40):





#49  
Styrene  
Concen: 0.26 ppb  
RT: 16.51 min Scan# 1955  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

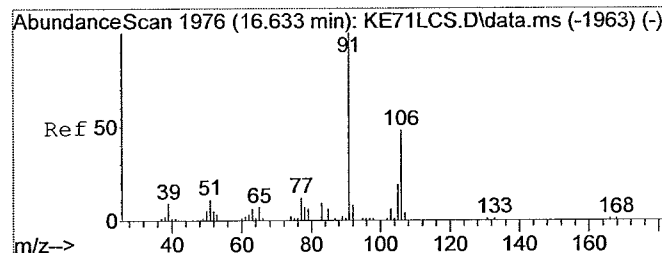
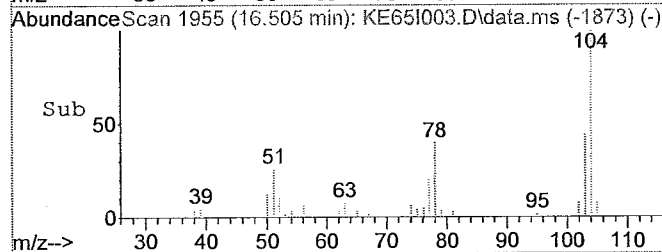
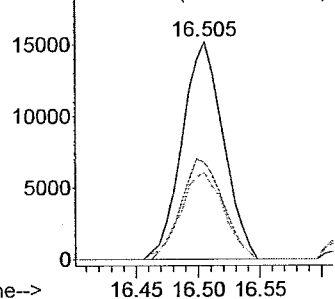
Tgt Ion:104.1 Resp: 34688  
Ion Ratio Lower Upper  
104 100  
103 47.0 37.6 56.4  
78 41.9 32.3 48.5  
0 0.0 0.0 0.0



AbundanceIon 104.10 (103.80 to 104.4)

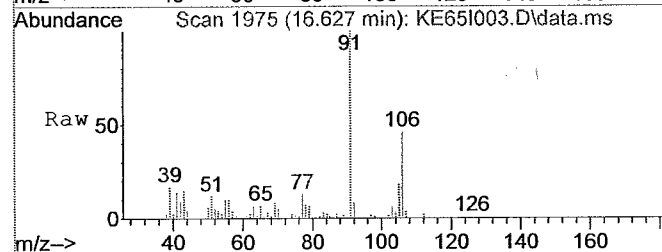
Ion 103.10 (102.80 to 103.4)

Ion 78.10 (77.80 to 78.40):



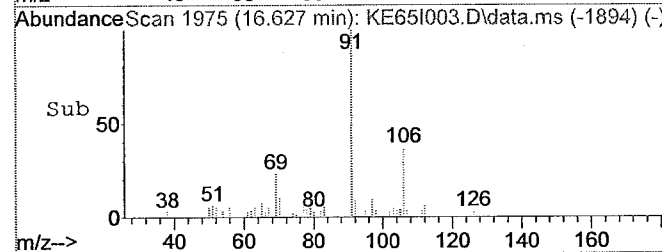
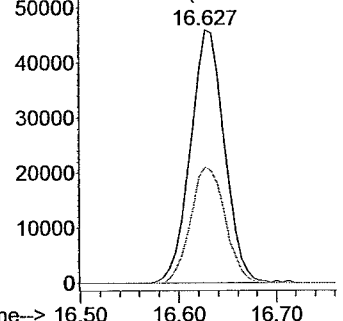
#51  
o-Xylene  
Concen: 0.56 ppb  
RT: 16.63 min Scan# 1975  
Delta R.T. -0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

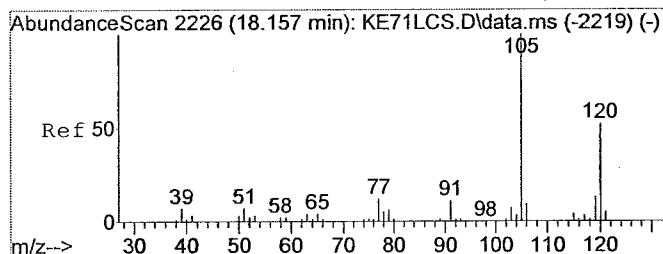
Tgt Ion:91.1 Resp: 109149  
Ion Ratio Lower Upper  
91 100  
106 46.4 38.2 57.4  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



AbundanceIon 91.10 (90.80 to 91.40):

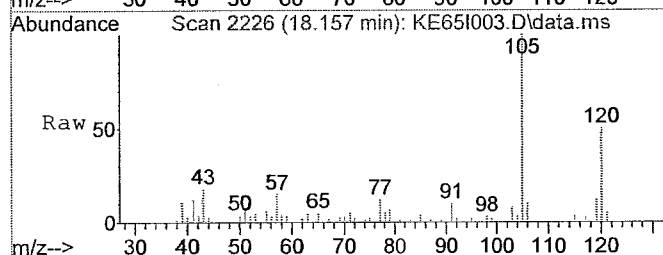
Ion 106.10 (105.80 to 106.4)



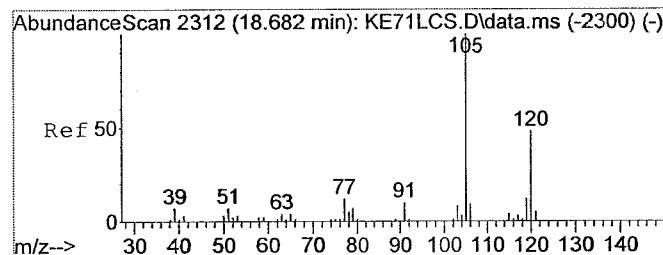
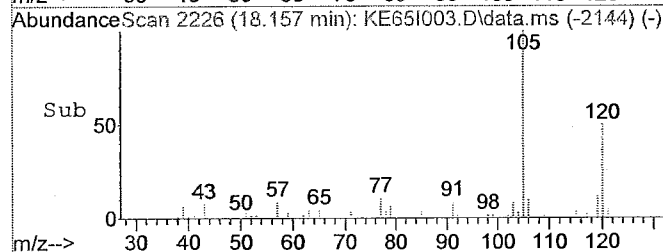
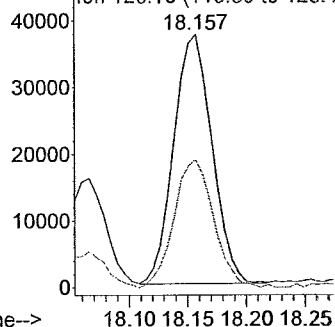


#54  
1,3,5-Trimethylbenzene  
Concen: 0.37 ppb  
RT: 18.16 min Scan# 2226  
Delta R.T. 0.00 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion:105.1 Resp: 84715  
Ion Ratio Lower Upper  
105 100  
120 53.1 41.3 61.9  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

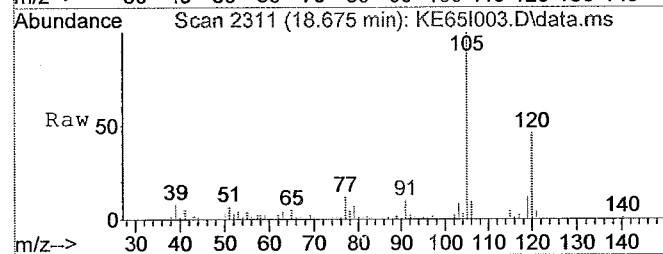


AbundanceIon 105.10 (104.80 to 105.4)

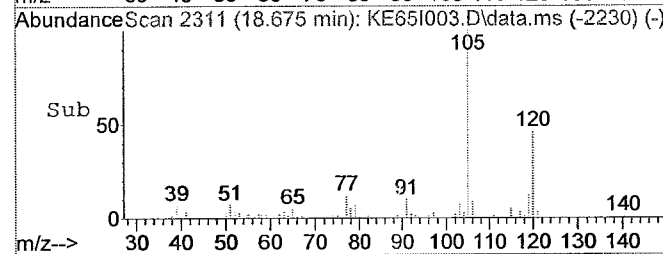
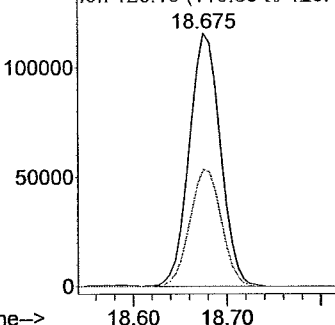


#55  
1,2,4-Trimethylbenzene  
Concen: 1.26 ppb  
RT: 18.68 min Scan# 2311  
Delta R.T. -0.01 min  
Lab File: KE65I003.D  
Acq: 12/19/2018 23:04

Tgt Ion:105.1 Resp: 265830  
Ion Ratio Lower Upper  
105 100  
120 46.7 38.7 58.1  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



AbundanceIon 105.10 (104.80 to 105.4)



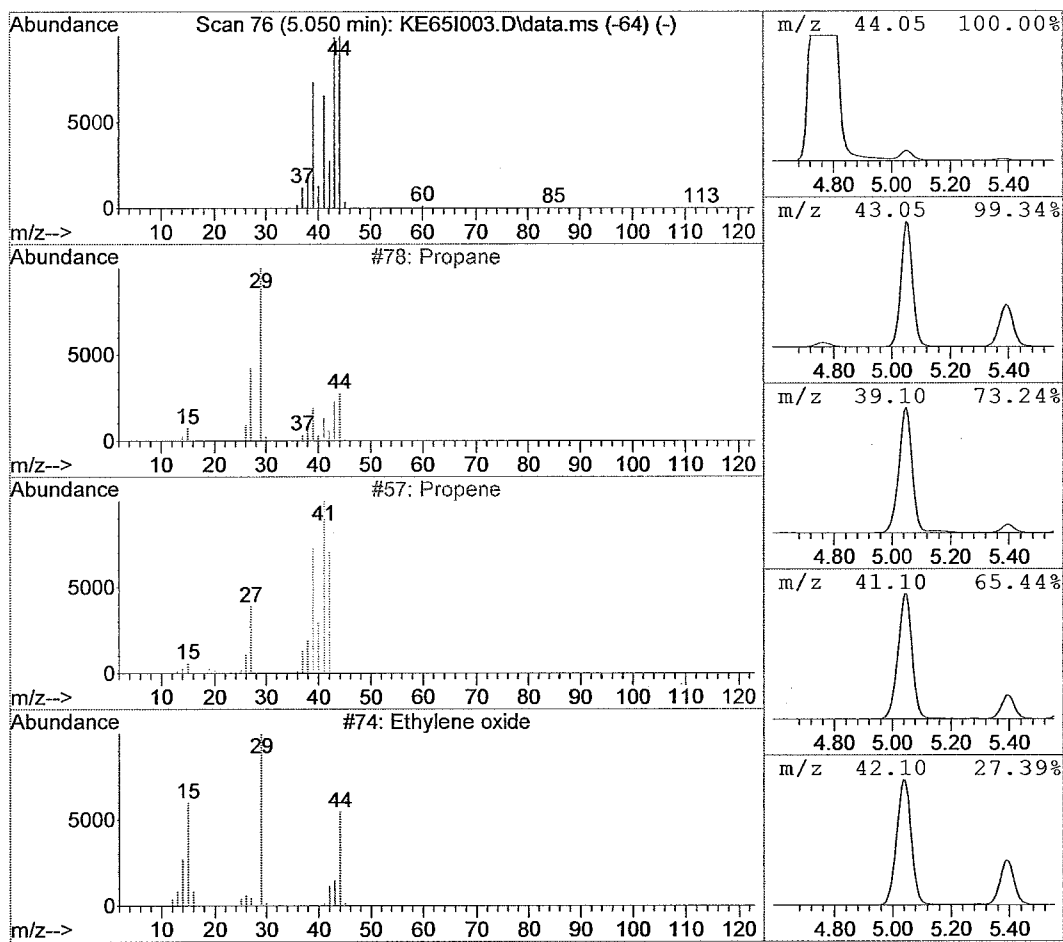
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc      | Area    | Relative to ISTD   | ISTD Area |
|------|-----------|---------|--------------------|-----------|
| 5.05 | 31.44 ppb | 8201425 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID                  | Ref# | CAS#        | Qual  |
|------------|-------------------------------|------|-------------|-------|
| 1          | Propane                       | 78   | 000074-98-6 | 90.00 |
| 2          | Propene                       | 57   | 000115-07-1 | 9.00  |
| 3          | Ethylene oxide                | 74   | 000075-21-8 | 5.00  |
| 4          | 1-Propanol, 2-amino-, (./-.)- | 905  | 006168-72-5 | 2.00  |
| 5          | Cyclopropene                  | 50   | 002781-85-3 | 2.00  |





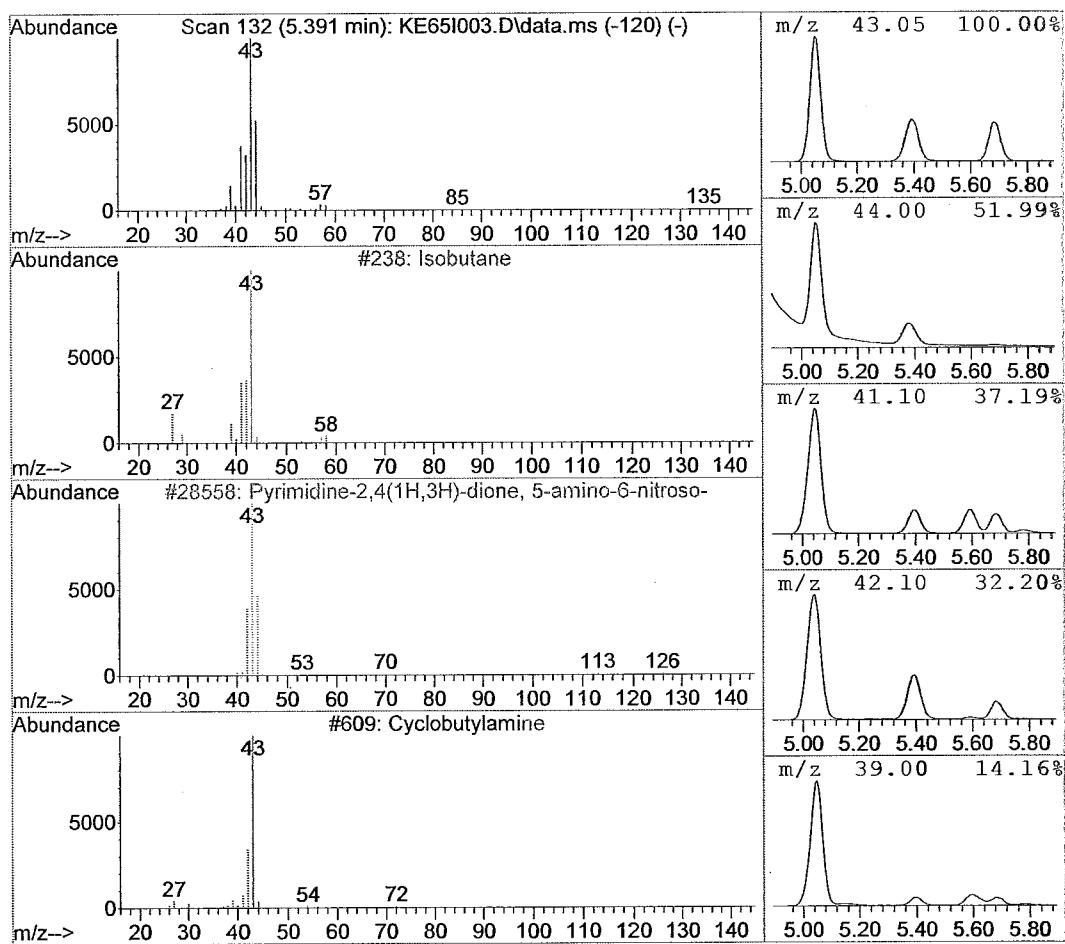
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 5.39 | 6.21 ppb | 1620489 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID                        | Ref#  | CAS#         | Qual  |
|------------|-------------------------------------|-------|--------------|-------|
| 1          | Isobutane                           | 238   | 000075-28-5  | 43.00 |
| 2          | Pyrimidine-2,4(1H,3H)-dione, 5-amin | 28558 | 1000270-67-7 | 9.00  |
| 3          | Cyclobutylamine                     | 609   | 002516-34-9  | 9.00  |
| 4          | Amphetamine                         | 15555 | 000300-62-9  | 4.00  |
| 5          | Butane                              | 232   | 000106-97-8  | 4.00  |



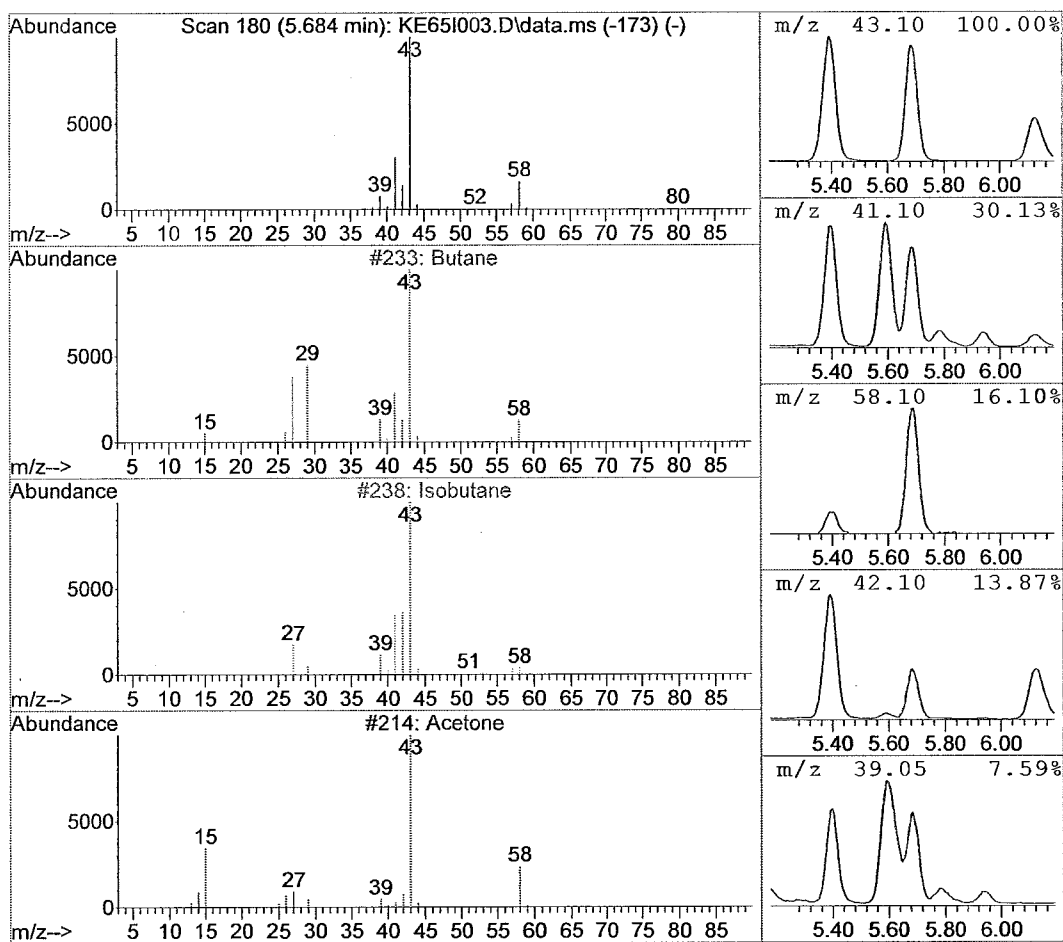
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 5.68 | 3.96 ppb | 1032361 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID    | Ref# | CAS#        | Qual  |
|------------|-----------------|------|-------------|-------|
| 1          | Butane          | 233  | 000106-97-8 | 78.00 |
| 2          | Isobutane       | 238  | 000075-28-5 | 9.00  |
| 3          | Acetone         | 214  | 000067-64-1 | 7.00  |
| 4          | Cyclobutylamine | 609  | 002516-34-9 | 4.00  |
| 5          | Hydrogen azide  | 70   | 007782-79-8 | 4.00  |



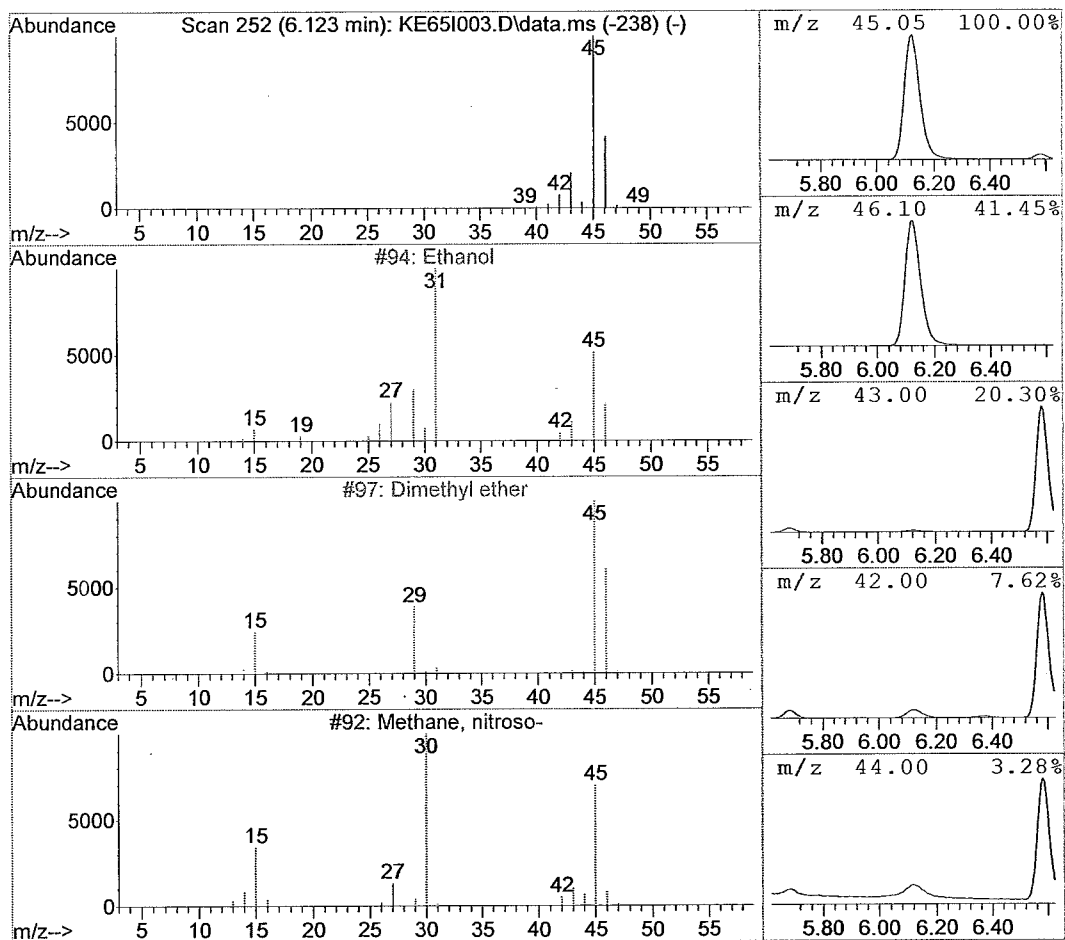
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 6.12 | 7.91 ppb | 2064363 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID      | Ref# | CAS#        | Qual  |
|------------|-------------------|------|-------------|-------|
| 1          | Ethanol           | 94   | 000064-17-5 | 90.00 |
| 2          | Dimethyl ether    | 97   | 000115-10-6 | 9.00  |
| 3          | Methane, nitroso- | 92   | 000865-40-7 | 4.00  |
| 4          | Formic acid       | 100  | 000064-18-6 | 4.00  |
| 5          | Oxalic acid       | 2224 | 000144-62-7 | 4.00  |



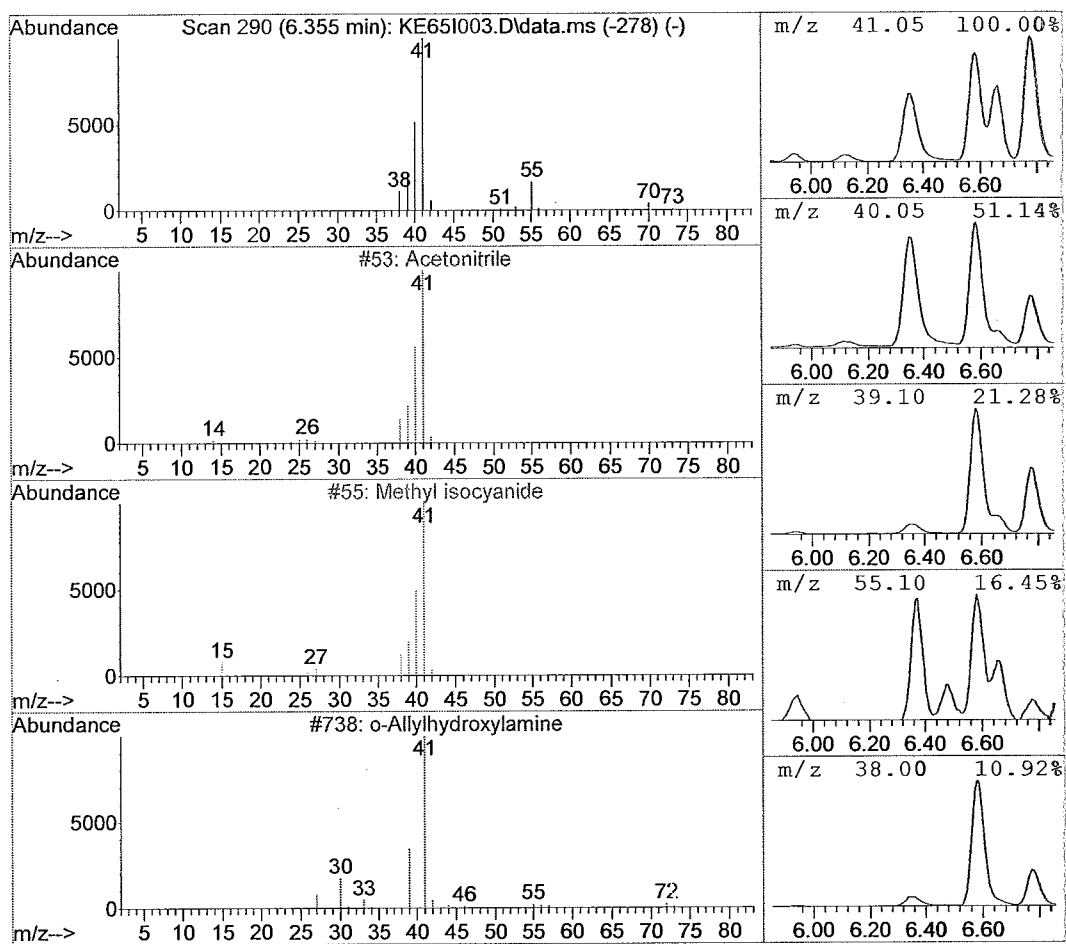
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 6.35 | 2.07 ppb | 538920 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID           | Ref# | CAS#        | Qual  |
|------------|------------------------|------|-------------|-------|
| 1          | Acetonitrile           | 53   | 000075-05-8 | 45.00 |
| 2          | Methyl isocyanide      | 55   | 000593-75-9 | 9.00  |
| 3          | o-Allylhydroxylamine   | 738  | 006542-54-7 | 4.00  |
| 4          | Borane, ethyldimethyl- | 505  | 001113-22-0 | 4.00  |
| 5          | 3-Aminopropionitrile   | 500  | 000151-18-8 | 3.00  |



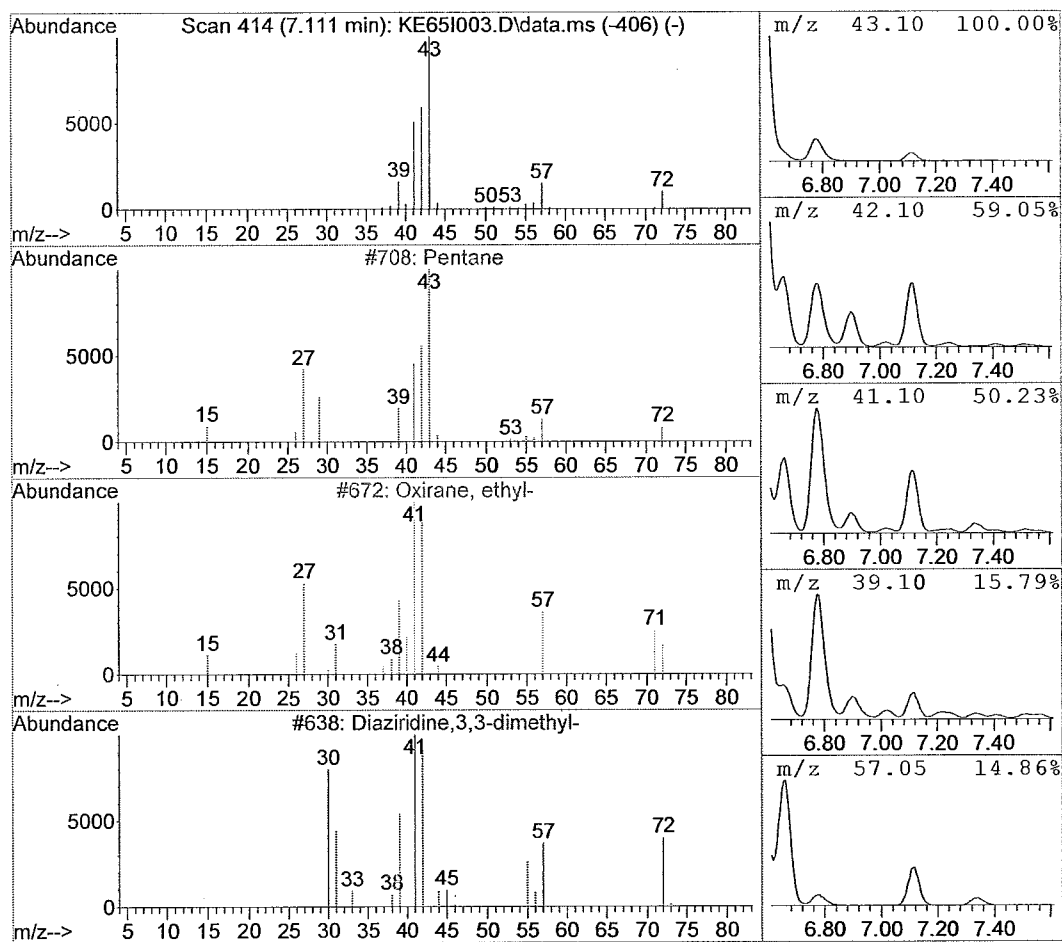
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 7.11 | 3.53 ppb | 919851 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID              | Ref# | CAS#        | Qual  |
|------------|---------------------------|------|-------------|-------|
| 1          | Pentane                   | 708  | 000109-66-0 | 90.00 |
| 2          | Oxirane, ethyl-           | 672  | 000106-88-7 | 9.00  |
| 3          | Diaziridine,3,3-dimethyl- | 638  | 004901-76-2 | 9.00  |
| 4          | Cyclobutane, methyl-      | 575  | 000598-61-8 | 9.00  |
| 5          | Isobutane                 | 238  | 000075-28-5 | 9.00  |



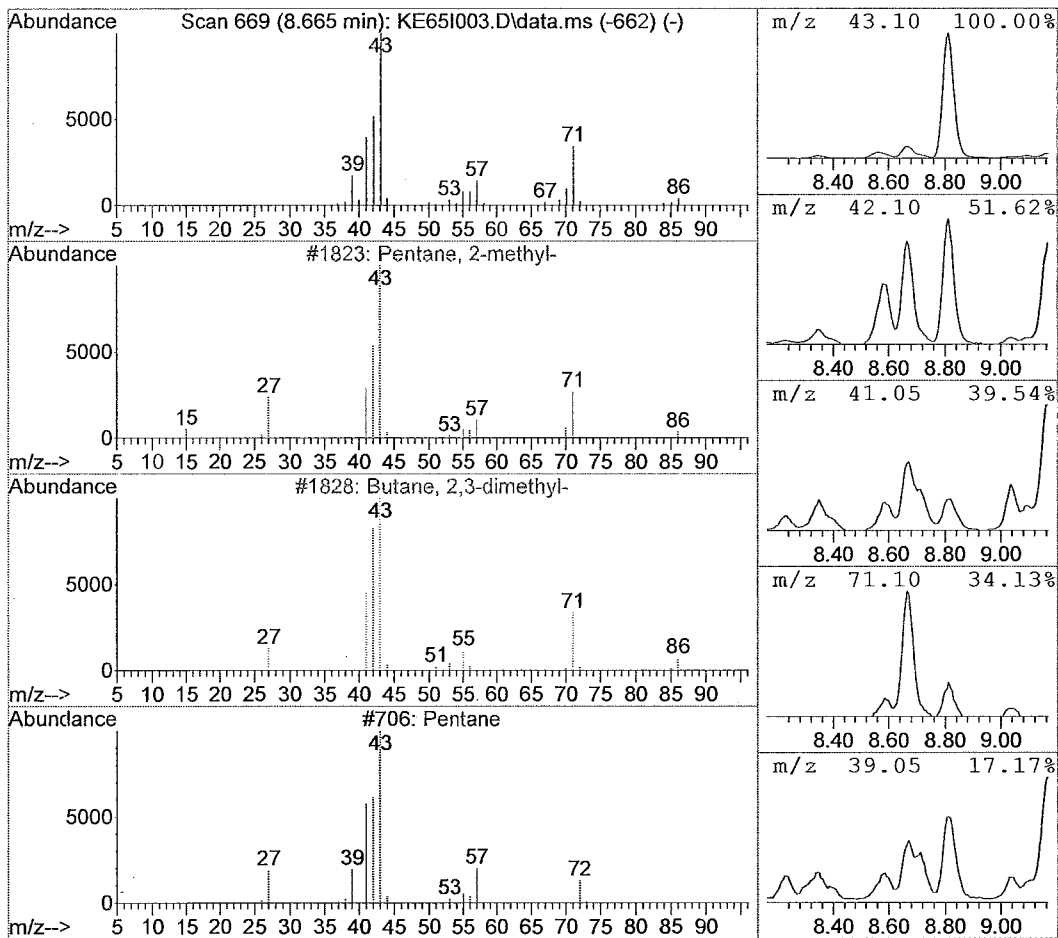
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 8.67 | 2.25 ppb | 587336 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID             | Ref#  | CAS#        | Qual  |
|------------|--------------------------|-------|-------------|-------|
| 1          | Pentane, 2-methyl-       | 1823  | 000107-83-5 | 91.00 |
| 2          | Butane, 2,3-dimethyl-    | 1828  | 000079-29-8 | 47.00 |
| 3          | Pentane                  | 706   | 000109-66-0 | 43.00 |
| 4          | 1-Butanol, 2,3-dimethyl- | 4476  | 019550-30-2 | 38.00 |
| 5          | Pentane, 2-bromo-        | 24063 | 000107-81-3 | 38.00 |



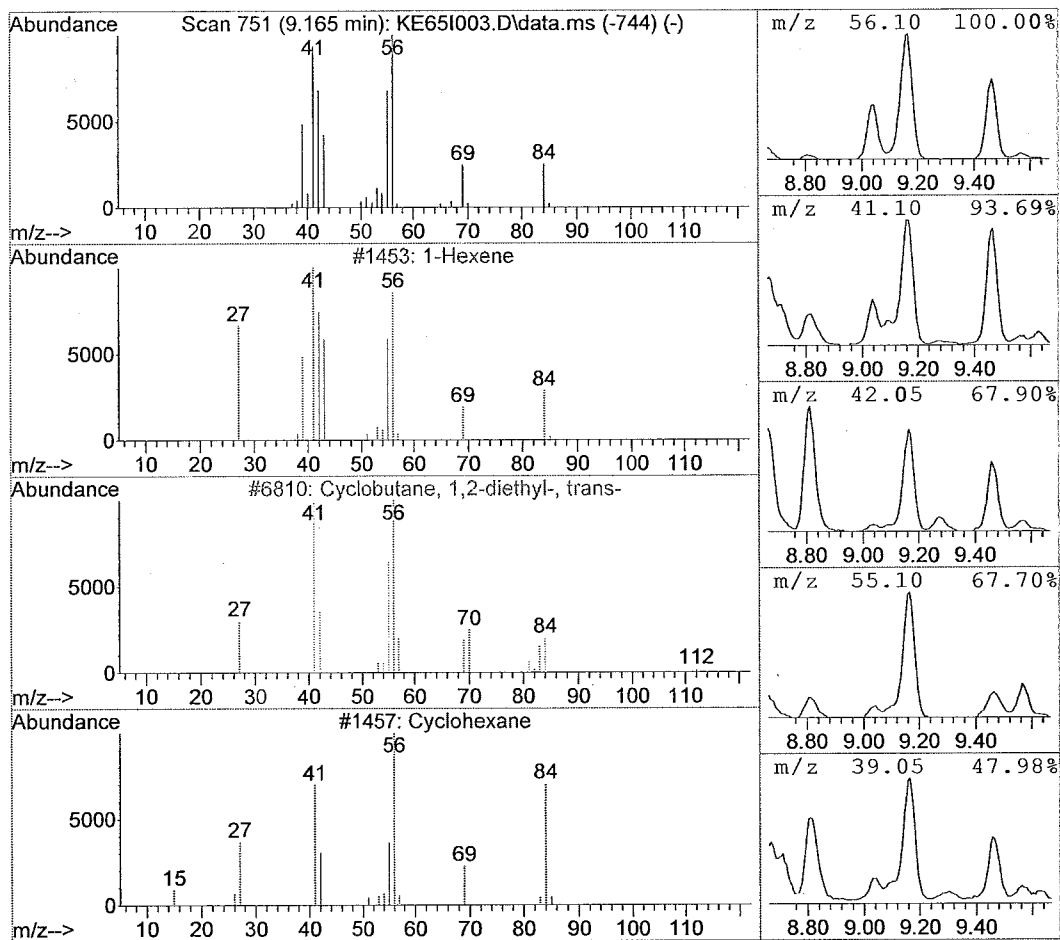
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 9.17 | 2.35 ppb | 612444 | Bromochloromethane | 5217250   |

| Hit# of 20 | Tentative ID                      | Ref# | CAS#        | Qual  |
|------------|-----------------------------------|------|-------------|-------|
| 1          | 1-Hexene                          | 1453 | 000592-41-6 | 94.00 |
| 2          | Cyclobutane, 1,2-diethyl-, trans- | 6810 | 019341-98-1 | 53.00 |
| 3          | Cyclohexane                       | 1457 | 000110-82-7 | 53.00 |
| 4          | Cyclobutane, 1,2-diethyl-         | 6737 | 061141-83-1 | 50.00 |
| 5          | 1-Pentene, 2-methyl-              | 1487 | 000763-29-1 | 50.00 |



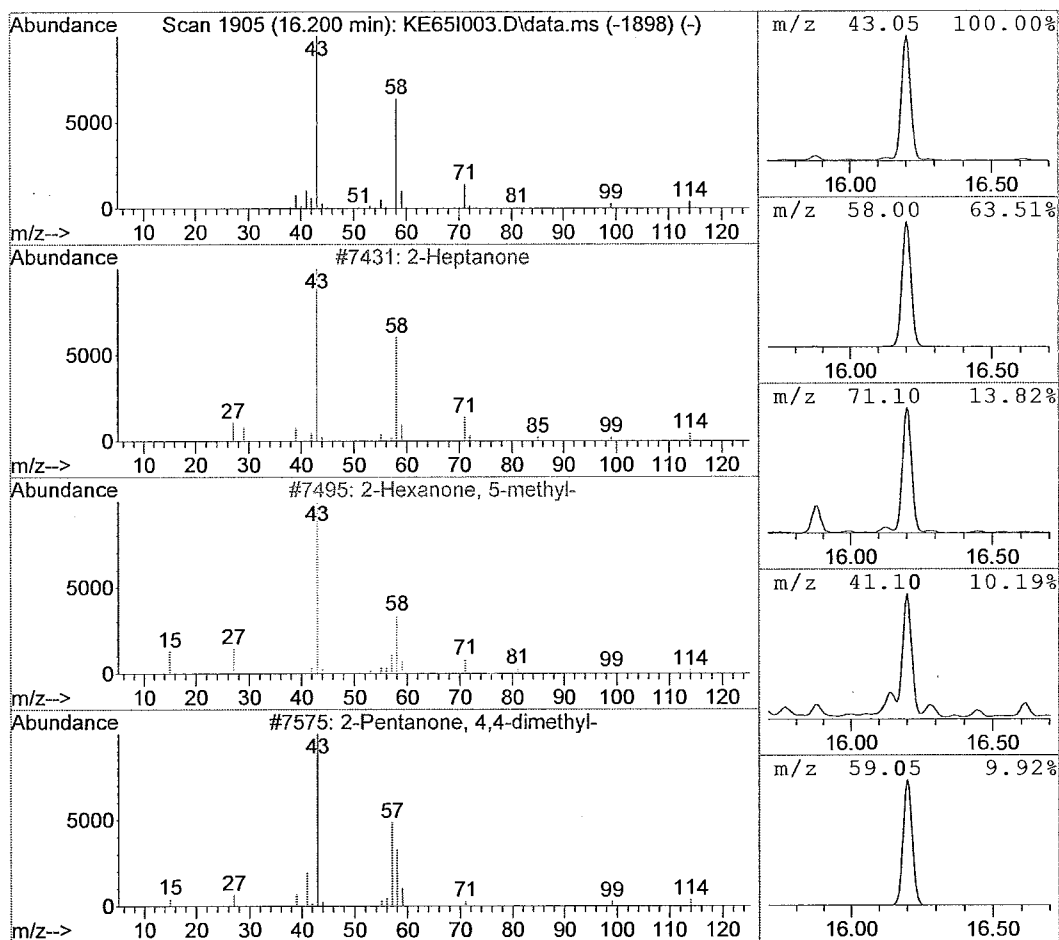
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 16.20 | 6.48 ppb | 3487201 | Chlorobenzene d5 | 10758112  |

| Hit# of 20 | Tentative ID                    | Ref#  | CAS#        | Qual  |
|------------|---------------------------------|-------|-------------|-------|
| 1          | 2-Heptanone                     | 7431  | 000110-43-0 | 90.00 |
| 2          | 2-Hexanone, 5-methyl-           | 7495  | 000110-12-3 | 64.00 |
| 3          | 2-Pentanone, 4,4-dimethyl-      | 7575  | 000590-50-1 | 50.00 |
| 4          | 2-Hexanone, 4-methyl-           | 7496  | 000105-42-0 | 50.00 |
| 5          | 2-Hexanone, 4-hydroxy-3-propyl- | 30250 | 062338-17-4 | 40.00 |





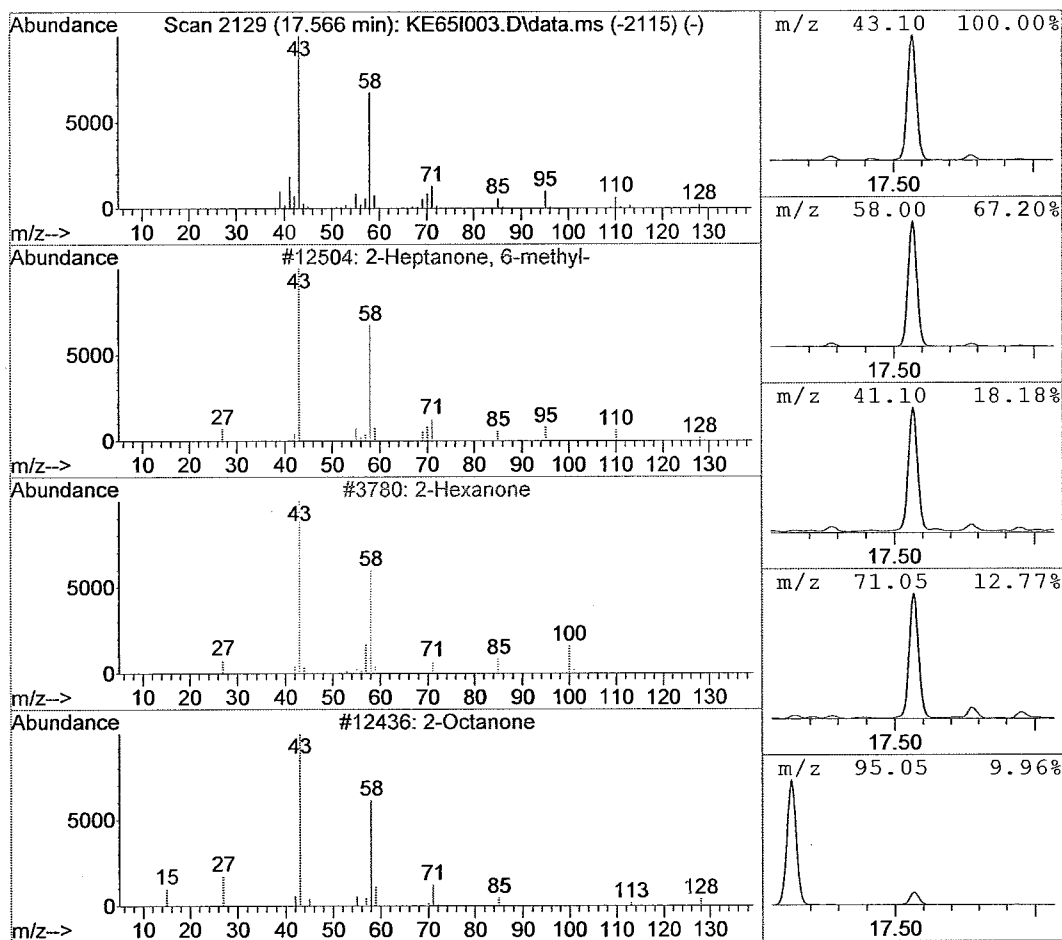
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE65I003.D Vial: 11  
Acq Time : 12/19/2018 23:04 Operator: BB  
Sample : 1835290003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 17.57 | 9.38 ppb | 5045112 | Chlorobenzene d5 | 10758112  |

| Hit# of 20 | Tentative ID             | Ref#  | CAS#        | Qual  |
|------------|--------------------------|-------|-------------|-------|
| 1          | 2-Heptanone, 6-methyl-   | 12504 | 000928-68-7 | 94.00 |
| 2          | 2-Hexanone               | 3780  | 000591-78-6 | 59.00 |
| 3          | 2-Octanone               | 12436 | 000111-13-7 | 53.00 |
| 4          | Butanimidamide           | 1617  | 000107-90-4 | 50.00 |
| 5          | 2-Isopropyl-5-oxohexanal | 28978 | 015303-46-5 | 50.00 |



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
 Acq Time : 12/20/2018 00:21 Operator: BB  
 Sample : 1835290004 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:46:04 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.41  | 130  | 259904   | 20.00 | ppb   | 86.13 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3536835  | 20.00 | ppb   | 93.96 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2790991  | 20.00 | ppb   | 99.40 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1491581  | 19.02 | ppb   | 95.10%    |

| Target Compounds              | R.T.  | QIon | Response | Conc         | Units | Qvalue |
|-------------------------------|-------|------|----------|--------------|-------|--------|
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 68421    | 0.4778       | ppb   | 100    |
| 3) Chloromethane              | 0.00  | 50   |          | Not Detected |       |        |
| 4) Freon 114                  | 0.00  | 135  |          | Not Detected |       |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          | Not Detected |       |        |
| 6) 1,3-Butadiene              | 5.62  | 54   | 31397    | 0.8863       | ppb # | 17     |
| 7) Bromomethane               | 0.00  | 94   |          | Not Detected |       |        |
| 8) Chloroethane               | 0.00  | 64   |          | Not Detected |       |        |
| 9) Acetone                    | 6.59  | 43   | 4777324  | 59.1304      | ppb   | 98     |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 28675    | 0.2248       | ppb   | 98     |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          | Not Detected |       |        |
| 12) Methylene Chloride        | 7.46  | 84   | 10000    | 0.2333       | ppb   | 91     |
| 13) Freon 113                 | 0.00  | 151  |          | Not Detected |       |        |
| 14) Carbon Disulfide          | 7.79  | 76   | 679464   | 6.4575       | ppb   | 99     |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          | Not Detected |       |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          | Not Detected |       |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          | Not Detected |       |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          | Not Detected |       |        |
| 19) 2-Butanone                | 8.82  | 43   | 456669   | 4.4287       | ppb   | 100    |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          | Not Detected |       |        |
| 22) Ethyl Acetate             | 0.00  | 61   |          | Not Detected |       |        |
| 23) Hexane                    | 9.46  | 57   | 91809    | 1.0343       | ppb   | 94     |
| 24) Chloroform                | 9.52  | 83   | 42723    | 0.4024       | ppb   | 97     |
| 25) Tetrahydrofuran           | 9.90  | 42   | 45318    | 0.7717       | ppb   | 92     |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          | Not Detected |       |        |
| 27) 1,1,1-Trichloroethane     | 10.47 | 97   | 17179    | 0.1548       | ppb   | 97     |
| 28) Benzene                   | 10.90 | 78   | 210676   | 1.4317       | ppb   | 98     |
| 29) Carbon Tetrachloride      | 11.05 | 117  | 29675    | 0.2665       | ppb   | 99     |
| 30) Cyclohexane               | 0.00  | 84   |          | Not Detected |       |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          | Not Detected |       |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          | Not Detected |       |        |
| 33) Trichloroethene           | 0.00  | 130  |          | Not Detected |       |        |
| 34) Heptane                   | 12.15 | 71   | 23397    | 0.4128       | ppb   | 93     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          | Not Detected |       |        |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 62563    | 0.4481       | ppb   | 98     |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          | Not Detected |       |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |        |
| 39) Toluene                   | 13.68 | 91   | 258218   | 1.4755       | ppb   | 99     |
| 40) 2-Hexanone                | 13.88 | 43   | 86522    | 0.7069       | ppb # | 83     |
| 41) Dibromochloromethane      | 0.00  | 129  |          | Not Detected |       |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          | Not Detected |       |        |
| 43) Tetrachloroethene         | 0.00  | 166  |          | Not Detected |       |        |
| 45) Chlorobenzene             | 0.00  | 112  |          | Not Detected |       |        |
| 46) Ethylbenzene              | 15.93 | 91   | 51001    | 0.2297       | ppb   | 98     |
| 47) m,p-Xylene                | 16.10 | 91   | 156670   | 0.8897       | ppb   | 97     |
| 48) Bromoform                 | 0.00  | 173  |          | Not Detected |       |        |
| 49) Styrene                   | 16.51 | 104  | 34903    | 0.2945       | ppb   | 98     |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          | Not Detected |       |        |

(#) = qualifier out of range (m) = manual integration

KE67I004.D TO15KH18.m Thu Dec 20 14:55:36 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
Acq Time : 12/20/2018 00:21 Operator: BB  
Sample : 1835290004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:46:04 2018

Results File: T015KH18.RES

Quant Method : I:\K-5975-K\METHODS\T015KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc Unit    | Qvalue |
|------------------------------|-------|------|----------|--------------|--------|
| 51) o-Xylene                 | 16.63 | 91   | 65041    | 0.3781 ppb   | 98     |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 18.16 | 105  | 33291    | 0.1662 ppb   | 97     |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 100948   | 0.5450 ppb   | 98     |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |        |

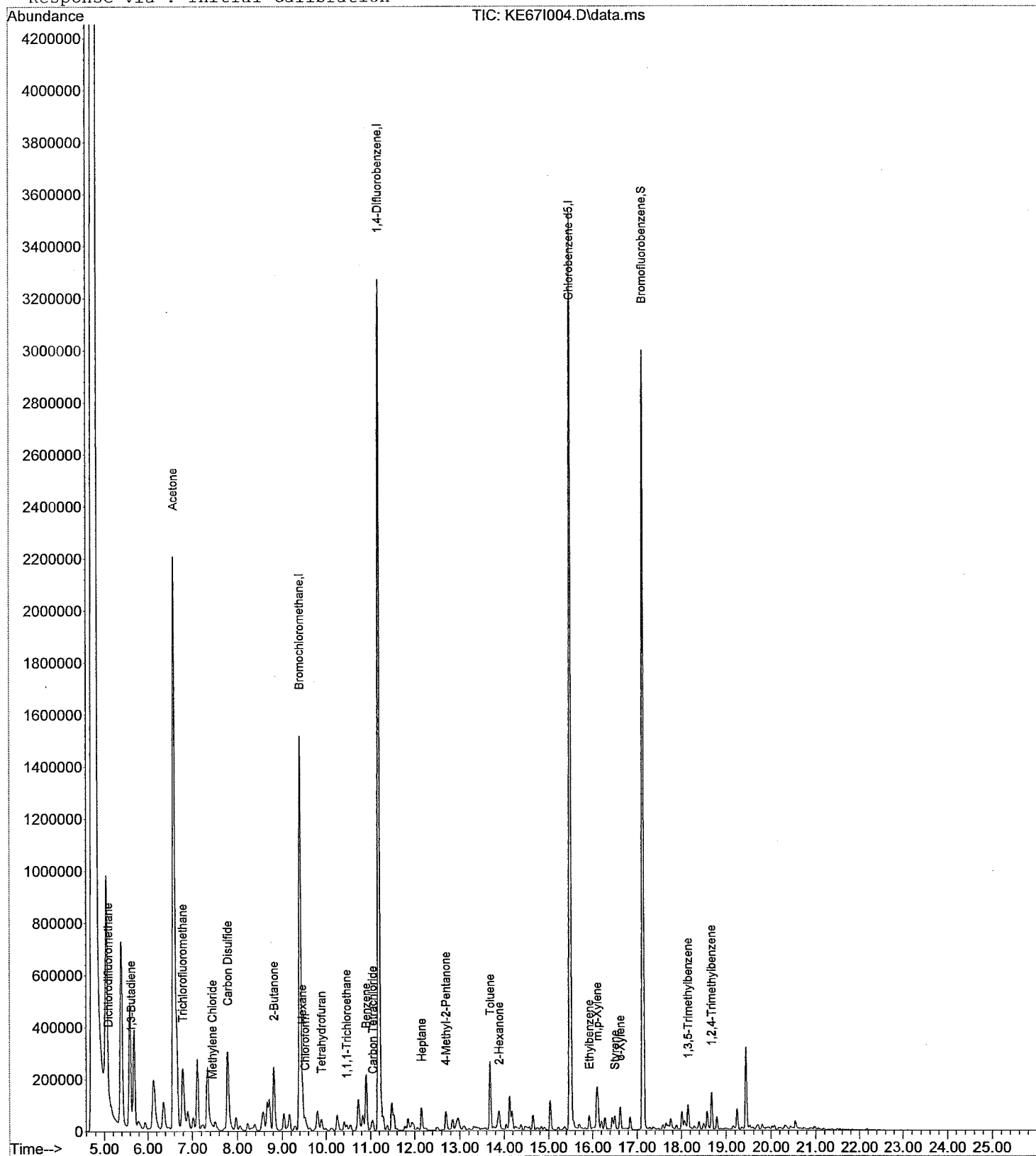
## Quantitation Report

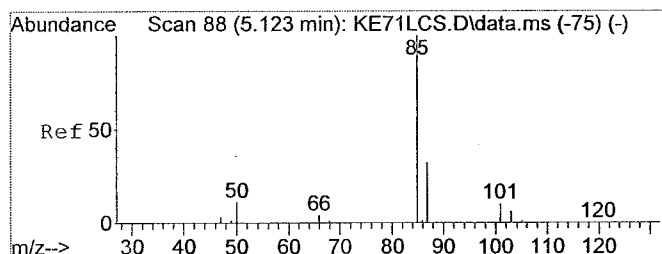
Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
Acq Time : 12/20/2018 00:21 Operator: BB  
Sample : 1835290004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:46:04 2018

Results File: TO15KH18.RES

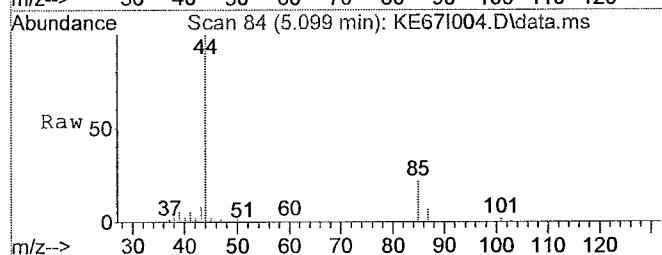
Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



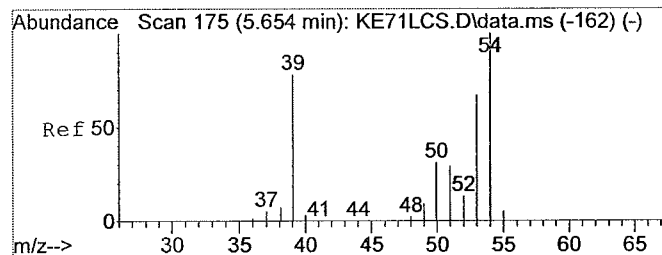
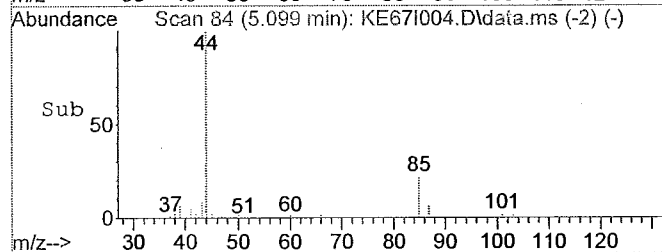
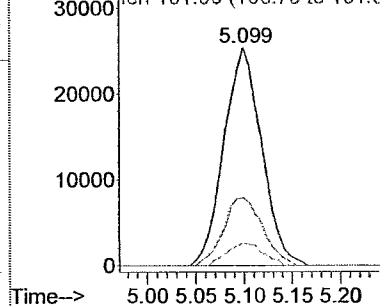


#2  
Dichlorodifluoromethane  
Concen: 0.48 ppb  
RT: 5.10 min Scan# 84  
Delta R.T. -0.00 min  
Lab File: KE671004.D  
Acq: 12/20/2018 00:21

Tgt Ion:85 Resp: 68421  
Ion Ratio Lower Upper  
85 100  
87 32.4 26.1 39.1  
101 9.8 8.1 12.1  
0 0.0 0.0 0.0

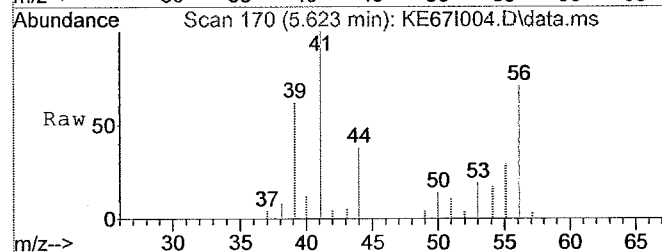


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30):

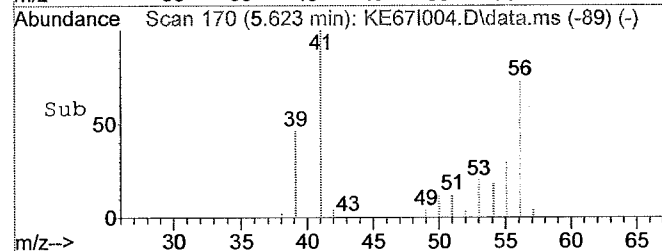
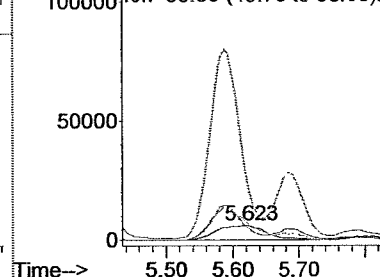


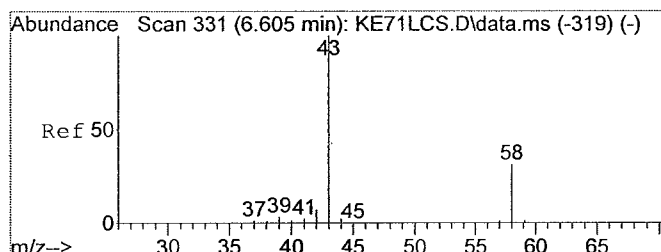
#6  
1,3-Butadiene  
Concen: 0.89 ppb  
RT: 5.62 min Scan# 170  
Delta R.T. -0.01 min  
Lab File: KE671004.D  
Acq: 12/20/2018 00:21

Tgt Ion:54.1 Resp: 31397  
Ion Ratio Lower Upper  
54 100  
39 0.0 66.3 99.5#  
53 0.0 54.6 82.0#  
50 0.0 25.9 38.9#



Abundance Ion 54.10 (53.80 to 54.40):  
Ion 39.10 (38.80 to 39.40):  
Ion 53.00 (52.70 to 53.30):  
Ion 50.00 (49.70 to 50.30):

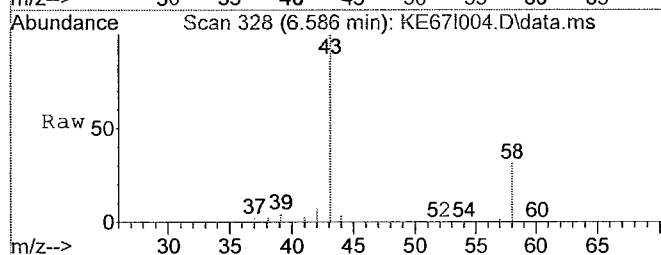




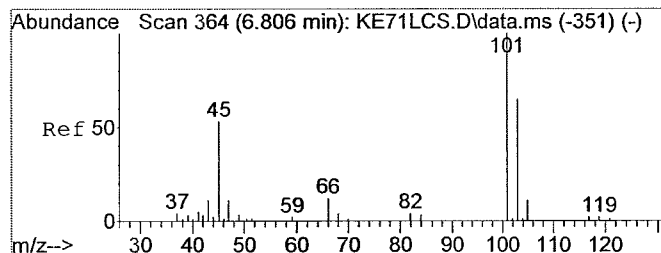
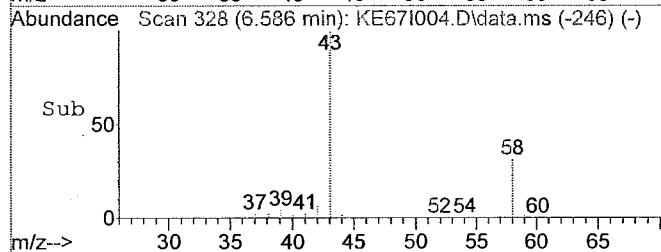
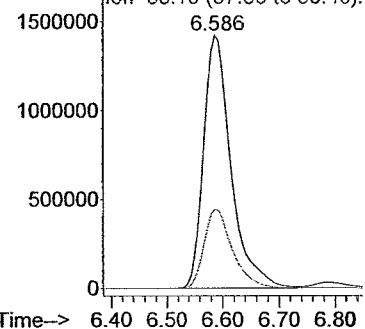
#9  
Acetone  
Concen: 59.13 ppb  
RT: 6.59 min Scan# 328  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

Tgt Ion: 43.1 Resp: 4777324

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 58  | 32.3  | 25.1  | 37.7  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



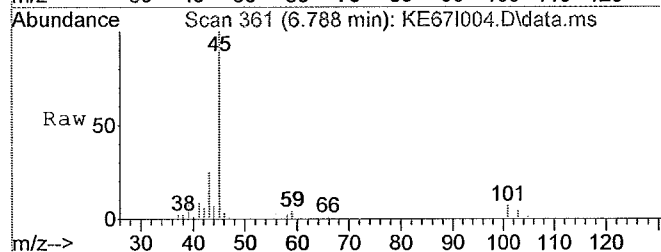
Abundance Ion 43.10 (42.80 to 43.40):  
Ion 58.10 (57.80 to 58.40):



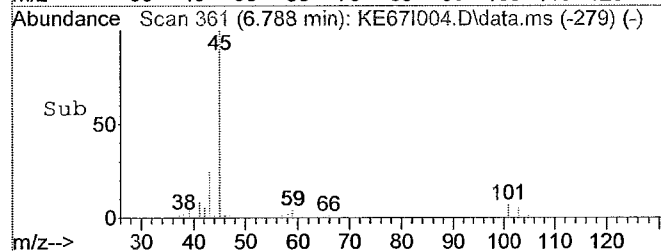
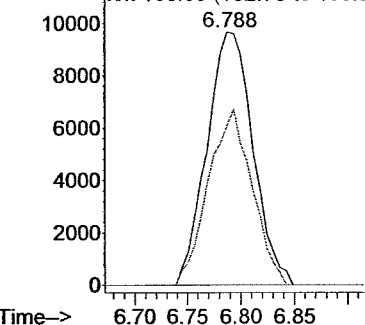
#10  
Trichlorofluoromethane  
Concen: 0.22 ppb  
RT: 6.79 min Scan# 361  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

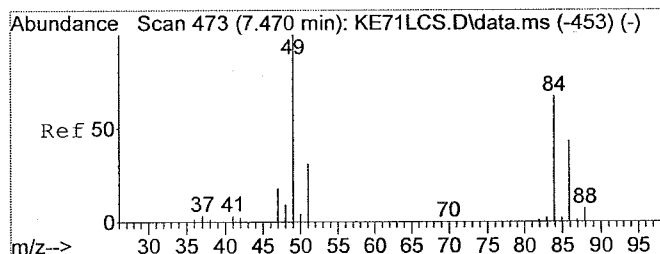
Tgt Ion: 101 Resp: 28675

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 101 | 100   |       |       |
| 103 | 66.1  | 51.6  | 77.4  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |



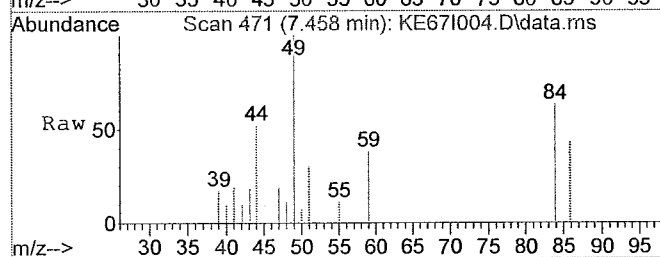
Abundance Ion 101.00 (100.70 to 101.30):  
Ion 103.00 (102.70 to 103.30):



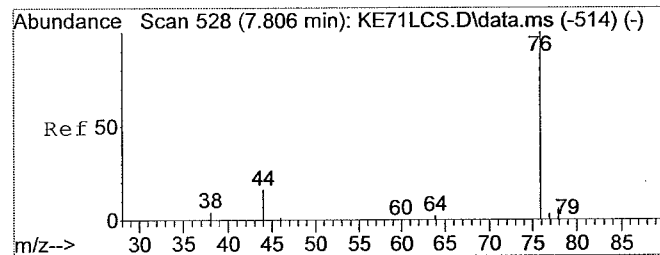
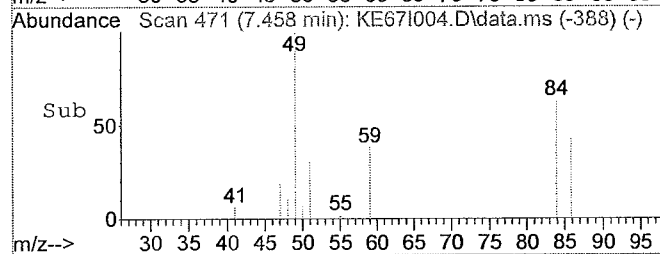
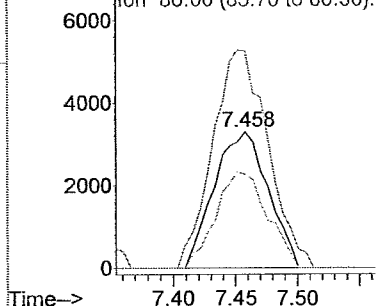


#12  
Methylene Chloride  
Concen: 0.23 ppb  
RT: 7.46 min Scan# 471  
Delta R.T. 0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 84    | Resp: | 10000 |
| Ion Ratio | Lower | Upper |       |
| 84        | 100   |       |       |
| 49        | 163.8 | 119.1 | 178.7 |
| 86        | 67.1  | 52.0  | 78.0  |
| 0         | 0.0   | 0.0   | 0.0   |

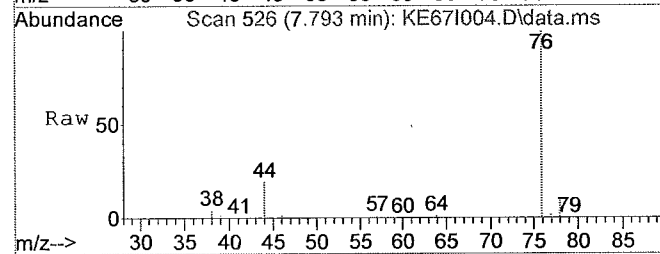


Abundance Ion 84.00 (83.70 to 84.30):  
Ion 49.00 (48.70 to 49.30):  
Ion 86.00 (85.70 to 86.30):

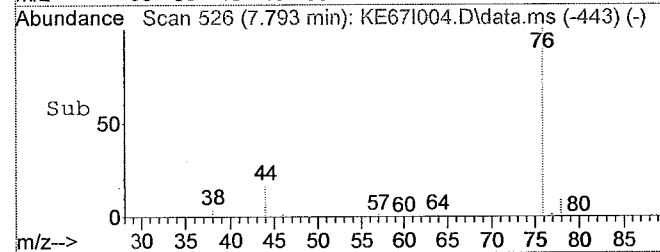
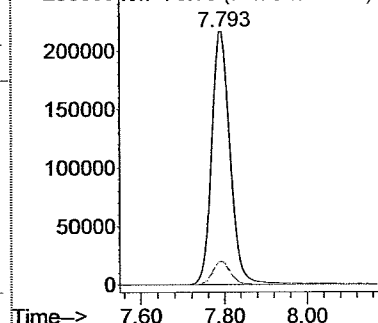


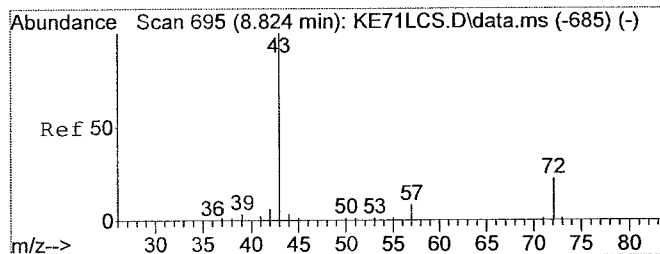
#14  
Carbon Disulfide  
Concen: 6.46 ppb  
RT: 7.79 min Scan# 526  
Delta R.T. 0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|           |       |       |        |
|-----------|-------|-------|--------|
| Tgt Ion:  | 76    | Resp: | 679464 |
| Ion Ratio | Lower | Upper |        |
| 76        | 100   |       |        |
| 78        | 8.9   | 7.3   | 10.9   |
| 0         | 0.0   | 0.0   | 0.0    |
| 0         | 0.0   | 0.0   | 0.0    |



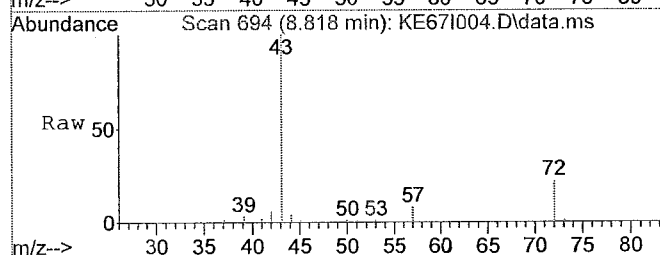
Abundance Ion 76.00 (75.70 to 76.30):  
250000 Ion 78.00 (77.70 to 78.30):



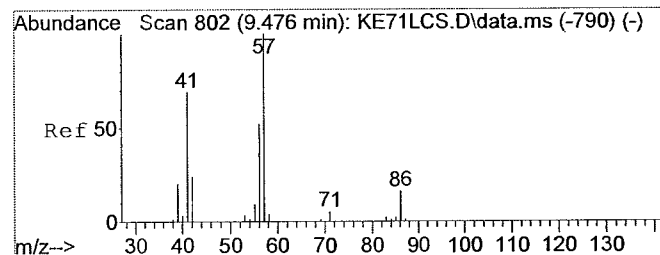
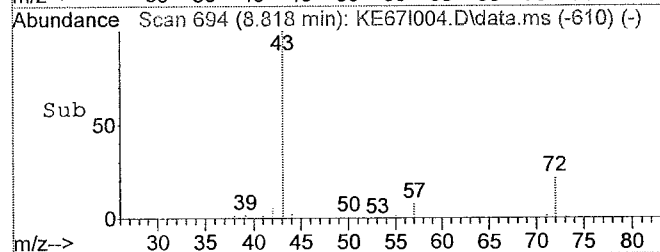
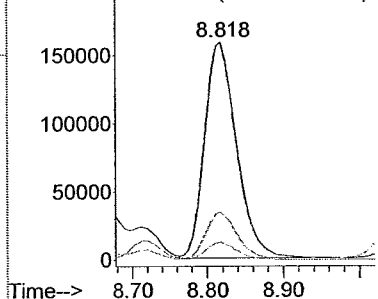


#19  
2-Butanone  
Concen: 4.43 ppb  
RT: 8.82 min Scan# 694  
Delta R.T. 0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|          |       |       |        |
|----------|-------|-------|--------|
| Tgt Ion: | 43.1  | Resp: | 456669 |
| Ion      | Ratio | Lower | Upper  |
| 43       | 100   |       |        |
| 72       | 22.2  | 17.9  | 26.9   |
| 57       | 7.9   | 6.4   | 9.6    |
| 0        | 0.0   | 0.0   | 0.0    |

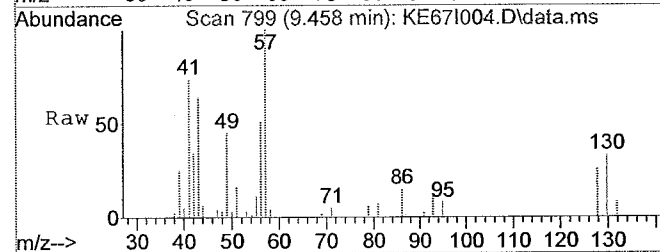


Abundance Ion 43.10 (42.80 to 43.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 57.00 (56.70 to 57.30):

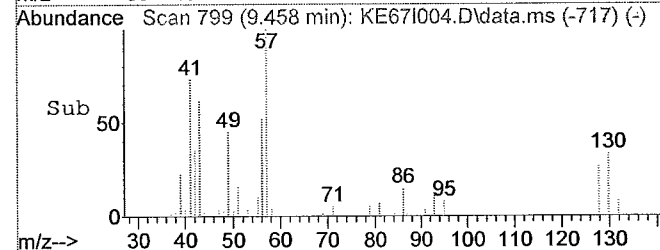
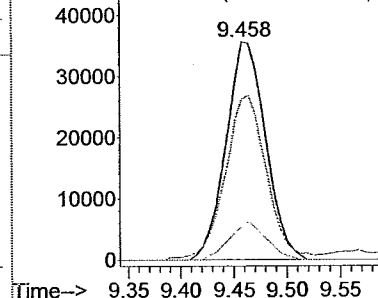


#23  
Hexane  
Concen: 1.03 ppb  
RT: 9.46 min Scan# 799  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

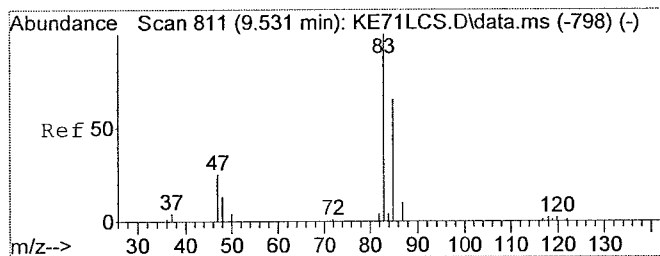
|          |       |       |       |
|----------|-------|-------|-------|
| Tgt Ion: | 57.1  | Resp: | 91809 |
| Ion      | Ratio | Lower | Upper |
| 57       | 100   |       |       |
| 41       | 78.9  | 58.6  | 88.0  |
| 86       | 16.0  | 14.2  | 21.4  |
| 0        | 0.0   | 0.0   | 0.0   |



Abundance Ion 57.10 (56.80 to 57.40):  
Ion 41.00 (40.70 to 41.30):  
Ion 86.00 (85.70 to 86.30):

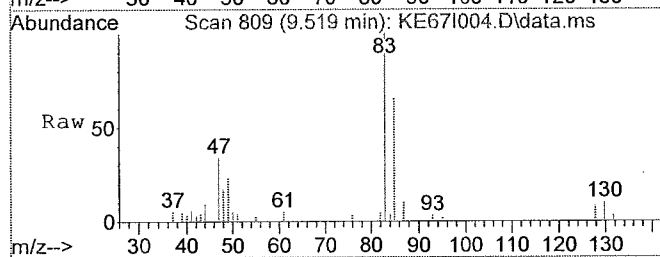




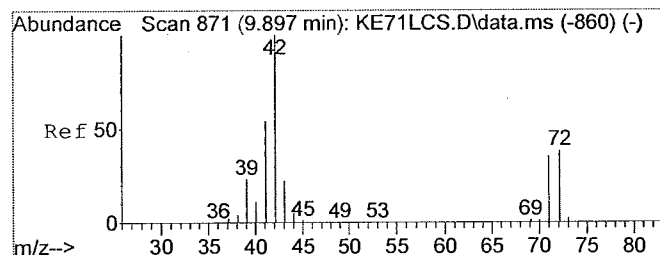
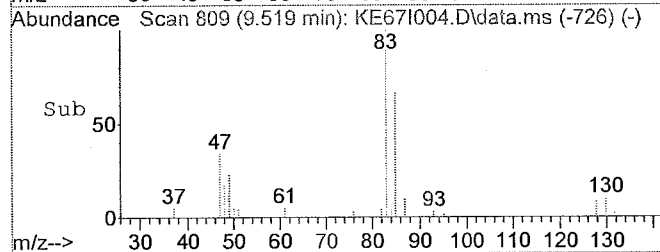
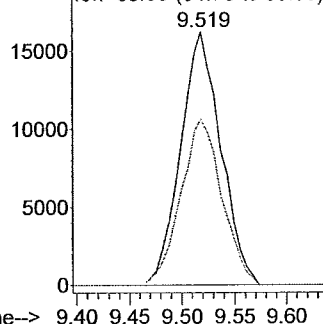


#24  
Chloroform  
Concen: 0.40 ppb  
RT: 9.52 min Scan# 809  
Delta R.T. 0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|            |       |           |
|------------|-------|-----------|
| Tgt Ion:83 | Resp: | 42723     |
| Ion Ratio  | Lower | Upper     |
| 83         | 100   |           |
| 85         | 67.3  | 52.2 78.4 |
| 0          | 0.0   | 0.0 0.0   |
| 0          | 0.0   | 0.0 0.0   |

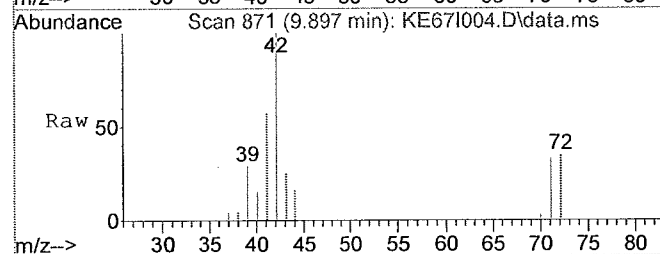


Abundance Ion 83.00 (82.70 to 83.30):  
Ion 85.00 (84.70 to 85.30):

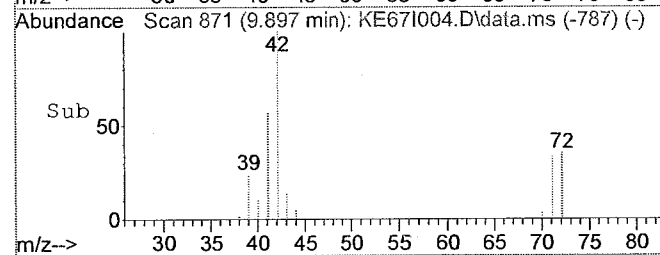
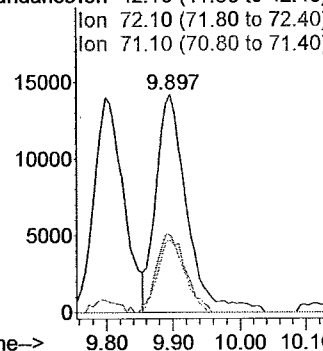


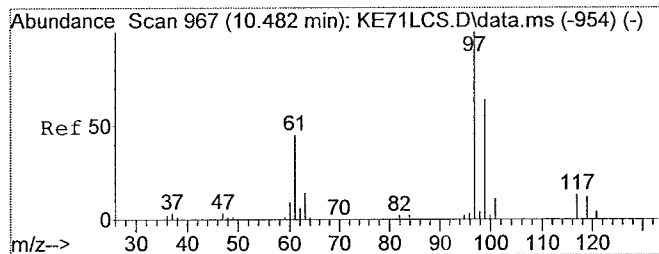
#25  
Tetrahydrofuran  
Concen: 0.77 ppb  
RT: 9.90 min Scan# 871  
Delta R.T. 0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|              |       |           |
|--------------|-------|-----------|
| Tgt Ion:42.1 | Resp: | 45318     |
| Ion Ratio    | Lower | Upper     |
| 42           | 100   |           |
| 72           | 33.6  | 29.7 44.5 |
| 71           | 29.1  | 28.1 42.1 |
| 0            | 0.0   | 0.0 0.0   |



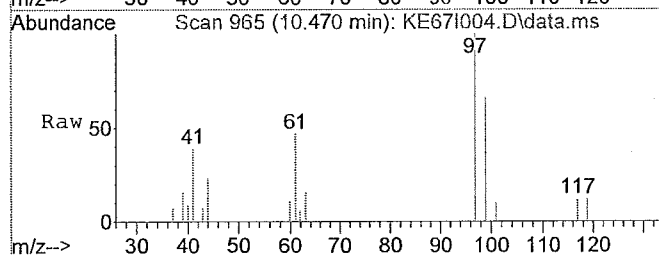
Abundance Ion 42.10 (41.80 to 42.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 71.10 (70.80 to 71.40):



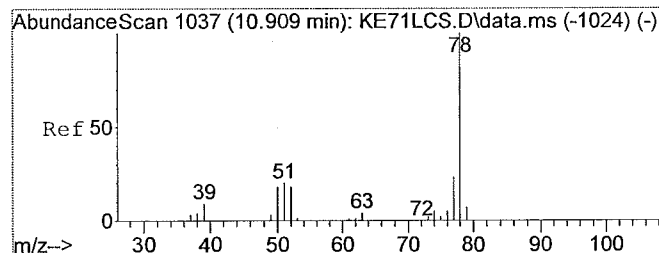
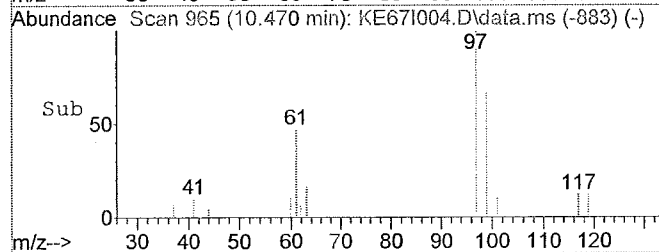
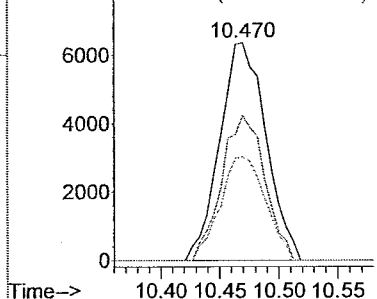


#27  
1,1,1-Trichloroethane  
Concen: 0.15 ppb  
RT: 10.47 min Scan# 965  
Delta R.T. -0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|     |        |       |       |
|-----|--------|-------|-------|
| Tgt | Ion:97 | Resp: | 17179 |
| Ion | Ratio  | Lower | Upper |
| 97  | 100    |       |       |
| 99  | 62.0   | 51.6  | 77.4  |
| 61  | 46.7   | 35.8  | 53.6  |
| 0   | 0.0    | 0.0   | 0.0   |

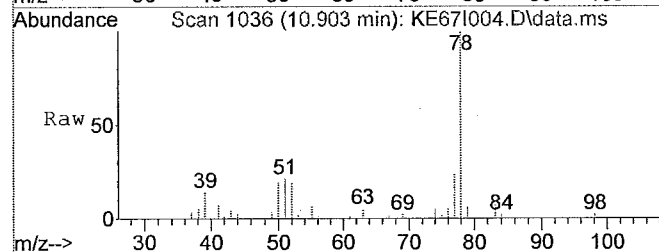


Abundance Ion 97.00 (96.70 to 97.30):  
Ion 99.00 (98.70 to 99.30):  
Ion 61.00 (60.70 to 61.30):

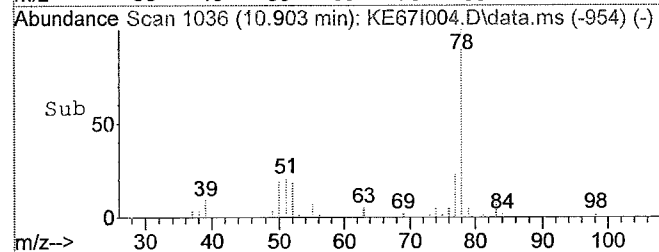
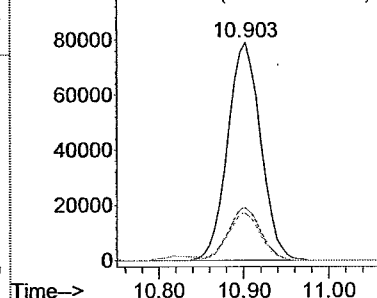


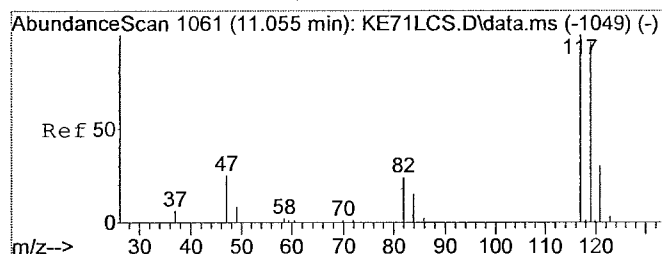
#28  
Benzene  
Concen: 1.43 ppb  
RT: 10.90 min Scan# 1036  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|     |          |       |        |
|-----|----------|-------|--------|
| Tgt | Ion:78.1 | Resp: | 210676 |
| Ion | Ratio    | Lower | Upper  |
| 78  | 100      |       |        |
| 77  | 23.9     | 18.6  | 28.0   |
| 51  | 21.3     | 15.7  | 23.5   |
| 0   | 0.0      | 0.0   | 0.0    |

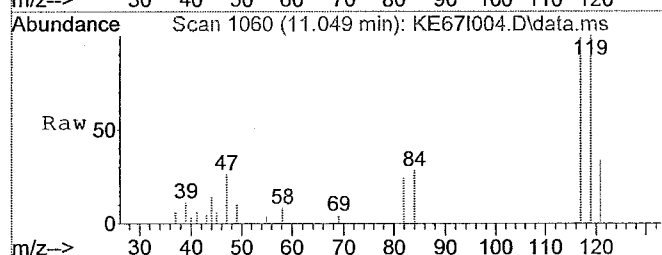


Abundance Ion 78.10 (77.80 to 78.40):  
Ion 77.10 (76.80 to 77.40):  
Ion 51.10 (50.80 to 51.40):



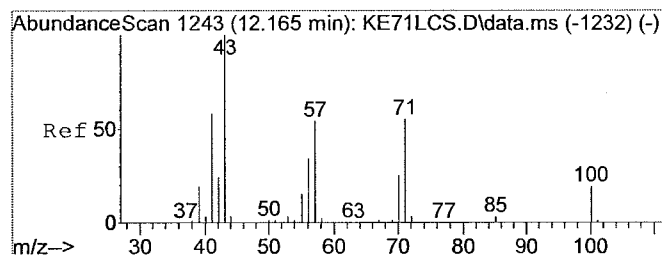
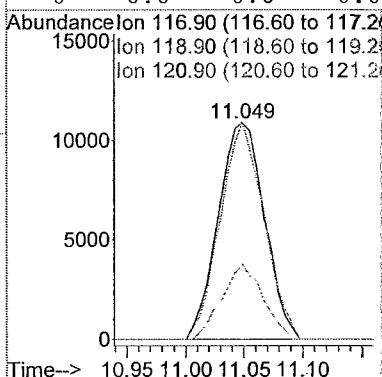
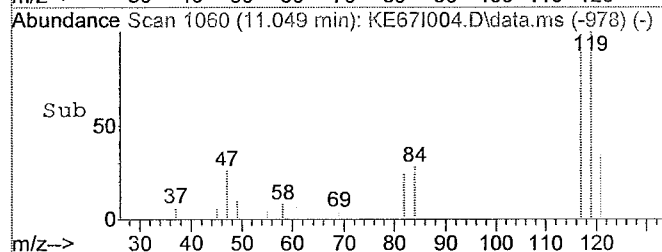


#29  
Carbon Tetrachloride  
Concen: 0.27 ppb  
RT: 11.05 min Scan# 1060  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

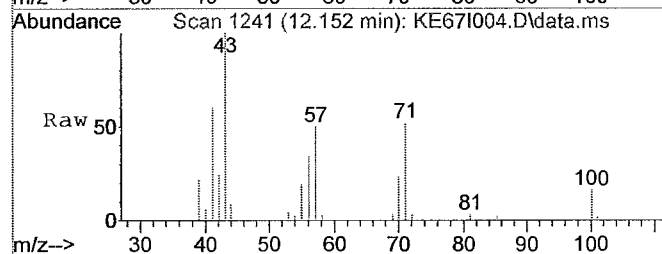


Tgt Ion:116.9 Resp: 29675

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 117 | 100   |       |       |
| 119 | 95.1  | 76.6  | 114.8 |
| 121 | 30.8  | 24.5  | 36.7  |
| 0   | 0.0   | 0.0   | 0.0   |

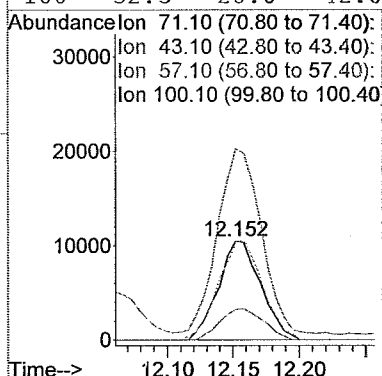
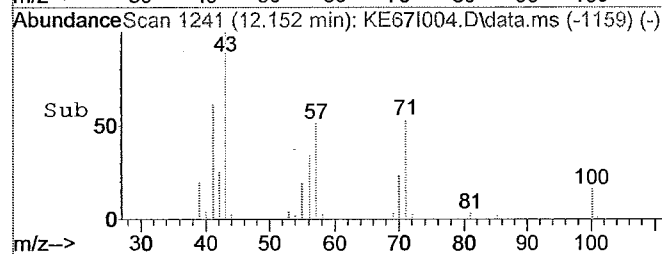


#34  
Heptane  
Concen: 0.41 ppb  
RT: 12.15 min Scan# 1241  
Delta R.T. -0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

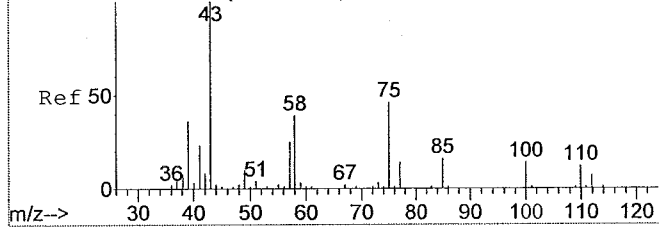


Tgt Ion:71.1 Resp: 23397

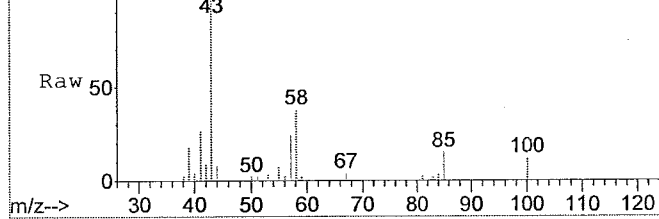
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 71  | 100   |       |       |
| 43  | 196.6 | 148.1 | 222.1 |
| 57  | 104.0 | 79.4  | 119.0 |
| 100 | 32.3  | 28.0  | 42.0  |



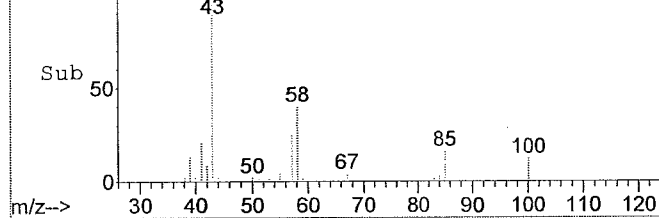
AbundanceScan 1332 (12.707 min): KE71LCS.D\data.ms (-1320) (-)



AbundanceScan 1331 (12.701 min): KE67I004.D\data.ms



AbundanceScan 1331 (12.701 min): KE67I004.D\data.ms (-1249) (-)



#36

4-Methyl-2-Pentanone  
Concen: 0.45 ppb  
RT: 12.70 min Scan# 1331  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

Tgt Ion: 43.1 Resp: 62563

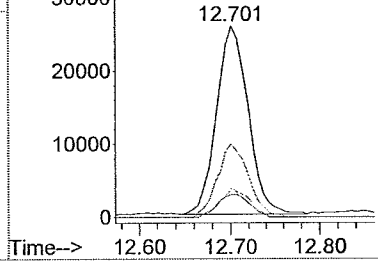
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 58  | 38.3  | 31.0  | 46.6  |
| 85  | 14.4  | 12.9  | 19.3  |
| 100 | 12.3  | 11.4  | 17.2  |

AbundanceIon 43.10 (42.80 to 43.40):

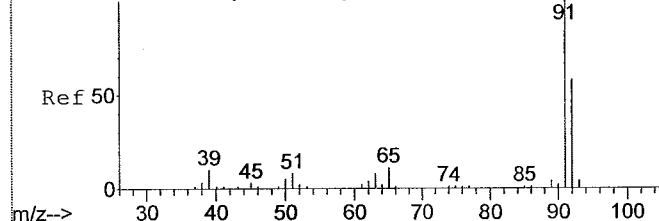
Ion 58.10 (57.80 to 58.40):

Ion 85.10 (84.80 to 85.40):

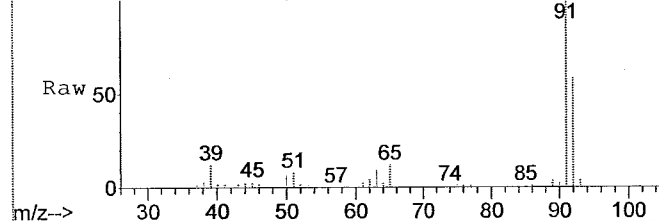
Ion 100.10 (99.80 to 100.40):



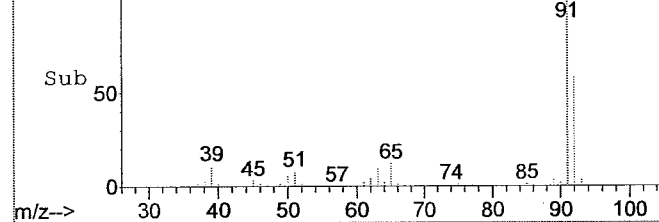
AbundanceScan 1493 (13.689 min): KE71LCS.D\data.ms (-1481) (-)



AbundanceScan 1492 (13.683 min): KE67I004.D\data.ms



AbundanceScan 1492 (13.683 min): KE67I004.D\data.ms (-1410) (-)



#39

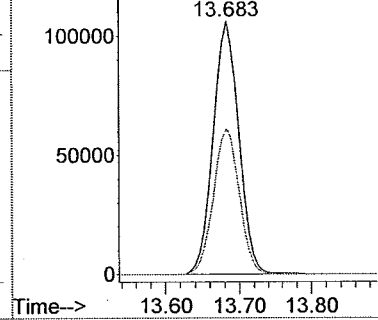
Toluene  
Concen: 1.48 ppb  
RT: 13.68 min Scan# 1492  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

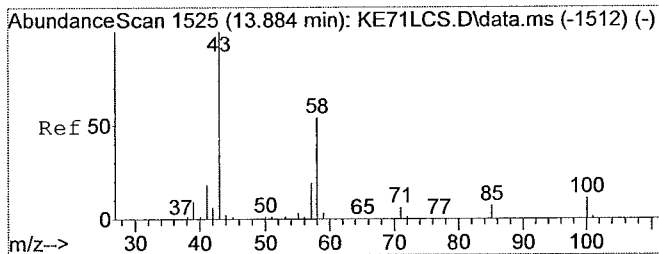
Tgt Ion: 91.1 Resp: 258218

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 91  | 100   |       |       |
| 92  | 57.8  | 46.9  | 70.3  |
| 0   | 0.0   | 0.0   | 0.0   |
| 0   | 0.0   | 0.0   | 0.0   |

AbundanceIon 91.10 (90.80 to 91.40):

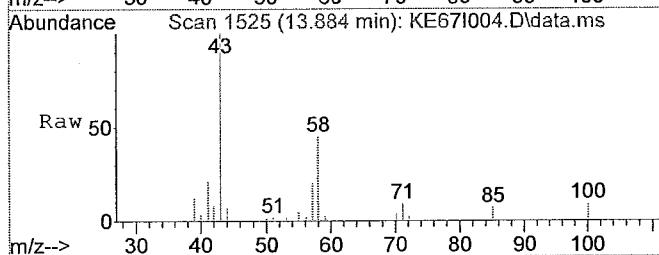
Ion 92.10 (91.80 to 92.40):



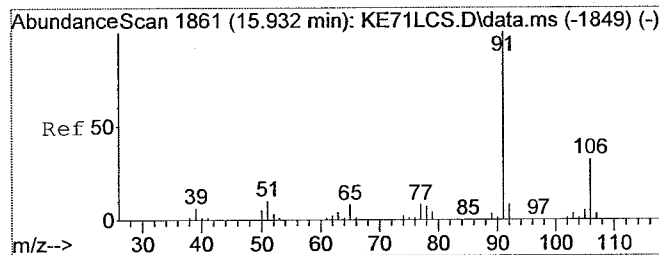
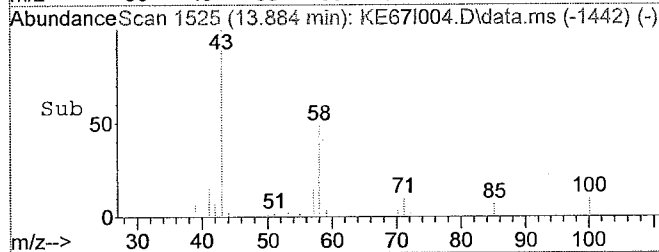
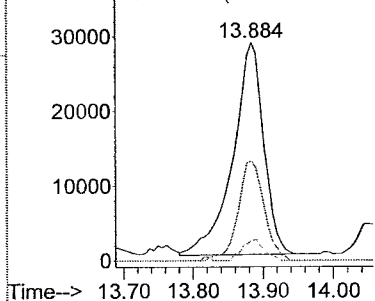


#40  
2-Hexanone  
Concen: 0.71 ppb  
RT: 13.88 min Scan# 1525  
Delta R.T. 0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

Tgt Ion:43.1 Resp: 86522  
Ion Ratio Lower Upper  
43 100  
58 39.7 42.5 63.7#  
100 7.1 8.6 13.0#  
0 0.0 0.0 0.0

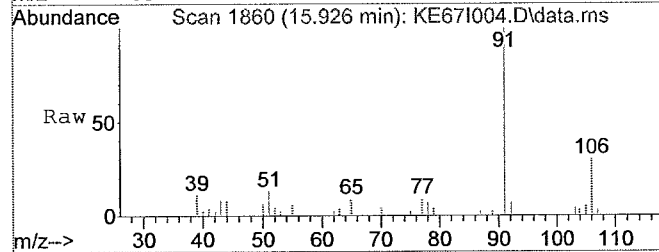


AbundanceIon 43.10 (42.80 to 43.40):  
Ion 58.10 (57.80 to 58.40):  
Ion 100.10 (99.80 to 100.40)

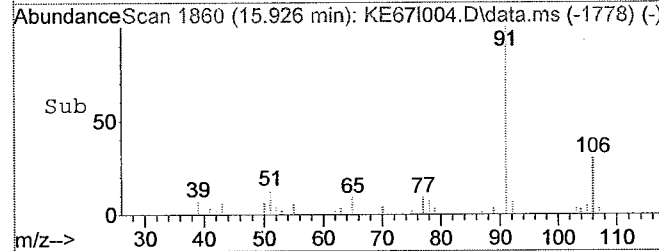
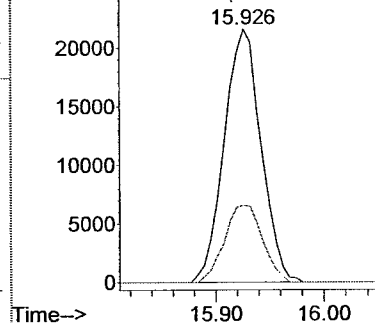


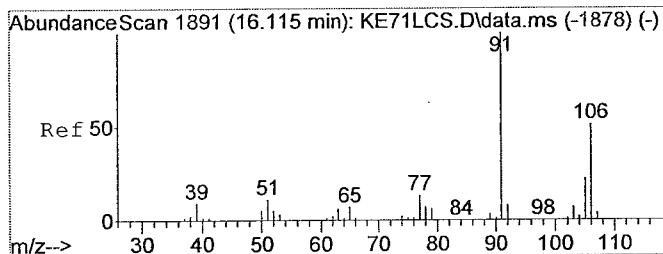
#46  
Ethylbenzene  
Concen: 0.23 ppb  
RT: 15.93 min Scan# 1860  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

Tgt Ion:91.1 Resp: 51001  
Ion Ratio Lower Upper  
91 100  
106 31.4 25.8 38.8  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

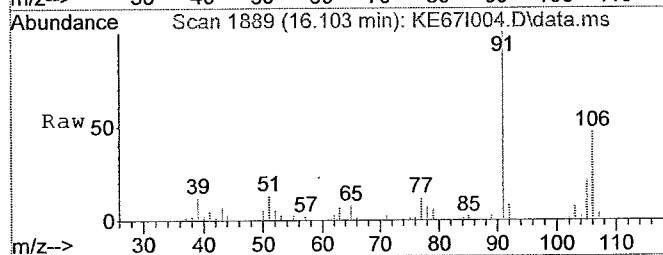


AbundanceIon 91.10 (90.80 to 91.40):  
Ion 106.10 (105.80 to 106.40)

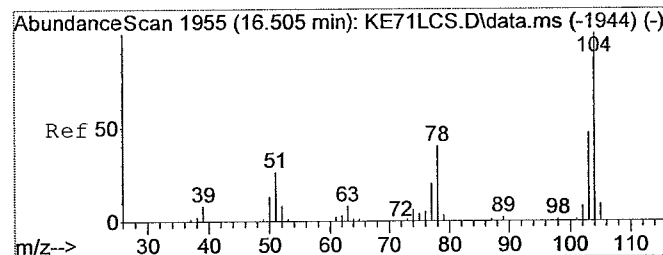
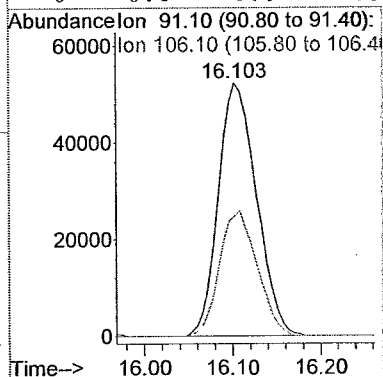
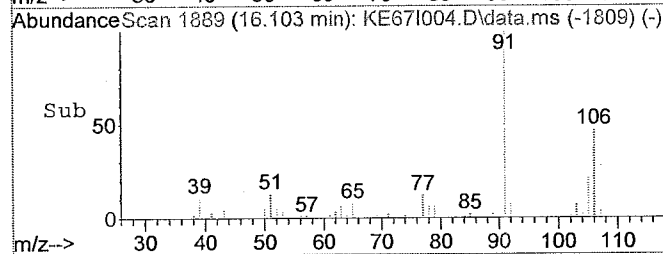




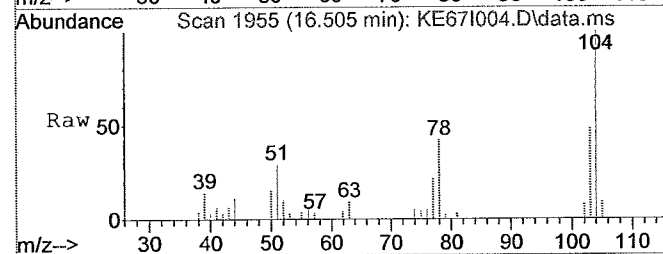
#47  
m,p-Xylene  
Concen: 0.89 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21



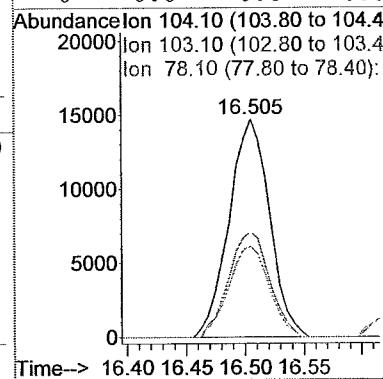
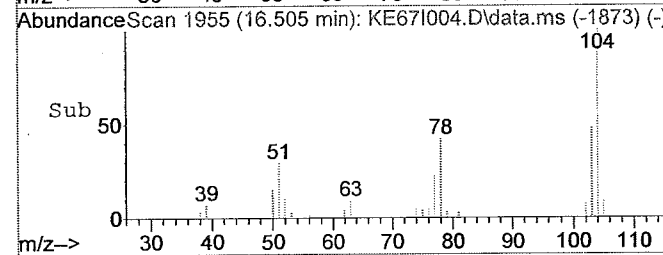
Tgt Ion: 91.1 Resp: 156670  
Ion Ratio Lower Upper  
91 100  
106 48.8 40.5 60.7  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

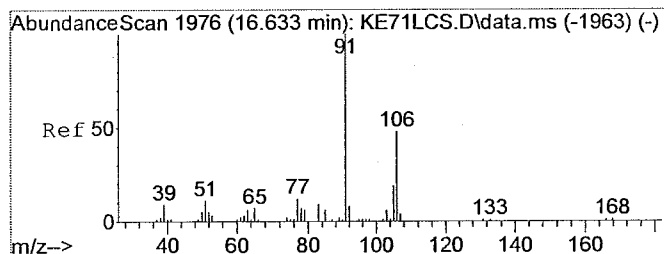


#49  
Styrene  
Concen: 0.29 ppb  
RT: 16.51 min Scan# 1955  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21



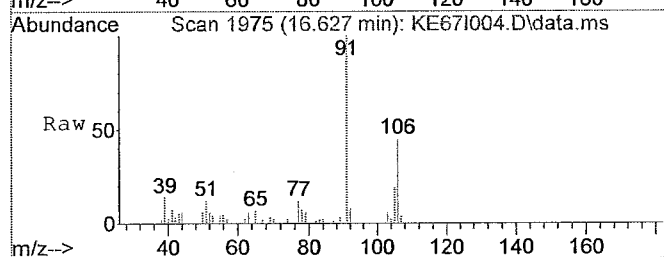
Tgt Ion: 104.1 Resp: 34903  
Ion Ratio Lower Upper  
104 100  
103 48.4 37.6 56.4  
78 41.8 32.3 48.5  
0 0.0 0.0 0.0



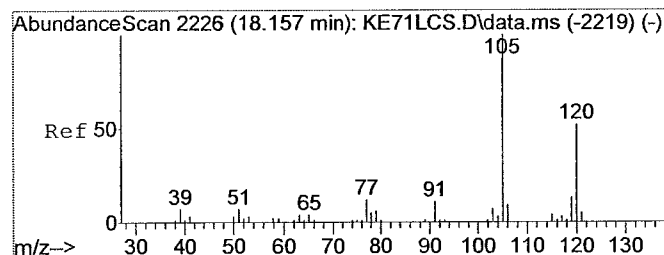
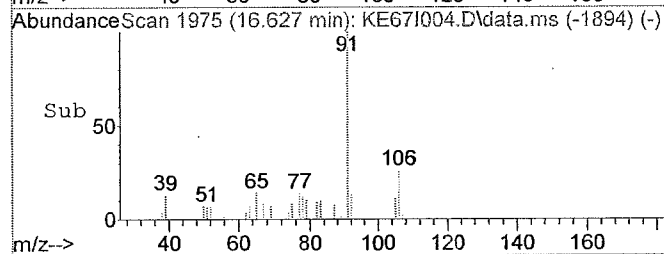
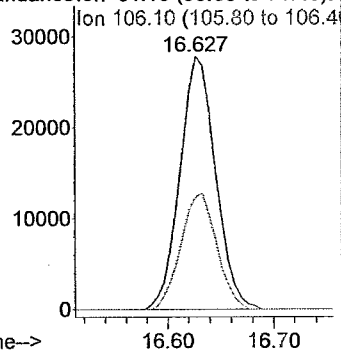


#51  
o-Xylene  
Concen: 0.38 ppb  
RT: 16.63 min Scan# 1975  
Delta R.T. -0.01 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 91.1  | Resp: | 65041 |
| Ion Ratio | Lower | Upper |       |
| 91        | 100   |       |       |
| 106       | 46.2  | 38.2  | 57.4  |
| 0         | 0.0   | 0.0   | 0.0   |
| 0         | 0.0   | 0.0   | 0.0   |

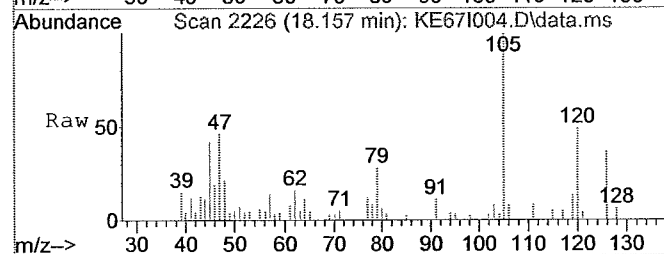


AbundanceIon 91.10 (90.80 to 91.40):

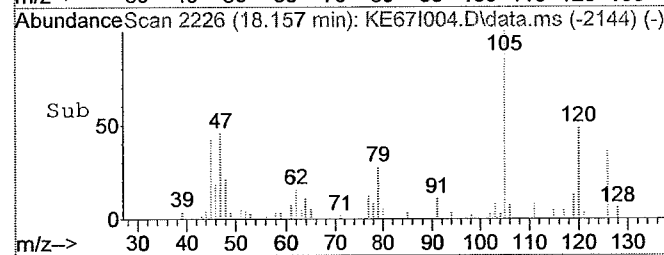
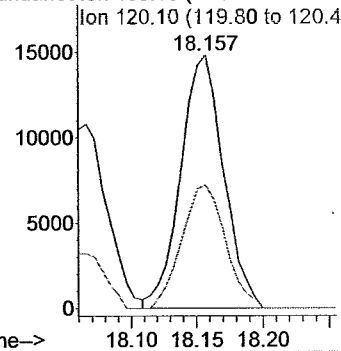


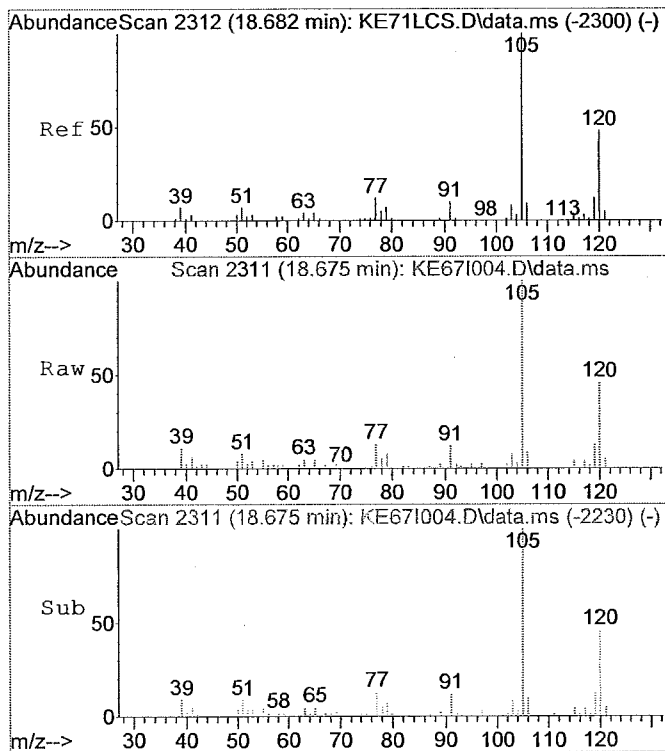
#54  
1,3,5-Trimethylbenzene  
Concen: 0.17 ppb  
RT: 18.16 min Scan# 2226  
Delta R.T. 0.00 min  
Lab File: KE67I004.D  
Acq: 12/20/2018 00:21

|           |       |       |       |
|-----------|-------|-------|-------|
| Tgt Ion:  | 105.1 | Resp: | 33291 |
| Ion Ratio | Lower | Upper |       |
| 105       | 100   |       |       |
| 120       | 49.6  | 41.3  | 61.9  |
| 0         | 0.0   | 0.0   | 0.0   |
| 0         | 0.0   | 0.0   | 0.0   |



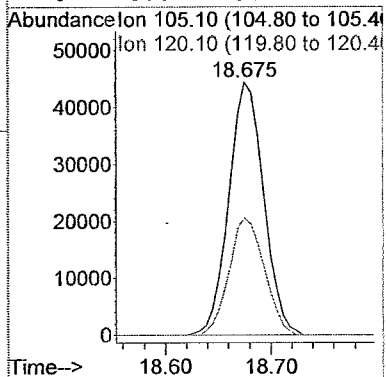
AbundanceIon 105.10 (104.80 to 105.4)





#55  
 1,2,4-Trimethylbenzene  
 Concen: 0.54 ppb  
 RT: 18.68 min Scan# 2311  
 Delta R.T. -0.01 min  
 Lab File: KE67I004.D  
 Acq: 12/20/2018 00:21

Tgt Ion:105.1 Resp: 100948  
 Ion Ratio Lower Upper  
 105 100  
 120 47.0 38.7 58.1  
 0 0.0 0.0 0.0  
 0 0.0 0.0 0.0





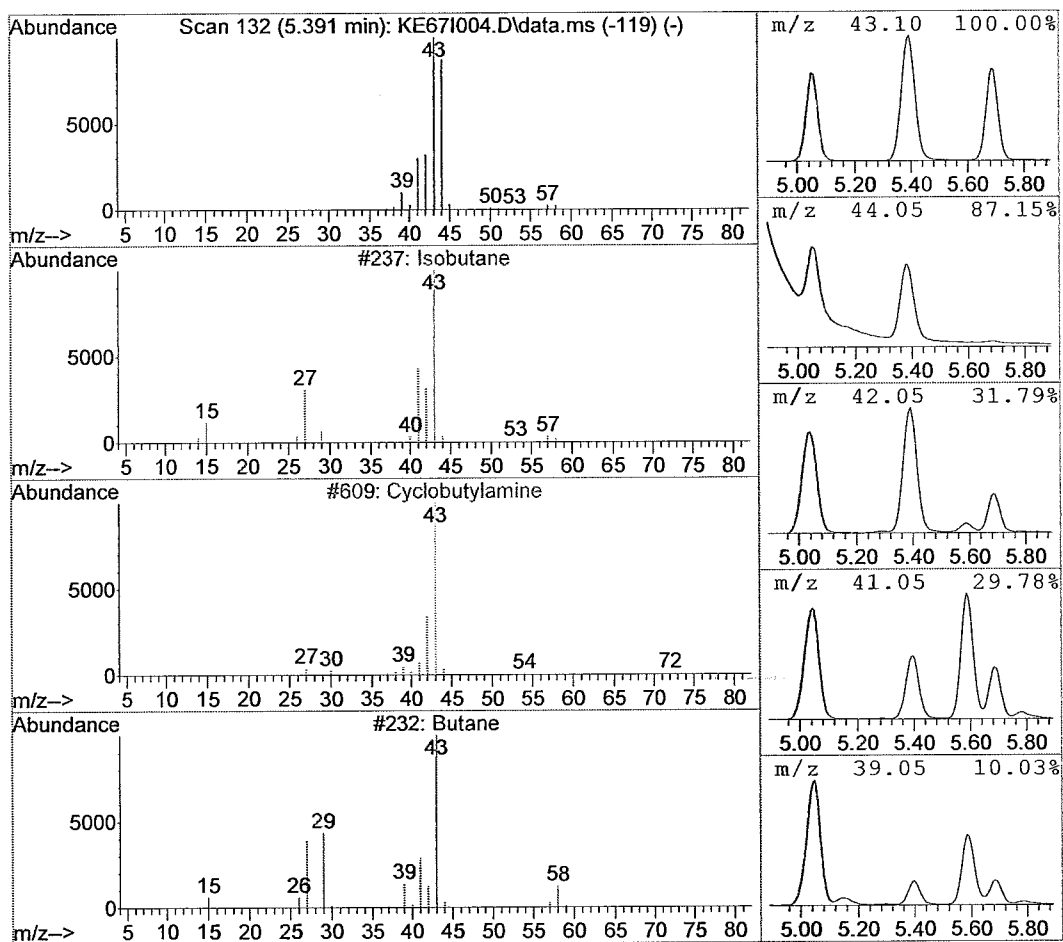
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
Acq Time : 12/20/2018 00:21 Operator: BB  
Sample : 1835290004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc      | Area    | Relative to ISTD   | ISTD Area |
|------|-----------|---------|--------------------|-----------|
| 5.39 | 11.10 ppb | 2652179 | Bromochloromethane | 4778948   |

| Hit# of 20 | Tentative ID    | Ref# | CAS#        | Qual  |
|------------|-----------------|------|-------------|-------|
| 1          | Isobutane       | 237  | 000075-28-5 | 22.00 |
| 2          | Cyclobutylamine | 609  | 002516-34-9 | 4.00  |
| 3          | Butane          | 232  | 000106-97-8 | 4.00  |
| 4          | Carbon dioxide  | 81   | 000124-38-9 | 3.00  |
| 5          | Propane         | 78   | 000074-98-6 | 3.00  |



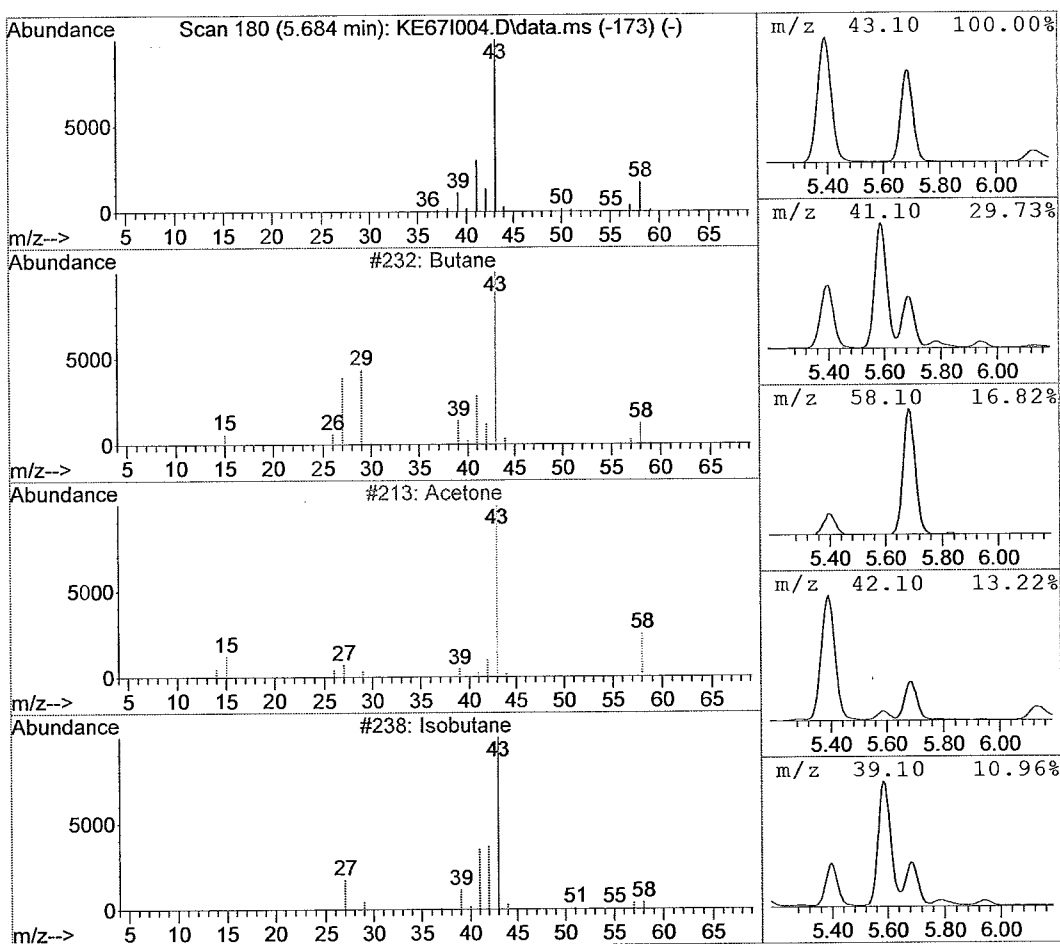
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
Acq Time : 12/20/2018 00:21 Operator: BB  
Sample : 1835290004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

```
Method      : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)
Title       : TO-15
Library     : C:\DATABASE\NIST11.L
```

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 5.68 | 4.87 ppb | 1162976 | Bromochloromethane | 4778948   |

| Hit# | of 20           | Tentative ID | Ref# | CAS#        | Qual  |
|------|-----------------|--------------|------|-------------|-------|
| 1    | Butane          |              | 232  | 000106-97-8 | 72.00 |
| 2    | Acetone         |              | 213  | 000067-64-1 | 45.00 |
| 3    | Isobutane       |              | 238  | 000075-28-5 | 9.00  |
| 4    | Propylene oxide |              | 225  | 000075-56-9 | 4.00  |
| 5    | Hydrogen azide  |              | 70   | 007782-79-8 | 4.00  |



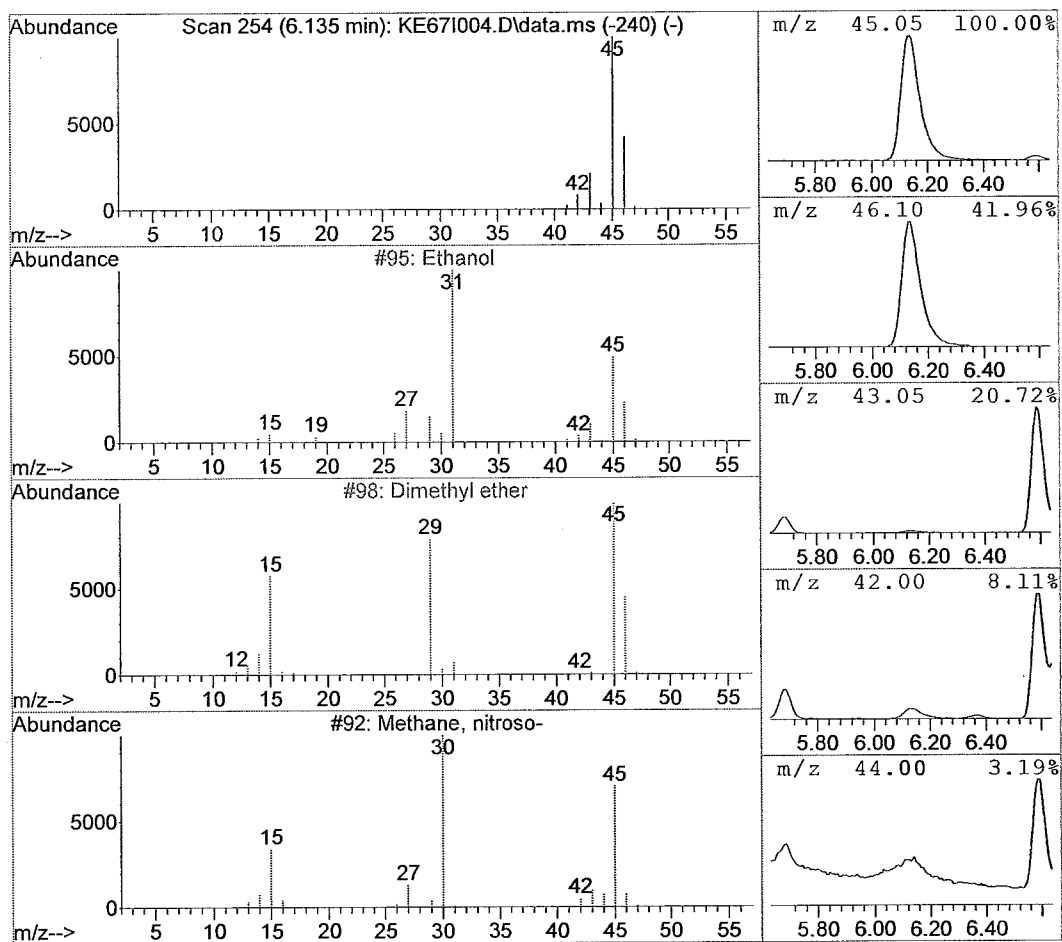
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
Acq Time : 12/20/2018 00:21 Operator: BB  
Sample : 1835290004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 6.14 | 3.65 ppb | 871396 | Bromochloromethane | 4778948   |

| Hit# of 20 | Tentative ID      | Ref# | CAS#        | Qual  |
|------------|-------------------|------|-------------|-------|
| 1          | Ethanol           | 95   | 000064-17-5 | 74.00 |
| 2          | Dimethyl ether    | 98   | 000115-10-6 | 9.00  |
| 3          | Methane, nitroso- | 92   | 000865-40-7 | 4.00  |
| 4          | Formic acid       | 100  | 000064-18-6 | 4.00  |
| 5          | Oxalic acid       | 2224 | 000144-62-7 | 4.00  |



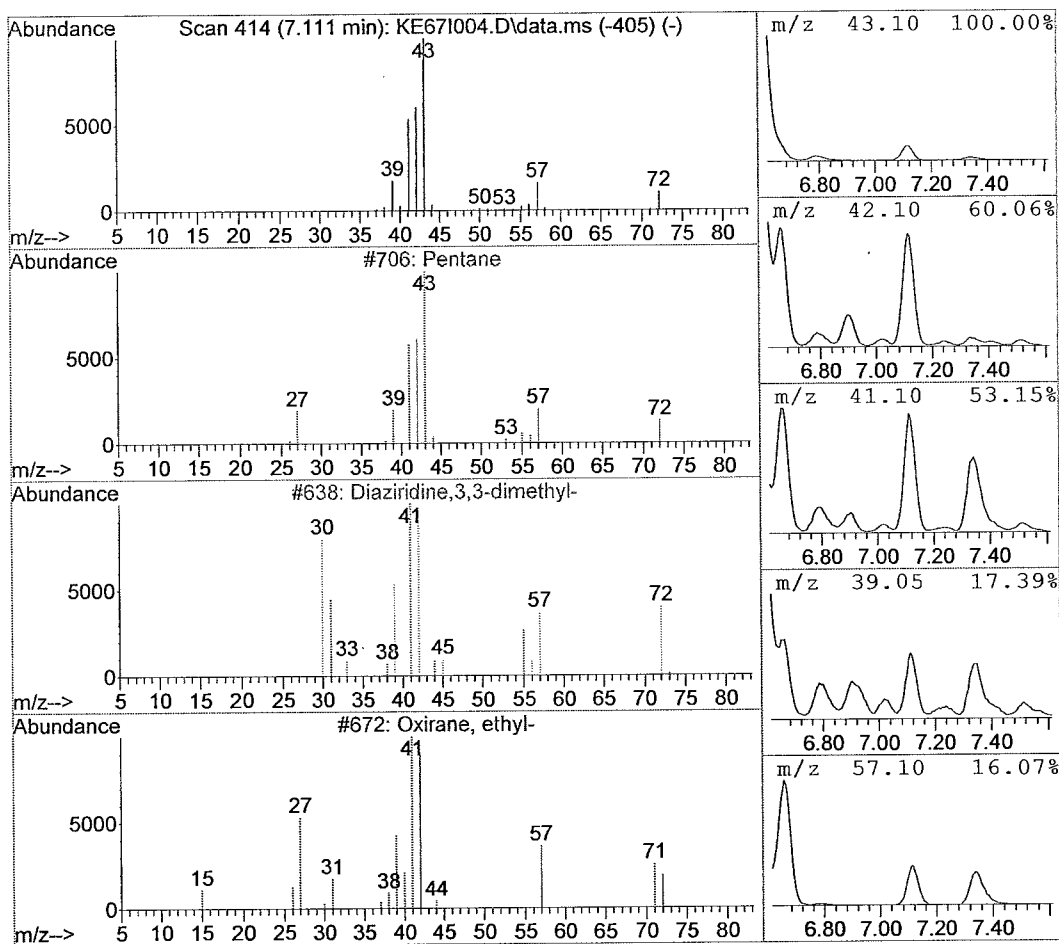
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
Acq Time : 12/20/2018 00:21 Operator: BB  
Sample : 1835290004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 7.11 | 3.15 ppb | 753784 | Bromochloromethane | 4778948   |

| Hit# of 20 | Tentative ID               | Ref# | CAS#        | Qual  |
|------------|----------------------------|------|-------------|-------|
| 1          | Pentane                    | 706  | 000109-66-0 | 87.00 |
| 2          | Diaziridine, 3,3-dimethyl- | 638  | 004901-76-2 | 25.00 |
| 3          | Oxirane, ethyl-            | 672  | 000106-88-7 | 9.00  |
| 4          | Propanal, 2-methyl-        | 689  | 000078-84-2 | 7.00  |
| 5          | Butane, 2-methyl-          | 713  | 000078-78-4 | 5.00  |



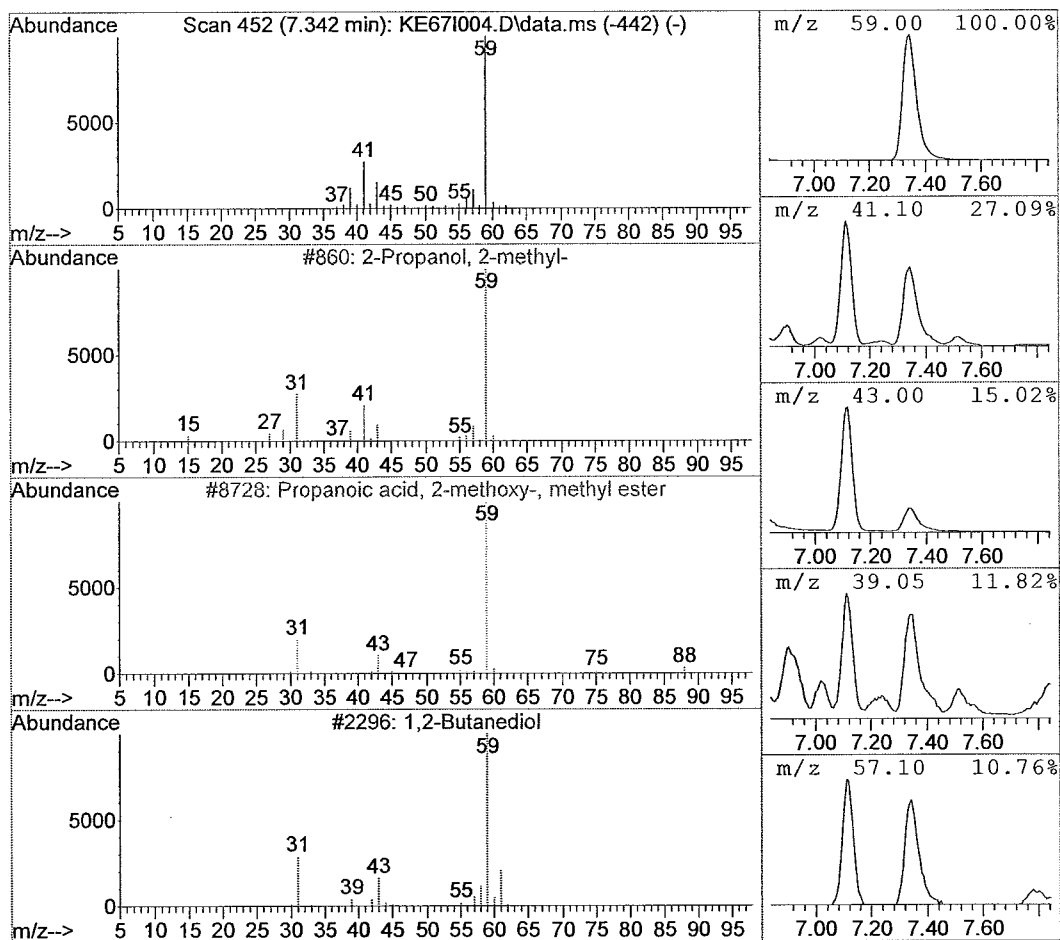
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE67I004.D Vial: 12  
Acq Time : 12/20/2018 00:21 Operator: BB  
Sample : 1835290004 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area   | Relative to ISTD   | ISTD Area |
|------|----------|--------|--------------------|-----------|
| 7.34 | 3.90 ppb | 931648 | Bromochloromethane | 4778948   |

| Hit# of 20 | Tentative ID                        | Ref# | CAS#         | Qual  |
|------------|-------------------------------------|------|--------------|-------|
| 1          | 2-Propanol, 2-methyl-               | 860  | 000075-65-0  | 72.00 |
| 2          | Propanoic acid, 2-methoxy-, methyl  | 8728 | 017639-76-8  | 39.00 |
| 3          | 1,2-Butanediol                      | 2296 | 000584-03-2  | 38.00 |
| 4          | (3,3-Dimethyloxiranyl)methanol      | 4327 | 1000306-71-7 | 9.00  |
| 5          | Propanoic acid, 2-hydroxy-2-methyl- | 4710 | 000594-61-6  | 9.00  |



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
 Acq Time : 12/20/2018 02:23 Operator: BB  
 Sample : 1835256003 Inst : 5975-K  
 Misc : Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:48:54 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )

Title : TO-15

Last Update : Wed Dec 05 10:49:41 2018

Response via : Initial Calibration

DataAcq Meth : TO-15.M

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area%  |
|-------------------------|-------|------|----------|-------|-------|--------|
| 1) Bromochloromethane   | 9.40  | 130  | 334592   | 20.00 | ppb   | 110.88 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3469271  | 20.00 | ppb   | 92.17  |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2880309  | 20.00 | ppb   | 102.58 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1510234  | 18.66 | ppb   | 93.30%    |

| Target Compounds              | R.T.  | QIon | Response | Conc         | Units | Qvalue         |
|-------------------------------|-------|------|----------|--------------|-------|----------------|
| 2) Dichlorodifluoromethane    | 5.10  | 85   | 67139    | 0.3642       | ppb   | 100            |
| 3) Chloromethane              | 5.26  | 50   | 31572    | 0.6264       | ppb   | 97             |
| 4) Freon 114                  | 0.00  | 135  |          | Not Detected |       |                |
| 5) Vinyl Chloride             | 0.00  | 62   |          | Not Detected |       |                |
| 6) 1,3-Butadiene              | 0.00  | 54   |          | Not Detected |       |                |
| 7) Bromomethane               | 0.00  | 94   |          | Not Detected |       |                |
| 8) Chloroethane               | 0.00  | 64   |          | Not Detected |       |                |
| 9) Acetone                    | 6.58  | 43   | 27461180 | 264.0238     | ppb   | 99 D.L         |
| 10) Trichlorofluoromethane    | 6.79  | 101  | 83033    | 0.5056       | ppb   | 100            |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          | Not Detected |       |                |
| 12) Methylene Chloride        | 7.45  | 84   | 12562    | 0.2277       | ppb   | 92             |
| 13) Freon 113                 | 0.00  | 151  |          | Not Detected |       |                |
| 14) Carbon Disulfide          | 0.00  | 76   |          | Not Detected |       |                |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          | Not Detected |       |                |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          | Not Detected |       |                |
| 17) methyl t-butyl ether      | 0.00  | 73   |          | Not Detected |       |                |
| 18) Vinyl Acetate             | 0.00  | 86   |          | Not Detected |       |                |
| 19) 2-Butanone                | 8.81  | 43   | 1451794  | 10.9366      | ppb   | 98             |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          | Not Detected |       |                |
| 22) Ethyl Acetate             | 9.40  | 61   | 2736807  | 151.0759     | ppb   | 99 D.L         |
| 23) Hexane                    | 0.00  | 57   |          | Not Detected |       |                |
| 24) Chloroform                | 0.00  | 83   |          | Not Detected |       |                |
| 25) Tetrahydrofuran           | 9.91  | 42   | 10218    | 0.1774       | ppb # | 51             |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          | Not Detected |       |                |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |                |
| 28) Benzene                   | 0.00  | 78   |          | Not Detected |       |                |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          | Not Detected |       |                |
| 30) Cyclohexane               | 11.18 | 84   | 140511   | 1.9232       | ppb # | 70             |
| 31) 1,2-Dichloropropane       | 11.67 | 63   | 8956     | 0.1591       | ppb   | 98             |
| 32) Bromodichloromethane      | 0.00  | 83   |          | Not Detected |       |                |
| 33) Trichloroethene           | 0.00  | 130  |          | Not Detected |       |                |
| 34) Heptane                   | 12.16 | 71   | 1578242  | 28.3900      | ppb   | 96             |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          | Not Detected |       |                |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 13989558 | 102.1476     | ppb   | 98 D.L         |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          | Not Detected |       |                |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          | Not Detected |       |                |
| 39) Toluene                   | 13.67 | 91   | 27317475 | 159.1349     | ppb m | 0 D.L 12/20/18 |
| 40) 2-Hexanone                | 0.00  | 43   |          | Not Detected |       |                |
| 41) Dibromochloromethane      | 0.00  | 129  |          | Not Detected |       |                |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          | Not Detected |       |                |
| 43) Tetrachloroethene         | 0.00  | 166  |          | Not Detected |       |                |
| 45) Chlorobenzene             | 0.00  | 112  |          | Not Detected |       |                |
| 46) Ethylbenzene              | 0.00  | 91   |          | Not Detected |       |                |
| 47) m,p-Xylene                | 16.10 | 91   | 49356    | 0.2716       | ppb   | 97             |
| 48) Bromoform                 | 0.00  | 173  |          | Not Detected |       |                |
| 49) Styrene                   | 0.00  | 104  |          | Not Detected |       |                |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          | Not Detected |       |                |

(#)=qualifier out of range (m)=manual integration

KE70I001.D TO15KH18.m Thu Dec 20 14:56:16 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:48:54 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T.  | QIon | Response | Conc         | Unit | Qvalue |
|------------------------------|-------|------|----------|--------------|------|--------|
| 51) o-Xylene                 | 0.00  | 91   |          | Not Detected |      |        |
| 53) 4-Ethyl Toluene          | 0.00  | 105  |          | Not Detected |      |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00  | 105  |          | Not Detected |      |        |
| 55) 1,2,4-Trimethylbenzene   | 18.68 | 105  | 56813    | 0.2972       | ppb  | 99     |
| 56) Benzyl Chloride          | 0.00  | 91   |          | Not Detected |      |        |
| 57) m-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |      |        |
| 58) p-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |      |        |
| 59) o-Dichlorobenzene        | 0.00  | 146  |          | Not Detected |      |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00  | 180  |          | Not Detected |      |        |
| 61) Hexachloro-1,3-butadiene | 0.00  | 225  |          | Not Detected |      |        |

-----  
(#) = qualifier out of range (m) = manual integration

KE70I001.D TO15KH18.m Thu Dec 20 14:56:16 2018

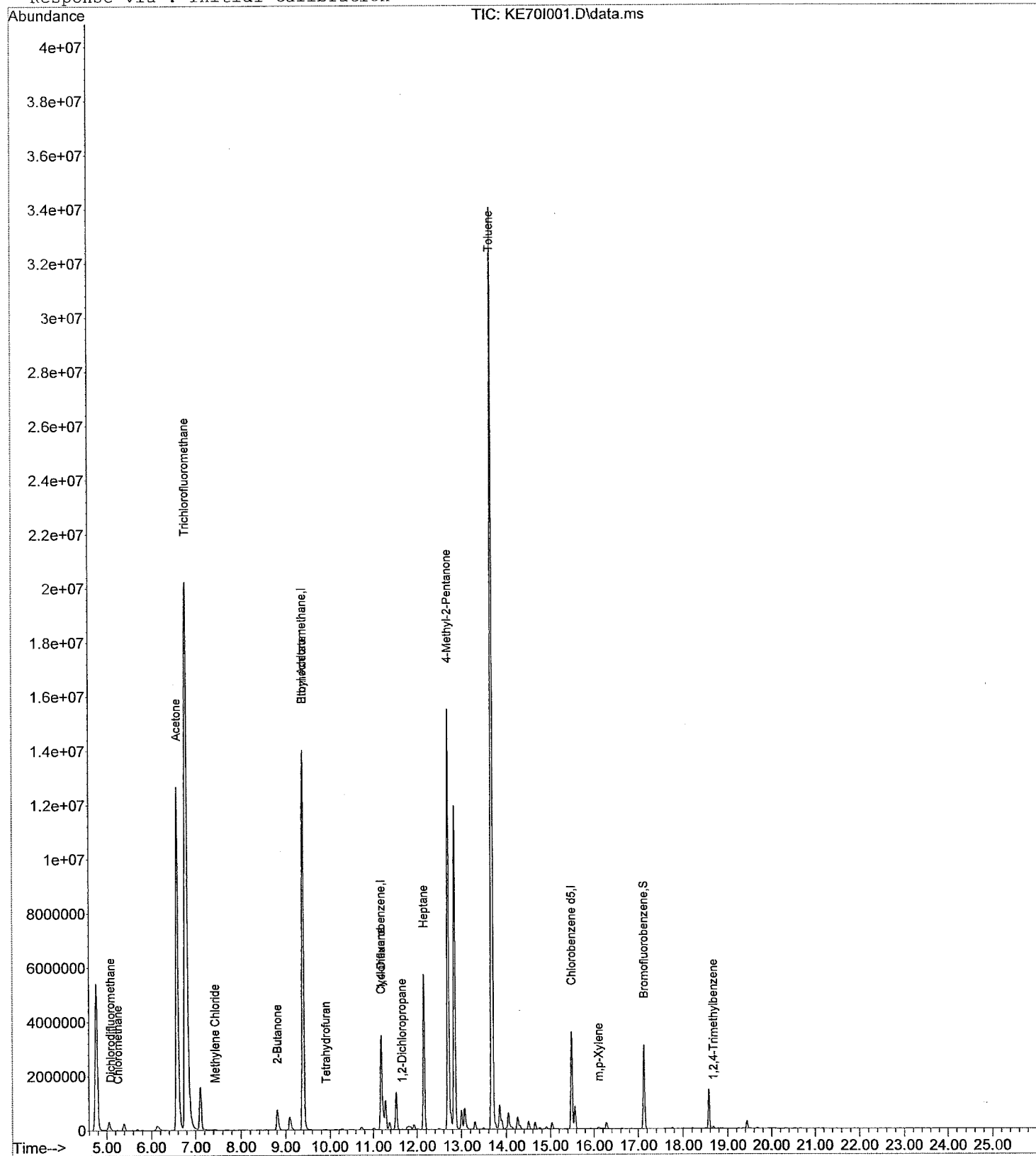
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:48:54 2018

Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration





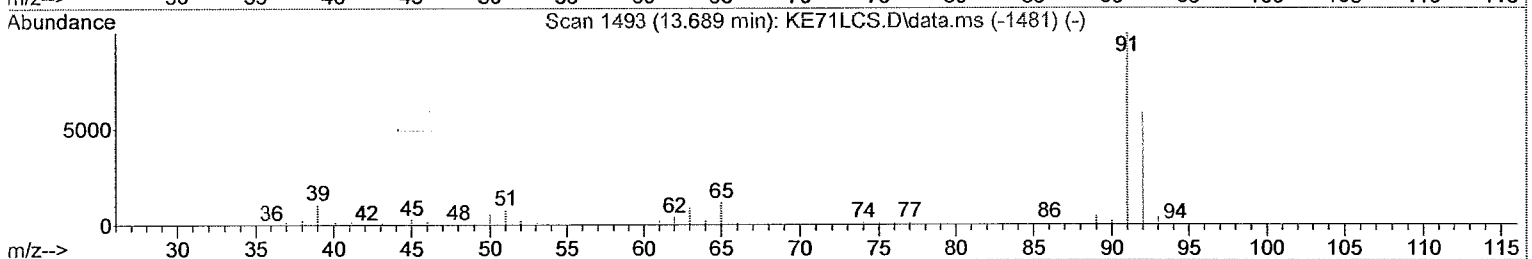
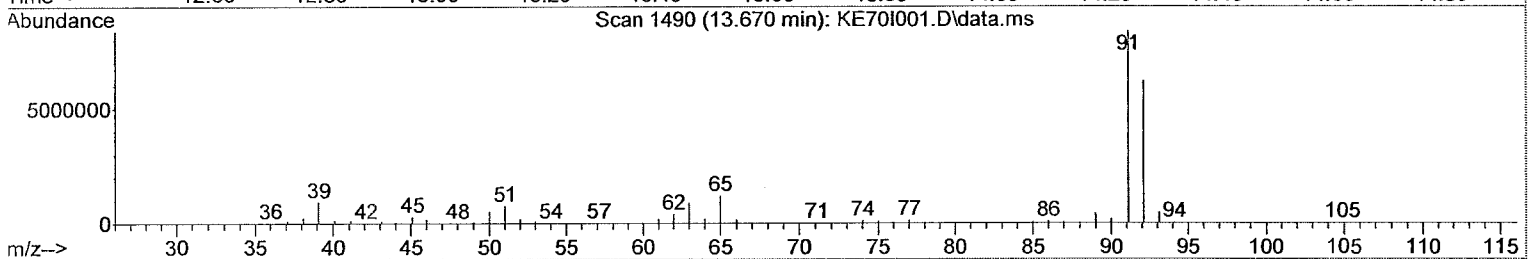
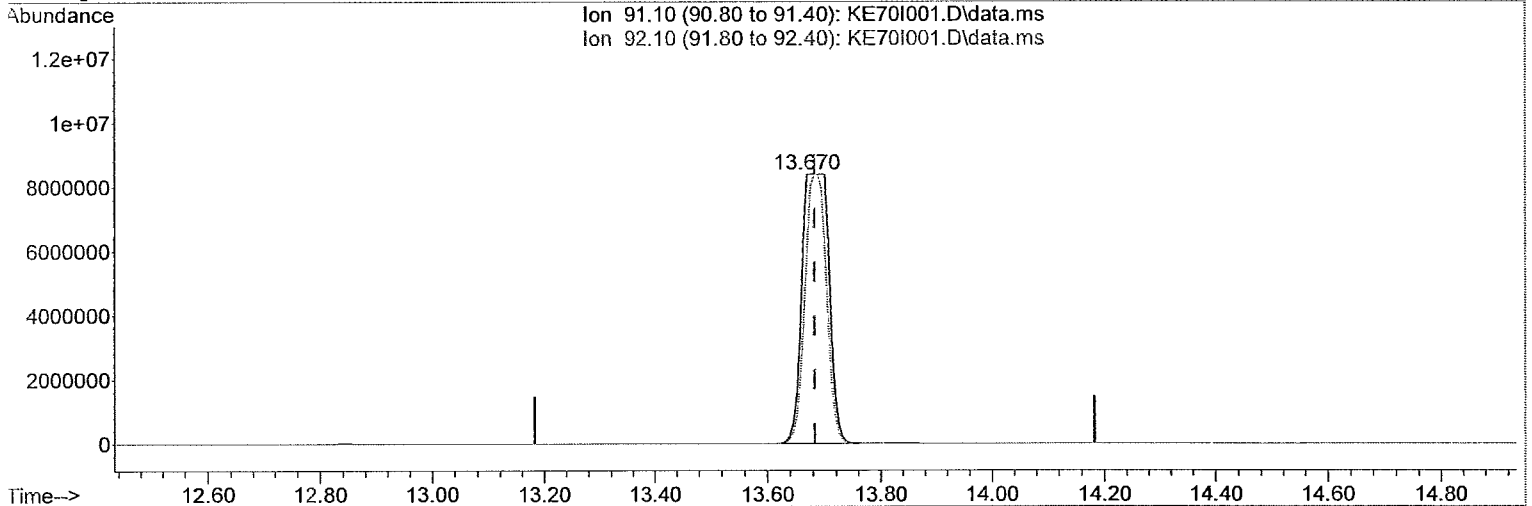
Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE70I001.D  
Acq On : 12/20/2018 02:23  
Operator : BB  
Sample : 1835256003  
Inst : 5975-K  
Misc :  
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 20 14:48:54 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration

## MANUAL RE-INTEGRATION

- ☒ missed peak assignment  
☐ assigned incorrect name to peak  
☐ over-integrated peak's area  
☐ under-integrated peak's area  
☐ other

initials BB date 12/20/18



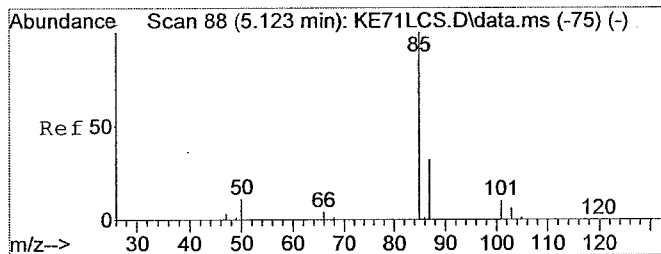
TIC: KE70I001.D\data.ms

(39) Toluene

13.670min (-0.012) 159.13 ppb m

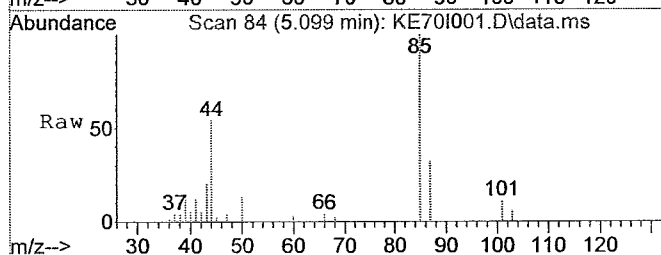
response 27317475

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 91.10 | 100.00 | 100.00 |
| 92.10 | 58.60  | 0.00#  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

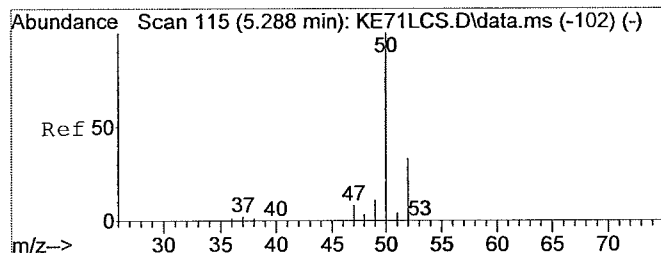
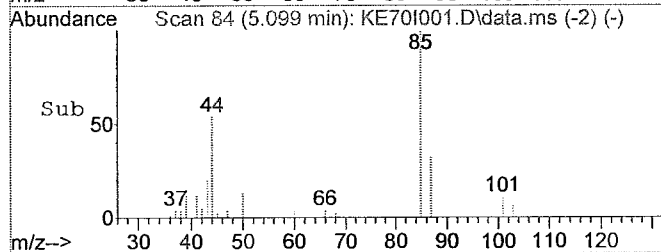
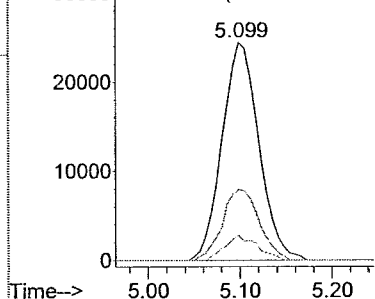


#2  
Dichlorodifluoromethane  
Concen: 0.36 ppb  
RT: 5.10 min Scan# 84  
Delta R.T. -0.00 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

Tgt Ion:85 Resp: 67139  
Ion Ratio Lower Upper  
85 100  
87 32.5 26.1 39.1  
101 10.0 8.1 12.1  
0 0.0 0.0 0.0

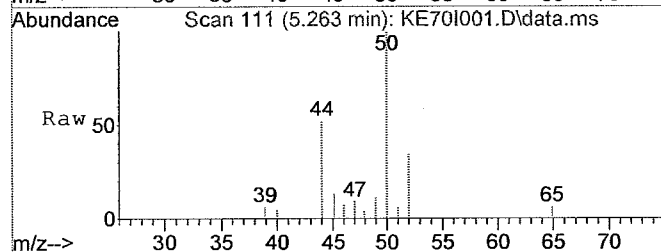


Abundance Ion 85.00 (84.70 to 85.30):  
Ion 87.00 (86.70 to 87.30):  
Ion 101.00 (100.70 to 101.30):

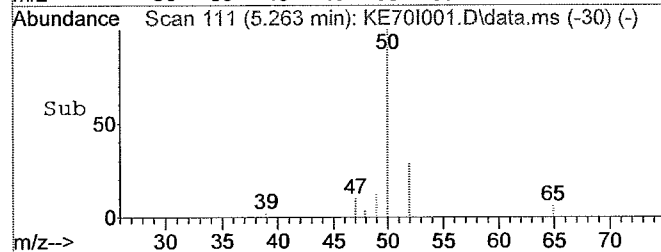
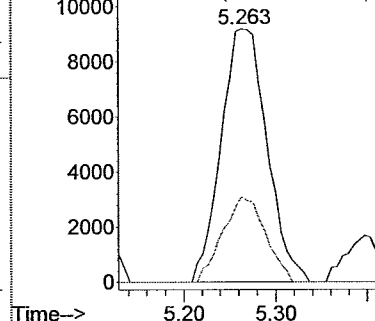


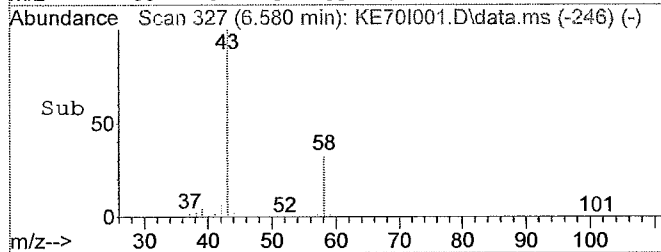
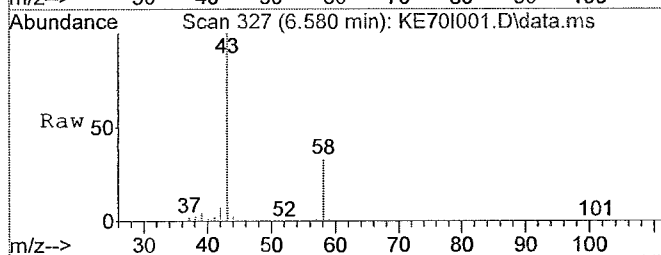
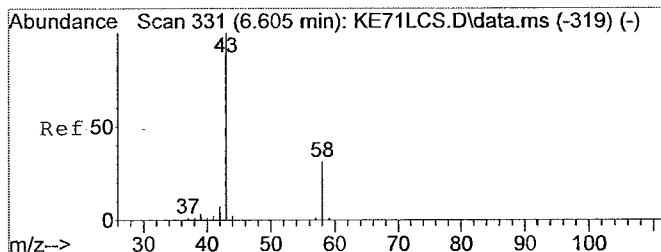
#3  
Chloromethane  
Concen: 0.63 ppb  
RT: 5.26 min Scan# 111  
Delta R.T. -0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

Tgt Ion:50 Resp: 31572  
Ion Ratio Lower Upper  
50 100  
52 31.5 26.3 39.5  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



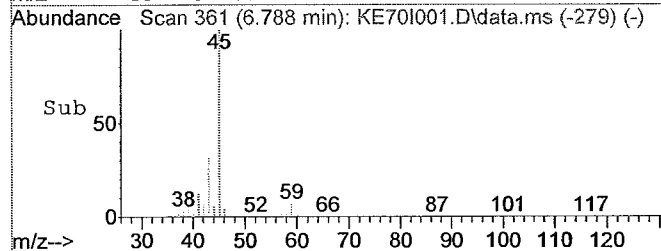
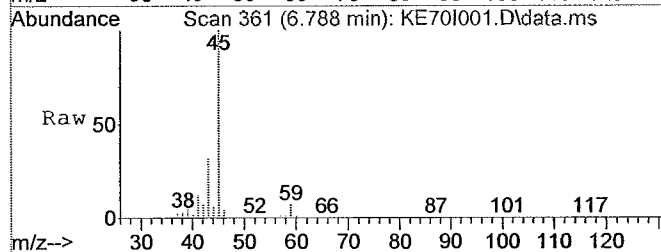
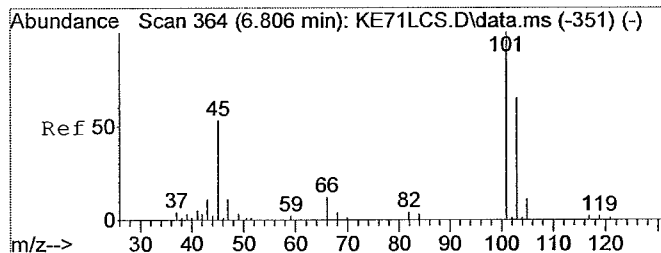
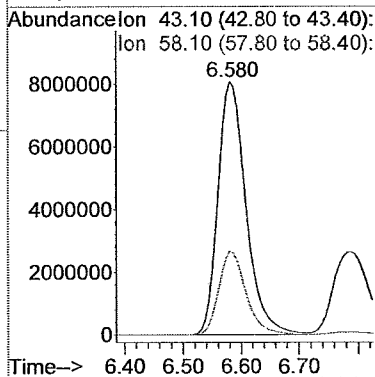
Abundance Ion 50.00 (49.70 to 50.30):  
Ion 52.00 (51.70 to 52.30):





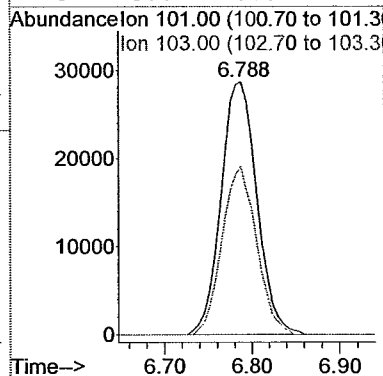
#9  
Acetone  
Concen: 264.02 ppb  
RT: 6.58 min Scan# 327  
Delta R.T. -0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

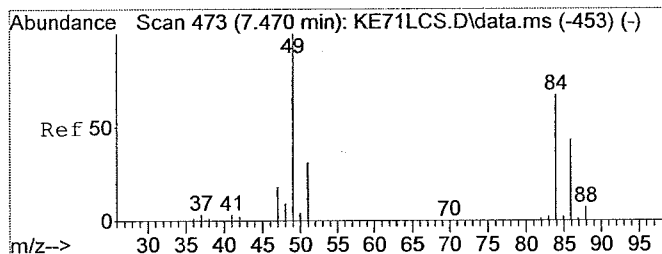
| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 43      | 100   |       |       |
| 58      | 32.1  | 25.1  | 37.7  |
| 0       | 0.0   | 0.0   | 0.0   |
| 0       | 0.0   | 0.0   | 0.0   |



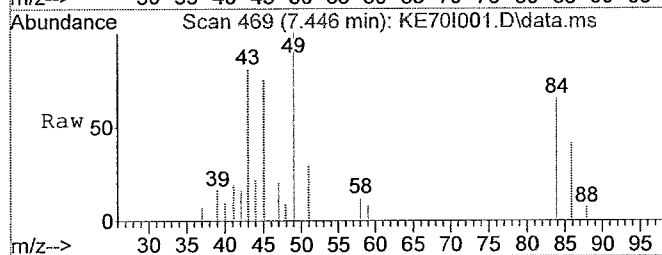
#10  
Trichlorofluoromethane  
Concen: 0.51 ppb  
RT: 6.79 min Scan# 361  
Delta R.T. 0.00 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

| Tgt Ion | Ratio | Lower | Upper |
|---------|-------|-------|-------|
| 101     | 100   |       |       |
| 103     | 64.2  | 51.6  | 77.4  |
| 0       | 0.0   | 0.0   | 0.0   |
| 0       | 0.0   | 0.0   | 0.0   |

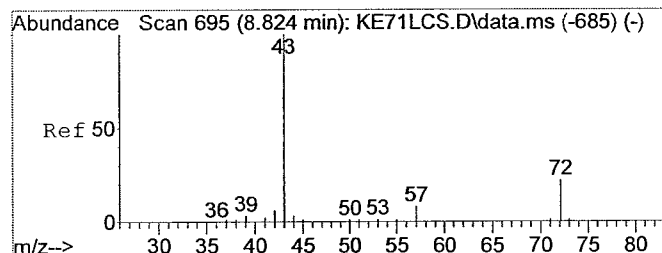
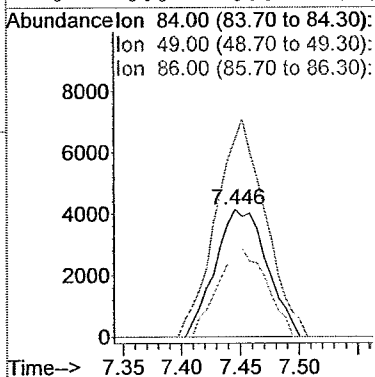
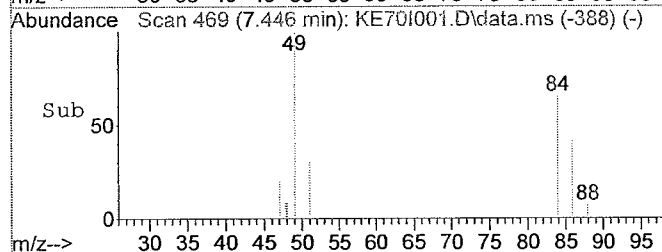




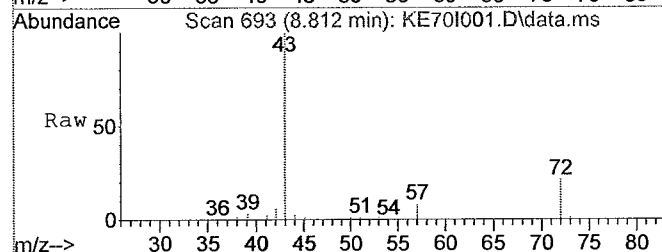
#12  
Methylene Chloride  
Concen: 0.23 ppb  
RT: 7.45 min Scan# 469  
Delta R.T. -0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23



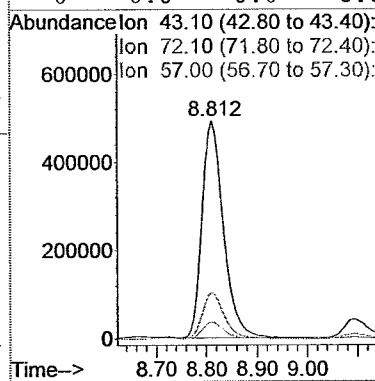
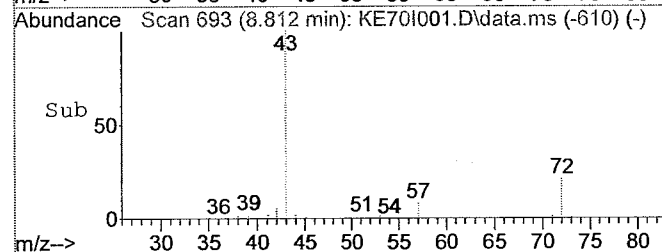
Tgt Ion: 84 Resp: 12562  
Ion Ratio Lower Upper  
84 100  
49 163.1 119.1 178.7  
86 64.7 52.0 78.0  
0 0.0 0.0 0.0

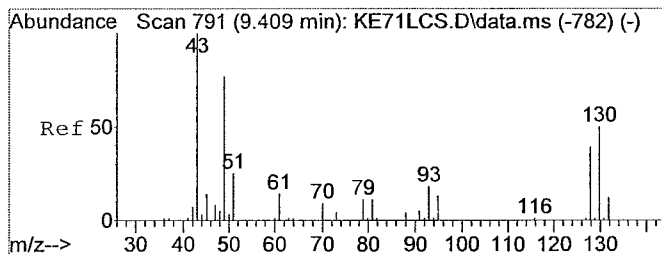


#19  
2-Butanone  
Concen: 10.94 ppb  
RT: 8.81 min Scan# 693  
Delta R.T. 0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23



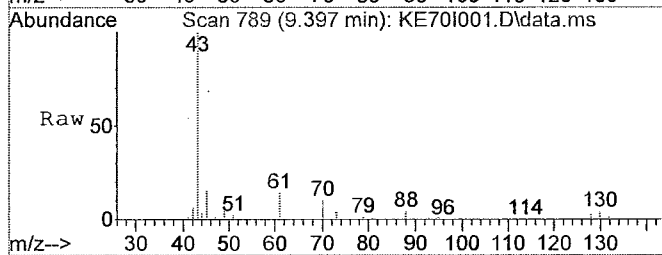
Tgt Ion: 43.1 Resp: 1451794  
Ion Ratio Lower Upper  
43 100  
72 21.4 17.9 26.9  
57 7.8 6.4 9.6  
0 0.0 0.0 0.0



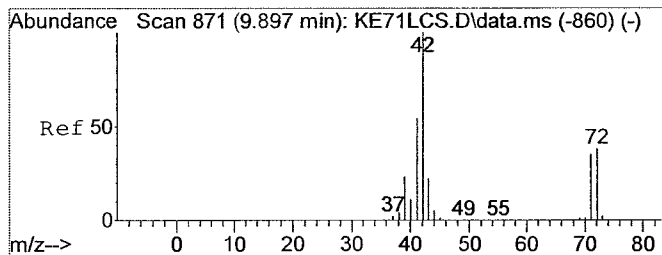
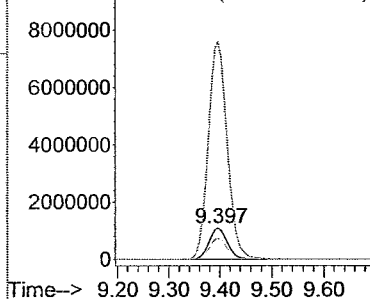
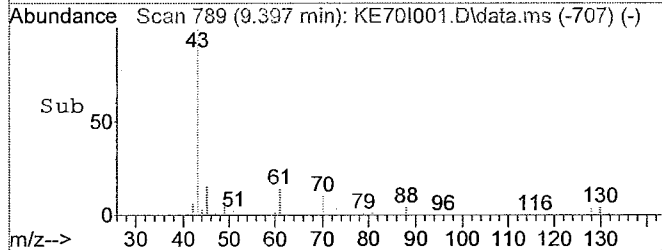


#22  
Ethyl Acetate  
Concen: 151.08 ppb  
RT: 9.40 min Scan# 789  
Delta R.T. 0.00 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

Tgt Ion: 61 Resp: 2736807  
Ion Ratio Lower Upper  
61 100  
43 720.3 574.6 861.8  
70 66.8 57.5 86.3  
0 0.0 0.0 0.0

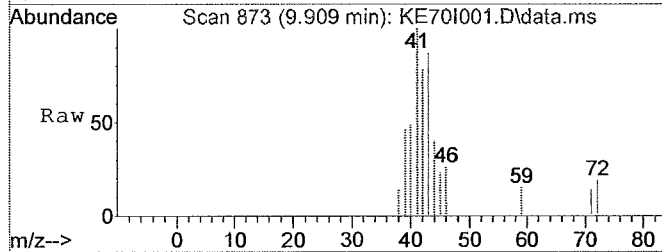


Abundance Ion 61.00 (60.70 to 61.30):  
Ion 43.00 (42.70 to 43.30):  
Ion 70.10 (69.80 to 70.40):

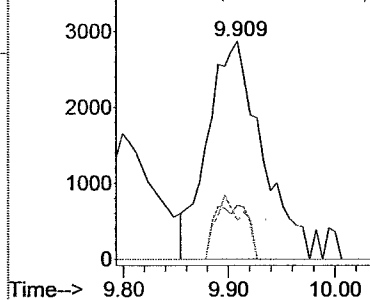
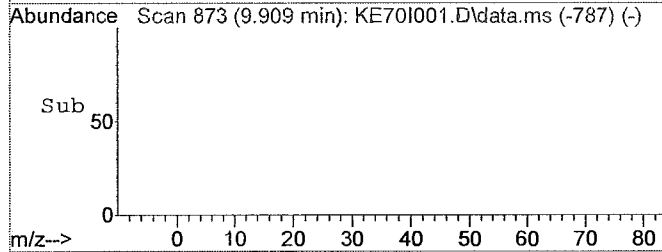


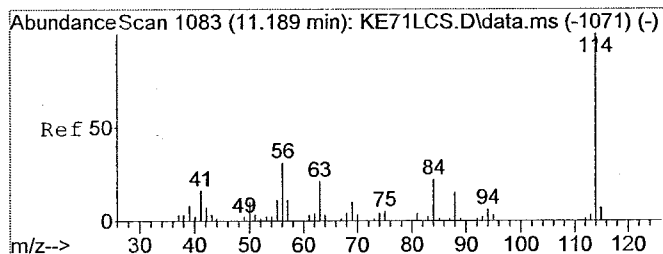
#25  
Tetrahydrofuran  
Concen: 0.18 ppb  
RT: 9.91 min Scan# 873  
Delta R.T. 0.02 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

Tgt Ion: 42.1 Resp: 10218  
Ion Ratio Lower Upper  
42 100  
72 0.0 29.7 44.5#  
71 15.0 28.1 42.1#  
0 0.0 0.0 0.0



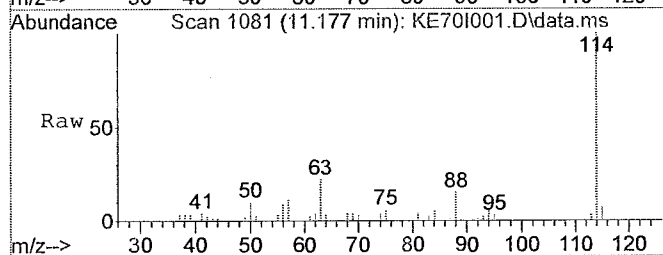
Abundance Ion 42.10 (41.80 to 42.40):  
Ion 72.10 (71.80 to 72.40):  
Ion 71.10 (70.80 to 71.40):



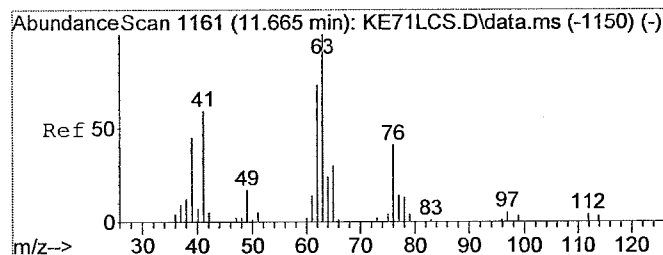
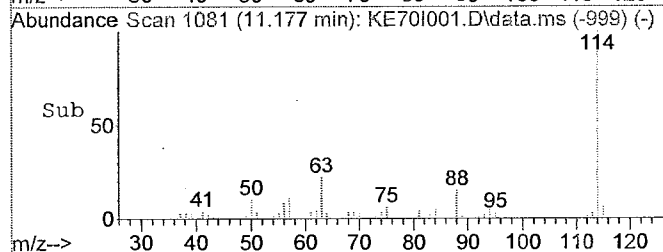
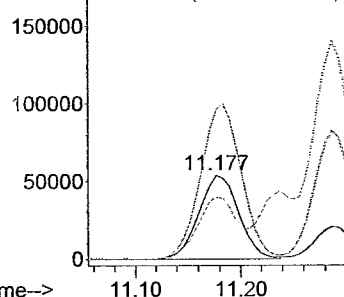


#30  
Cyclohexane  
Concen: 1.92 ppb  
RT: 11.18 min Scan# 1081  
Delta R.T. 0.00 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

Tgt Ion: 84.1 Resp: 140511  
Ion Ratio Lower Upper  
84 100  
56 189.1 111.8 167.8#  
41 76.1 55.8 83.8  
0 0.0 0.0 0.0

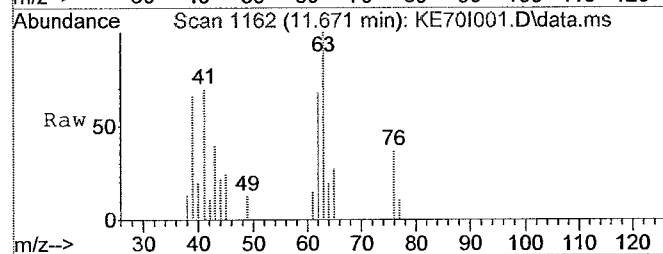


Abundance Ion 84.10 (83.80 to 84.40):  
Ion 56.10 (55.80 to 56.40):  
Ion 41.10 (40.80 to 41.40):

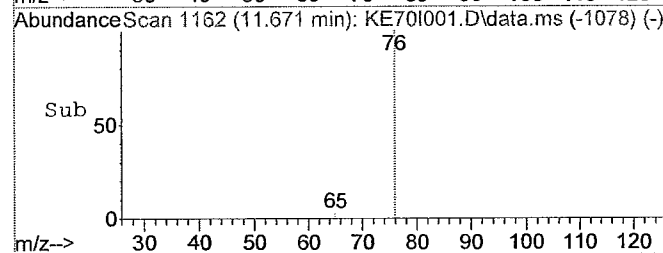
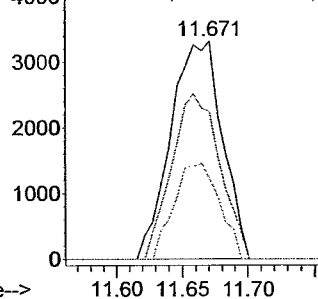


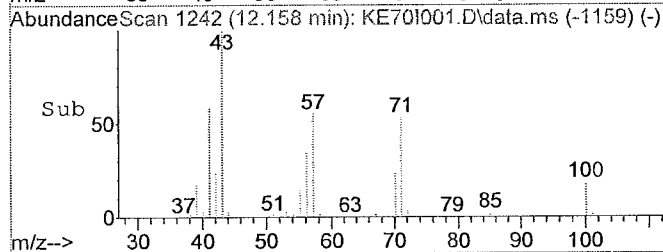
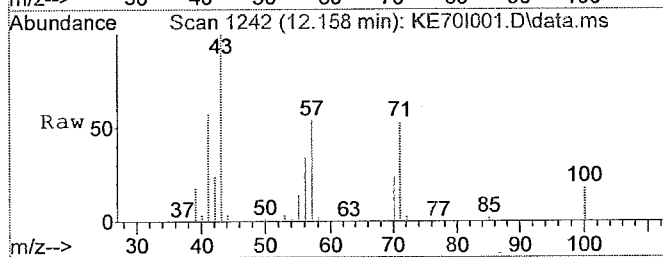
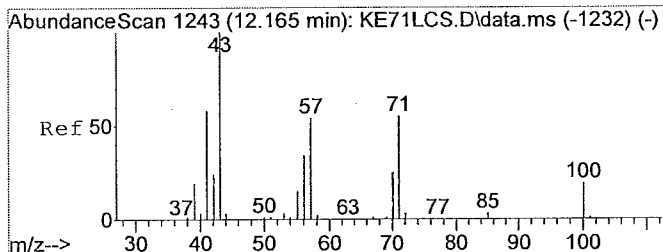
#31  
1,2-Dichloropropane  
Concen: 0.16 ppb  
RT: 11.67 min Scan# 1162  
Delta R.T. 0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

Tgt Ion: 63 Resp: 8956  
Ion Ratio Lower Upper  
63 100  
62 71.2 57.7 86.5  
76 38.6 32.8 49.2  
0 0.0 0.0 0.0



Abundance Ion 63.00 (62.70 to 63.30):  
Ion 62.00 (61.70 to 62.30):  
Ion 76.00 (75.70 to 76.30):

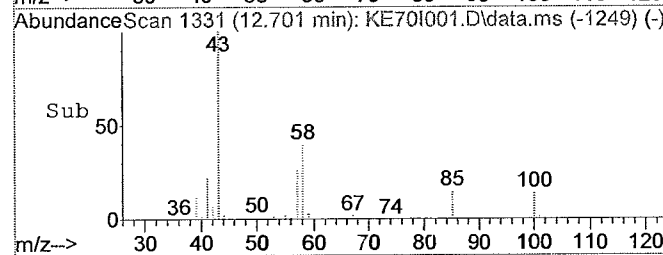
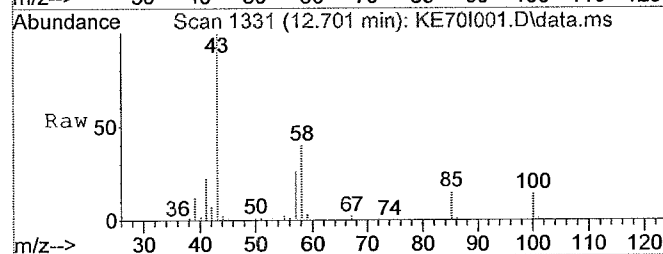
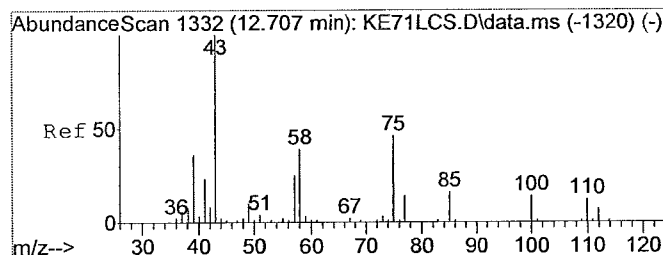
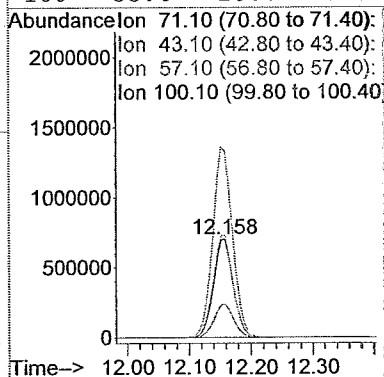




#34  
Heptane  
Concen: 28.39 ppb  
RT: 12.16 min Scan# 1242  
Delta R.T. 0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

Tgt Ion: 71.1 Resp: 1578242

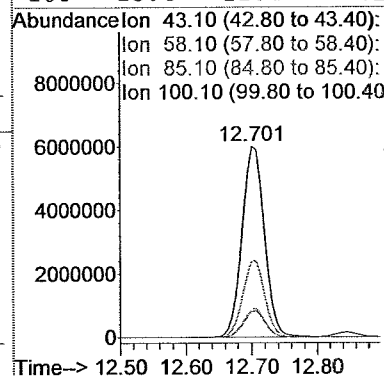
| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 71  | 100   |       |       |
| 43  | 191.9 | 148.1 | 222.1 |
| 57  | 103.1 | 79.4  | 119.0 |
| 100 | 33.6  | 28.0  | 42.0  |

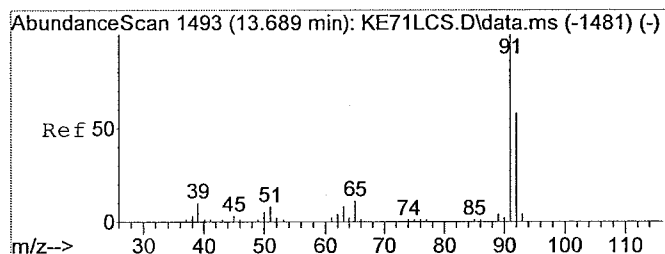


#36  
4-Methyl-2-Pentanone  
Concen: 102.15 ppb  
RT: 12.70 min Scan# 1331  
Delta R.T. 0.00 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

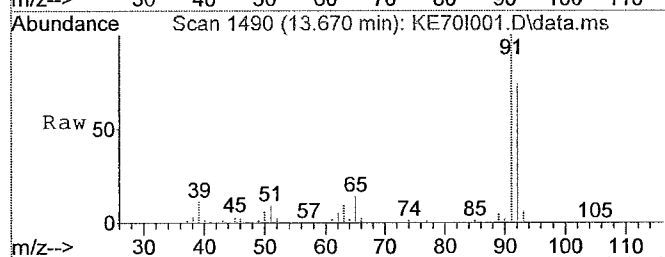
Tgt Ion: 43.1 Resp: 13989558

| Ion | Ratio | Lower | Upper |
|-----|-------|-------|-------|
| 43  | 100   |       |       |
| 58  | 39.5  | 31.0  | 46.6  |
| 85  | 14.6  | 12.9  | 19.3  |
| 100 | 13.6  | 11.4  | 17.2  |

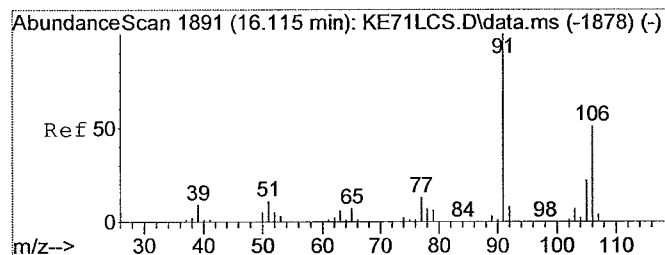
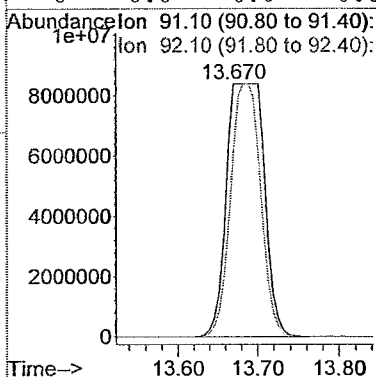
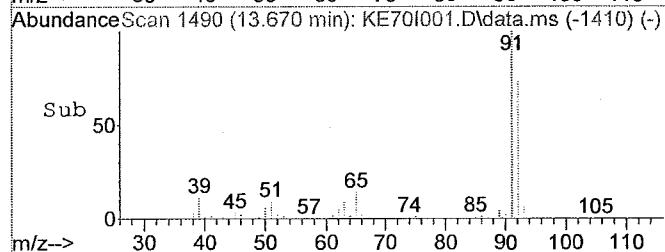




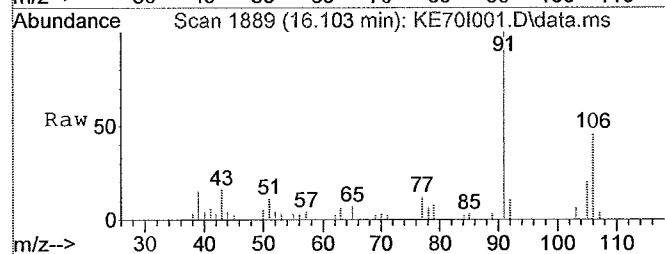
#39  
Toluene  
Concen: 159.13 ppb m  
RT: 13.67 min Scan# 1490  
Delta R.T. -0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23



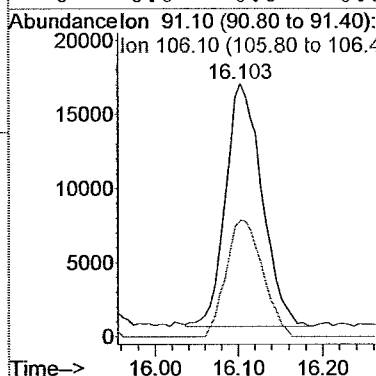
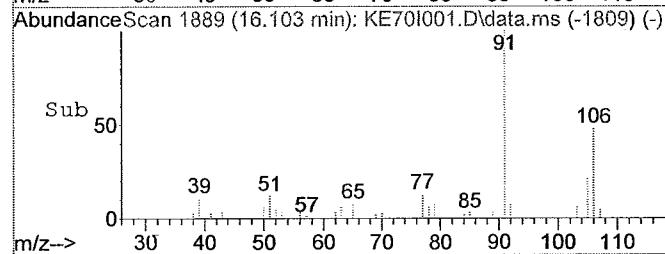
Tgt Ion: 91.1 Resp: 27317475  
Ion Ratio Lower Upper  
91 100  
92 0.0 46.9 70.3#  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0



#47  
m,p-Xylene  
Concen: 0.27 ppb  
RT: 16.10 min Scan# 1889  
Delta R.T. -0.01 min  
Lab File: KE70I001.D  
Acq: 12/20/2018 02:23

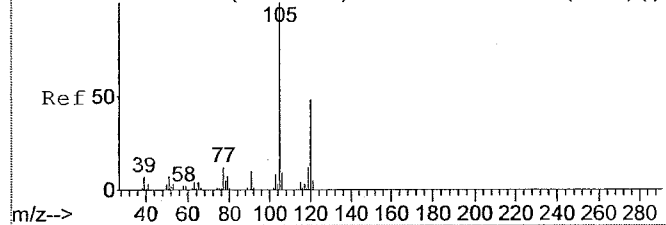


Tgt Ion: 91.1 Resp: 49356  
Ion Ratio Lower Upper  
91 100  
106 48.3 40.5 60.7  
0 0.0 0.0 0.0  
0 0.0 0.0 0.0

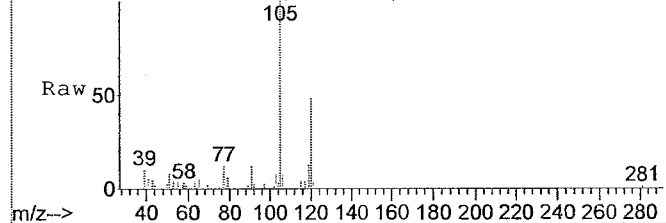




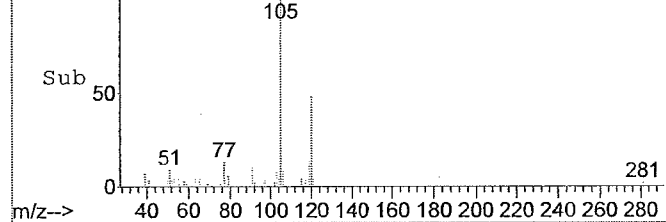
AbundanceScan 2312 (18.682 min): KE71LCS.D\data.ms (-2300) (-)



AbundanceScan 2311 (18.675 min): KE70I001.D\data.ms



AbundanceScan 2311 (18.675 min): KE70I001.D\data.ms (-2230) (-)



#55

1,2,4-Trimethylbenzene

Concen: 0.30 ppb

RT: 18.68 min Scan# 2311

Delta R.T. -0.01 min

Lab File: KE70I001.D

Acq: 12/20/2018 02:23

Tgt Ion:105.1 Resp: 56813

Ion Ratio Lower Upper

105 100

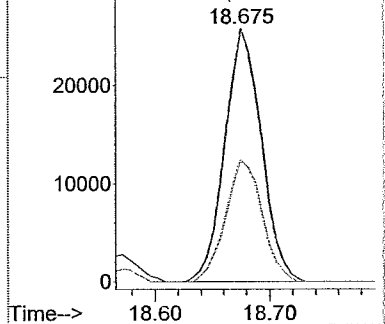
120 48.0 38.7 58.1

0 0.0 0.0 0.0

0 0.0 0.0 0.0

AbundanceIon 105.10 (104.80 to 105.40)

30000Ion 120.10 (119.80 to 120.40)



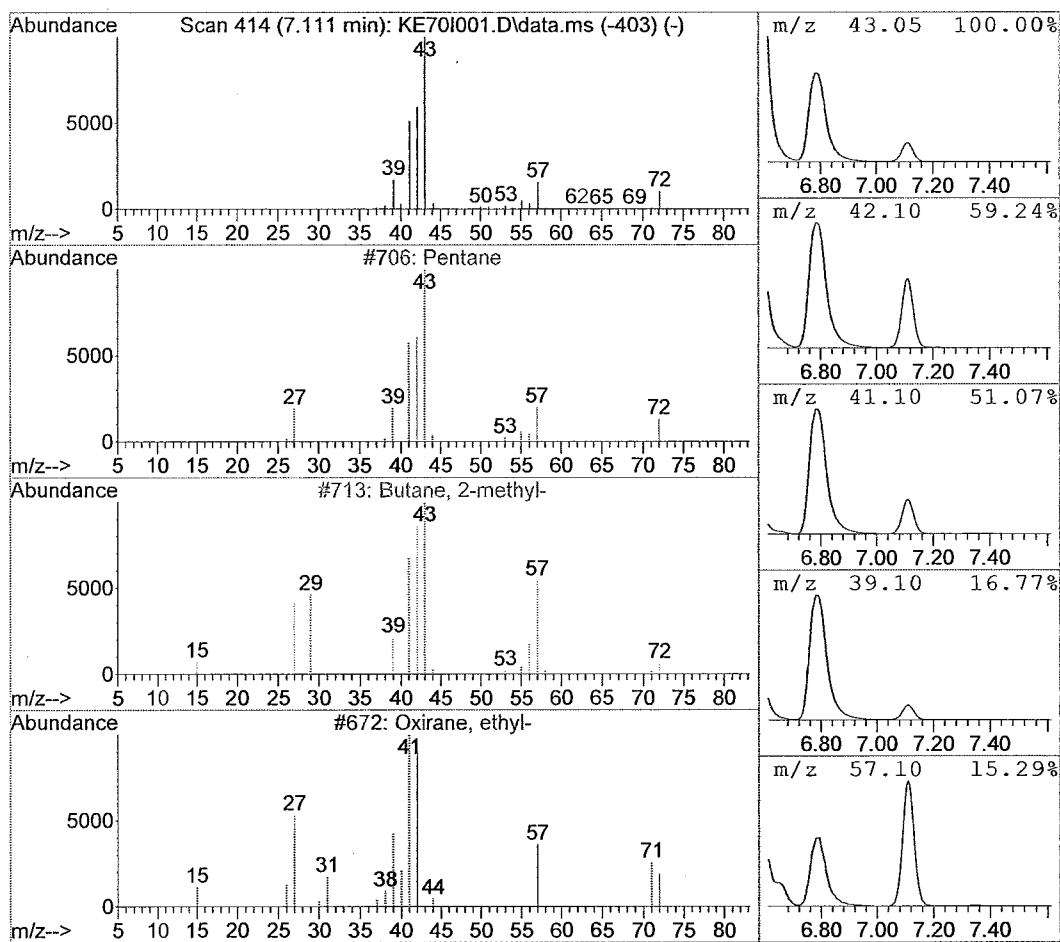
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T. | Conc     | Area    | Relative to ISTD   | ISTD Area |
|------|----------|---------|--------------------|-----------|
| 7.11 | 2.35 ppb | 4315853 | Bromochloromethane | 36683840  |

| Hit# of 20 | Tentative ID           | Ref# | CAS#        | Qual  |
|------------|------------------------|------|-------------|-------|
| 1          | Pentane                | 706  | 000109-66-0 | 91.00 |
| 2          | Butane, 2-methyl-      | 713  | 000078-78-4 | 38.00 |
| 3          | Oxirane, ethyl-        | 672  | 000106-88-7 | 9.00  |
| 4          | Butane, 2,3-dimethyl-  | 1831 | 000079-29-8 | 9.00  |
| 5          | Butanal, 2,2-dimethyl- | 3861 | 002094-75-9 | 9.00  |



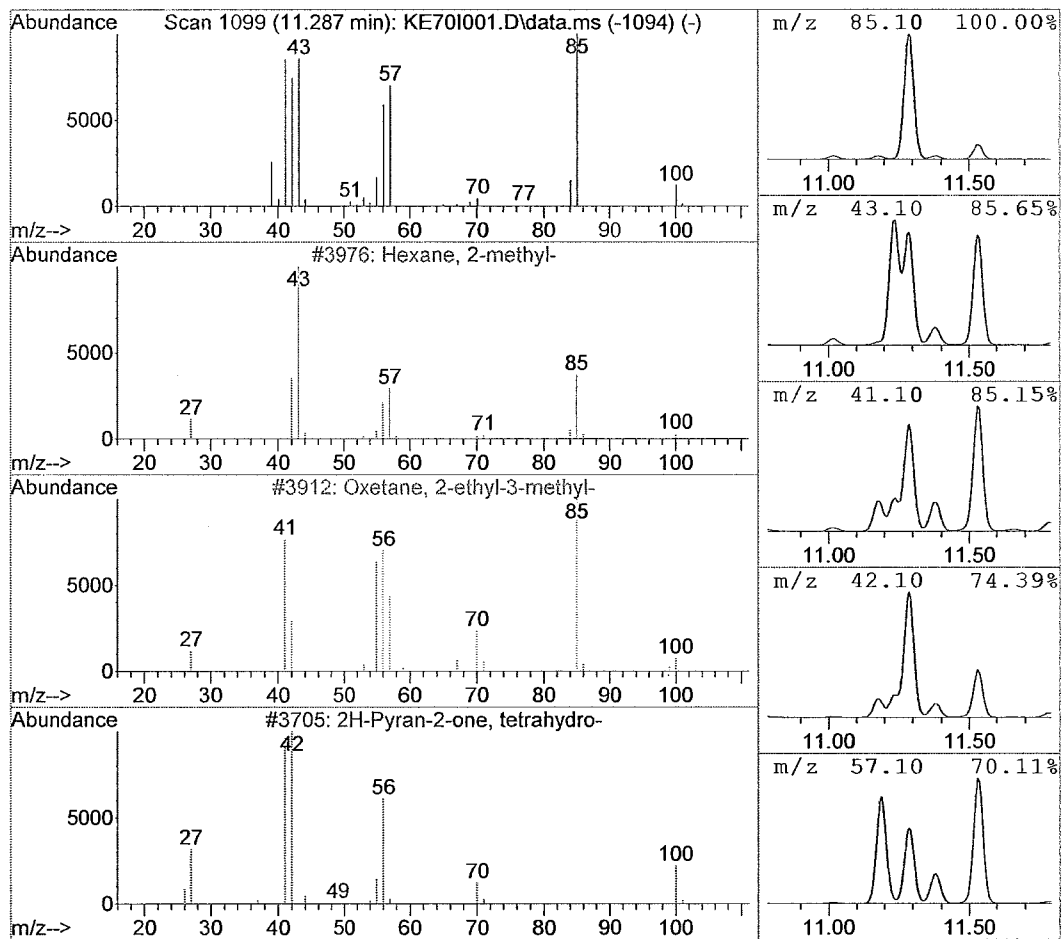
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD    | ISTD Area |
|-------|----------|---------|---------------------|-----------|
| 11.29 | 4.90 ppb | 2483976 | 1,4-Difluorobenzene | 10130523  |

| Hit# of 20 | Tentative ID                   | Ref# | CAS#        | Qual  |
|------------|--------------------------------|------|-------------|-------|
| 1          | Hexane, 2-methyl-              | 3976 | 000591-76-4 | 80.00 |
| 2          | Oxetane, 2-ethyl-3-methyl-     | 3912 | 053778-62-4 | 47.00 |
| 3          | 2H-Pyran-2-one, tetrahydro-    | 3705 | 000542-28-9 | 43.00 |
| 4          | Pentane, 2,2-dimethyl-         | 3995 | 000590-35-2 | 43.00 |
| 5          | 2H-Pyran, tetrahydro-2-methyl- | 3944 | 010141-72-7 | 40.00 |



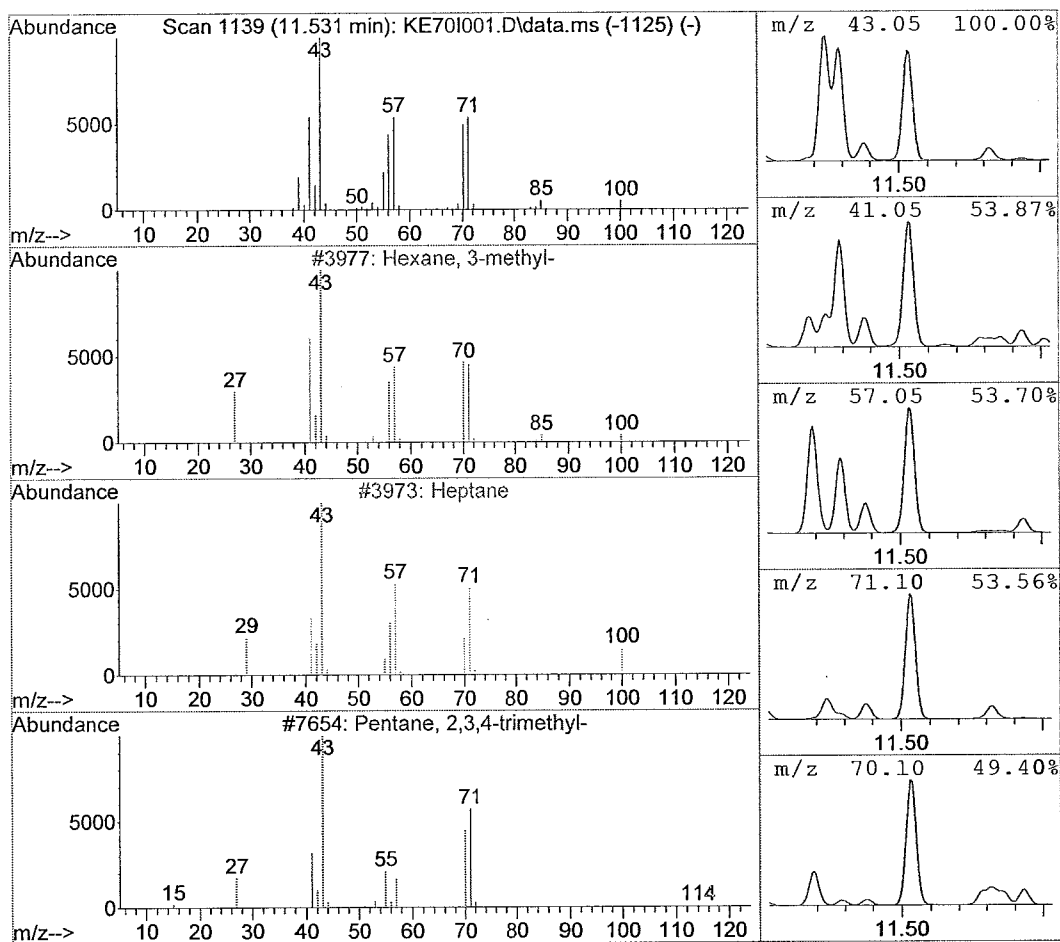
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc.    | Area    | Relative to ISTD    | ISTD Area |
|-------|----------|---------|---------------------|-----------|
| 11.53 | 6.64 ppb | 3361572 | 1,4-Difluorobenzene | 10130523  |

| Hit# of 20 | Tentative ID              | Ref#  | CAS#        | Qual  |
|------------|---------------------------|-------|-------------|-------|
| 1          | Hexane, 3-methyl-         | 3977  | 000589-34-4 | 95.00 |
| 2          | Heptane                   | 3973  | 000142-82-5 | 59.00 |
| 3          | Pentane, 2,3,4-trimethyl- | 7654  | 000565-75-3 | 53.00 |
| 4          | Pentane, 3-ethyl-         | 3981  | 000617-78-7 | 53.00 |
| 5          | Heptane, 3,4-dimethyl-    | 12682 | 000922-28-1 | 50.00 |



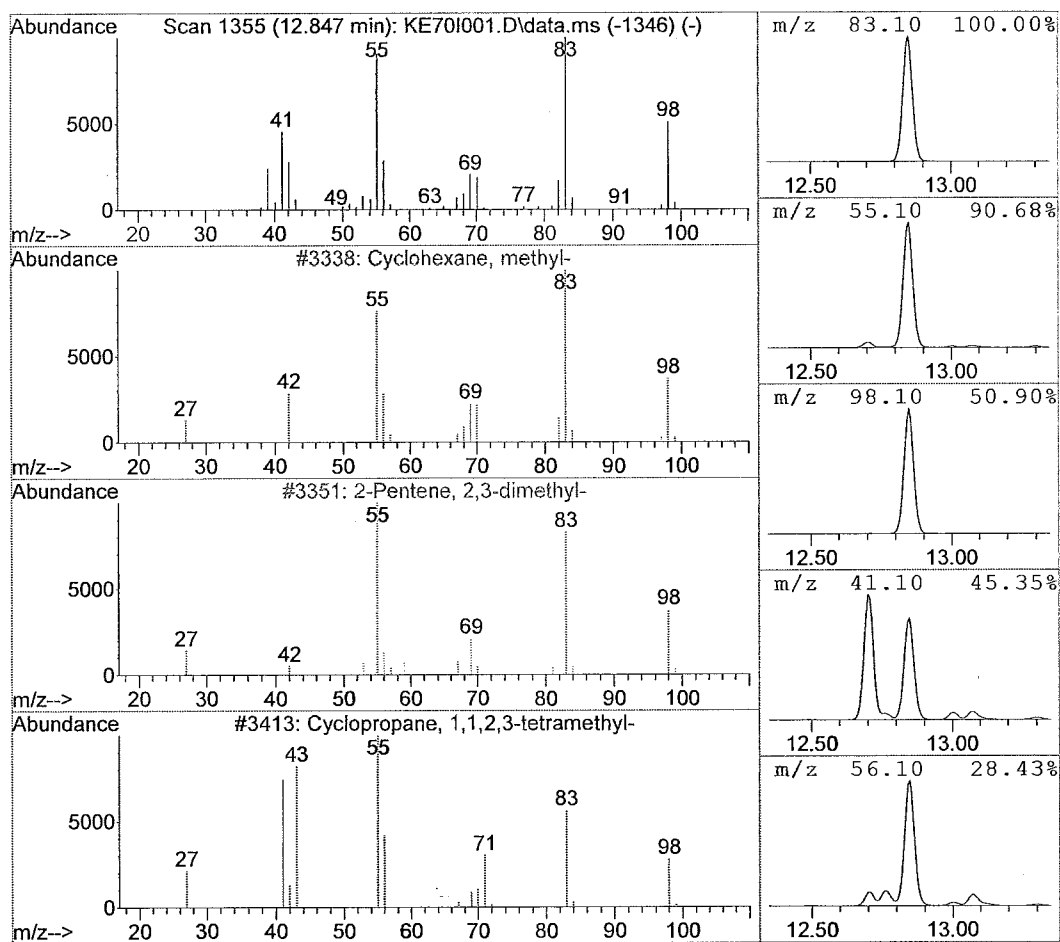
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc      | Area     | Relative to ISTD    | ISTD Area |
|-------|-----------|----------|---------------------|-----------|
| 12.85 | 56.16 ppb | 28447547 | 1,4-Difluorobenzene | 10130523  |

| Hit# of 20 | Tentative ID                       | Ref# | CAS#        | Qual  |
|------------|------------------------------------|------|-------------|-------|
| 1          | Cyclohexane, methyl-               | 3338 | 000108-87-2 | 91.00 |
| 2          | 2-Pentene, 2,3-dimethyl-           | 3351 | 010574-37-5 | 72.00 |
| 3          | Cyclopropane, 1,1,2,3-tetramethyl- | 3413 | 074752-93-5 | 72.00 |
| 4          | Furan, 2,5-dihydro-2,5-dimethyl-   | 3271 | 059242-27-2 | 64.00 |
| 5          | 2-Pentene, 3,4-dimethyl-, (E)-     | 3398 | 004914-92-5 | 59.00 |



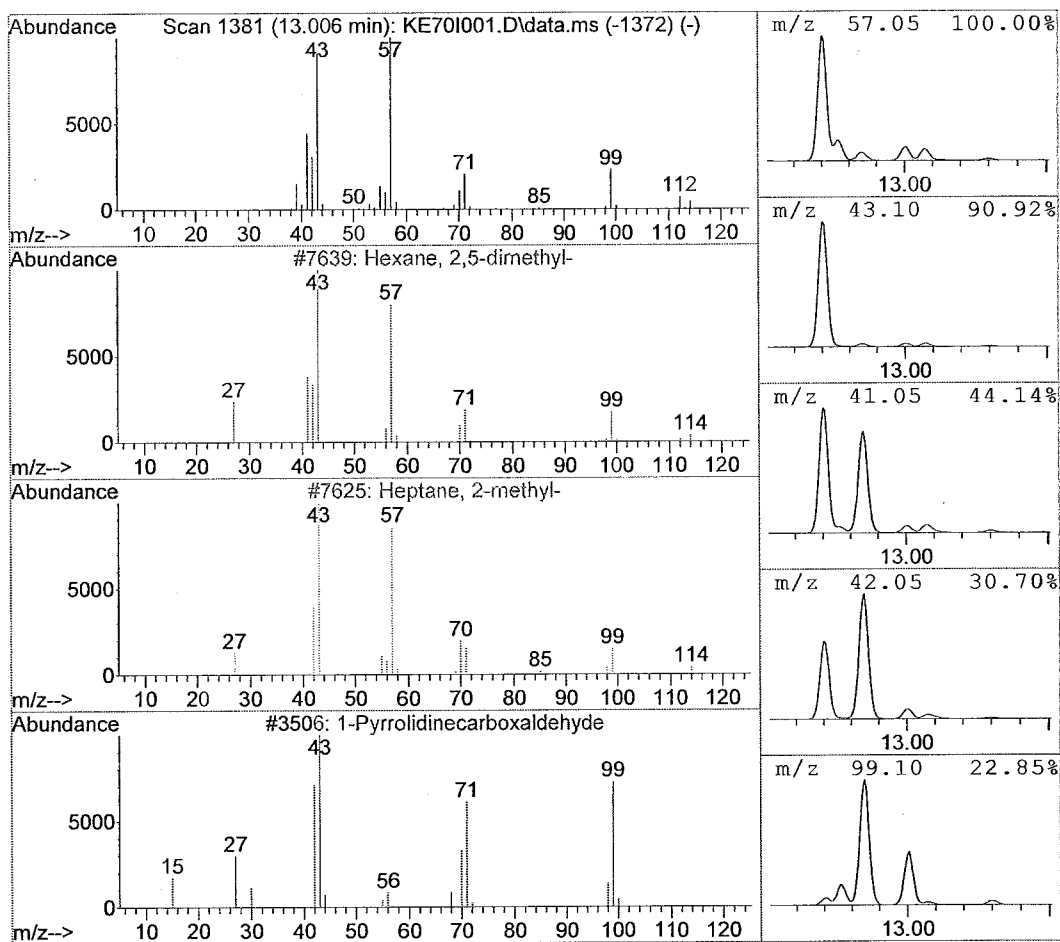
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD    | ISTD Area |
|-------|----------|---------|---------------------|-----------|
| 13.01 | 3.25 ppb | 1646500 | 1,4-Difluorobenzene | 10130523  |

| Hit# of 20 | Tentative ID                      | Ref#  | CAS#         | Qual  |
|------------|-----------------------------------|-------|--------------|-------|
| 1          | Hexane, 2,5-dimethyl-             | 7639  | 000592-13-2  | 94.00 |
| 2          | Heptane, 2-methyl-                | 7625  | 000592-27-8  | 87.00 |
| 3          | 1-Pyrrolidinecarboxaldehyde       | 3506  | 003760-54-1  | 47.00 |
| 4          | Hydroxylamine, O-(3-methylbutyl)- | 4619  | 019411-65-5  | 43.00 |
| 5          | 2-Isopropyl-4H-oxazol-5-one       | 11764 | 1000190-01-9 | 42.00 |



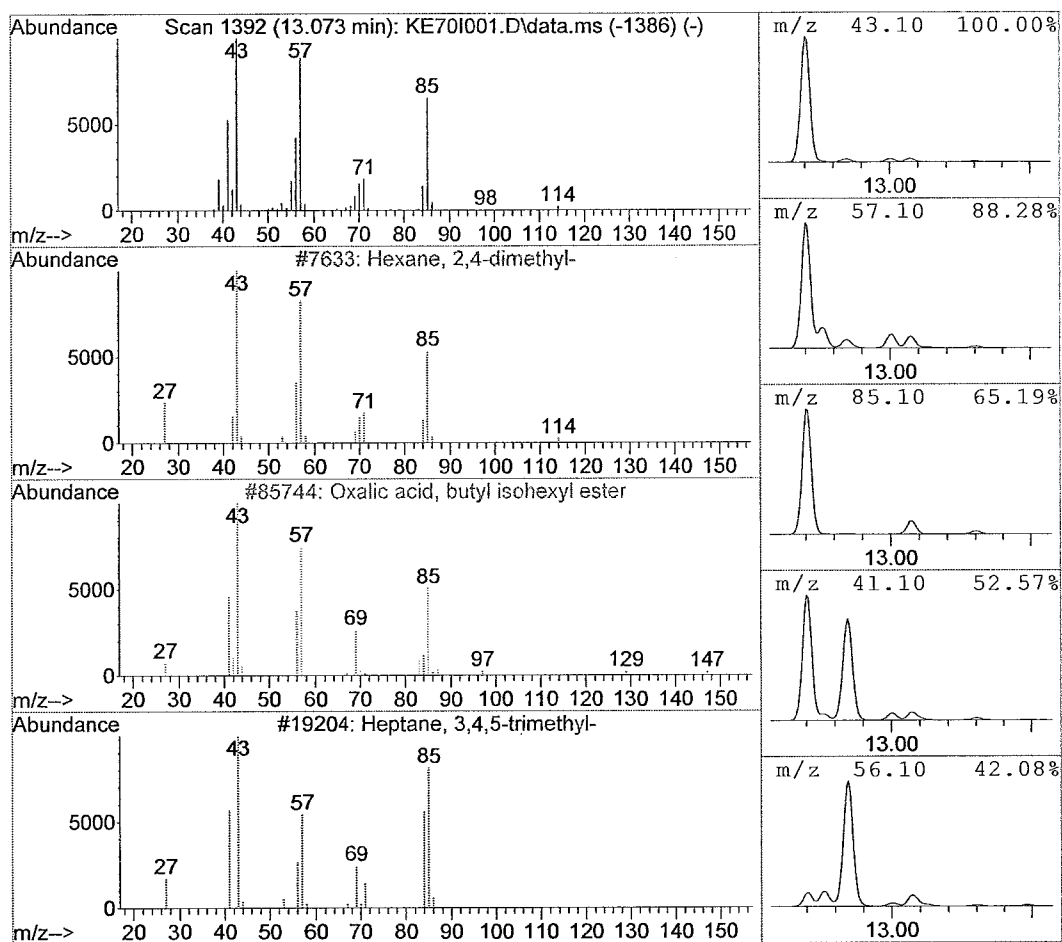
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD    | ISTD Area |
|-------|----------|---------|---------------------|-----------|
| 13.07 | 4.27 ppb | 2161872 | 1,4-Difluorobenzene | 10130523  |

| Hit# of 20 | Tentative ID                       | Ref#   | CAS#         | Qual  |
|------------|------------------------------------|--------|--------------|-------|
| 1          | Hexane, 2,4-dimethyl-              | 7633   | 000589-43-5  | 96.00 |
| 2          | Oxalic acid, butyl isohexyl ester  | 85744  | 1000309-32-7 | 72.00 |
| 3          | Heptane, 3,4,5-trimethyl-          | 19204  | 020278-89-1  | 64.00 |
| 4          | Sulfurous acid, hexyl heptyl ester | 113722 | 1000309-12-9 | 53.00 |
| 5          | Pentane, 2,2,3,4-tetramethyl-      | 12733  | 001186-53-4  | 53.00 |



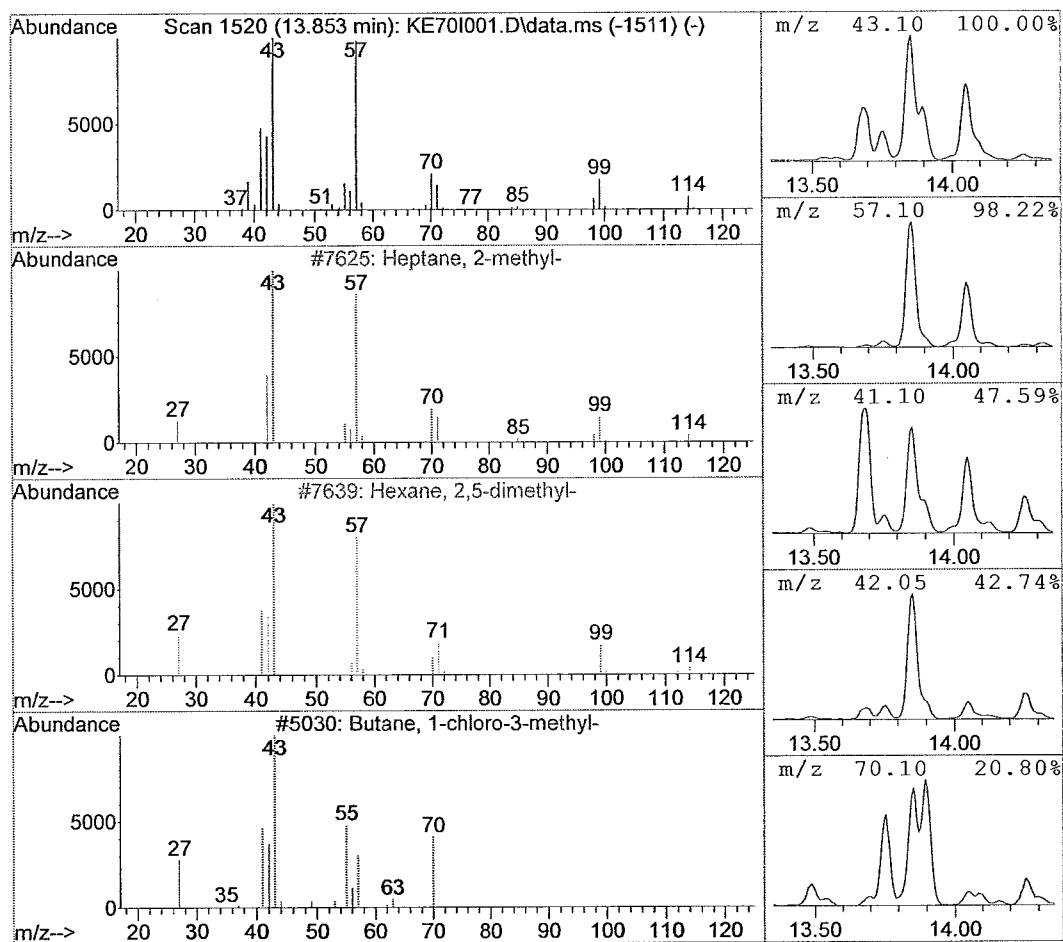
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 13.85 | 4.58 ppb | 2021527 | Chlorobenzene d5 | 8825629   |

| Hit# of 20 | Tentative ID                      | Ref#  | CAS#        | Qual  |
|------------|-----------------------------------|-------|-------------|-------|
| 1          | Heptane, 2-methyl-                | 7625  | 000592-27-8 | 95.00 |
| 2          | Hexane, 2,5-dimethyl-             | 7639  | 000592-13-2 | 80.00 |
| 3          | Butane, 1-chloro-3-methyl-        | 5030  | 000107-84-6 | 50.00 |
| 4          | Butane, 1-(ethenyl-oxo)-3-methyl- | 7605  | 039782-38-2 | 38.00 |
| 5          | Heptane, 3-ethyl-                 | 12668 | 015869-80-4 | 32.00 |





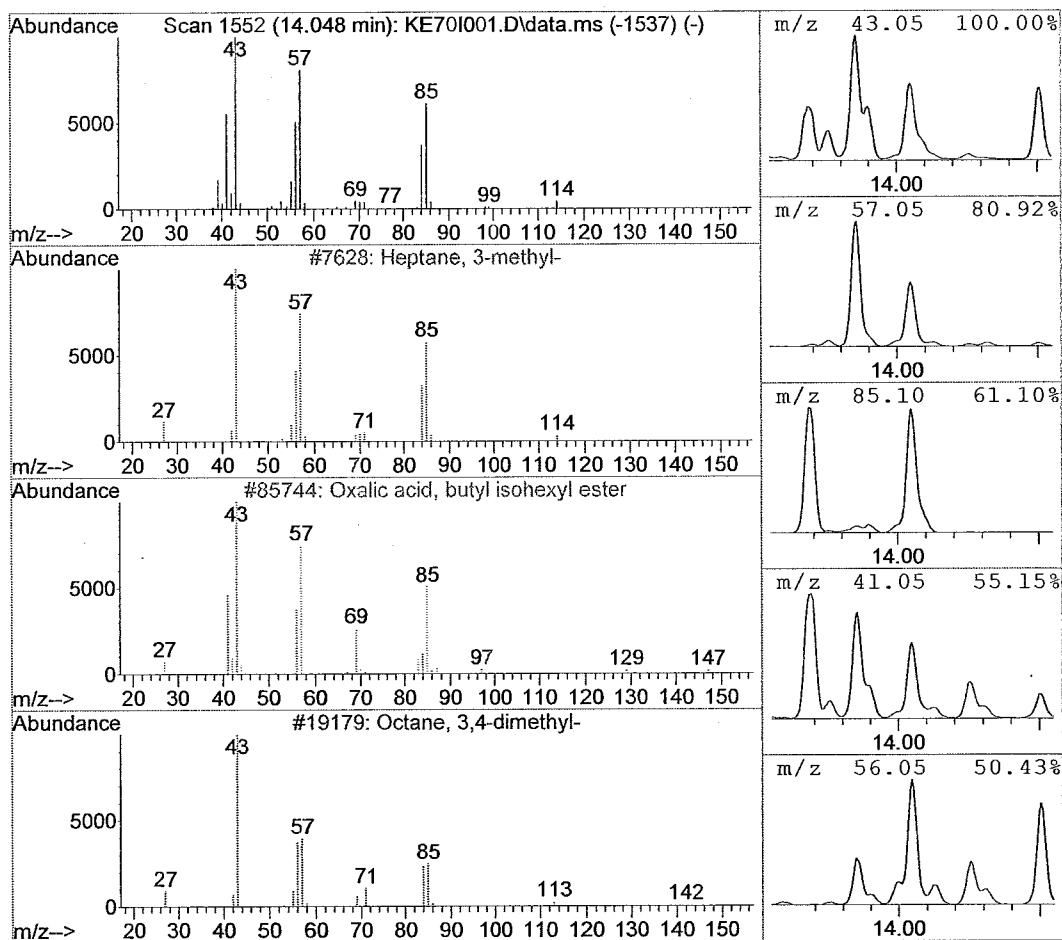
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 14.05 | 3.73 ppb | 1645336 | Chlorobenzene d5 | 8825629   |

| Hit# of 20 | Tentative ID                      | Ref#  | CAS#         | Qual  |
|------------|-----------------------------------|-------|--------------|-------|
| 1          | Heptane, 3-methyl-                | 7628  | 000589-81-1  | 91.00 |
| 2          | Oxalic acid, butyl isohexyl ester | 85744 | 1000309-32-7 | 78.00 |
| 3          | Octane, 3,4-dimethyl-             | 19179 | 015869-92-8  | 72.00 |
| 4          | Nonane, 5-methyl-                 | 19165 | 015869-85-9  | 64.00 |
| 5          | Pentane, 3-ethyl-2,4-dimethyl-    | 12745 | 001068-87-7  | 53.00 |



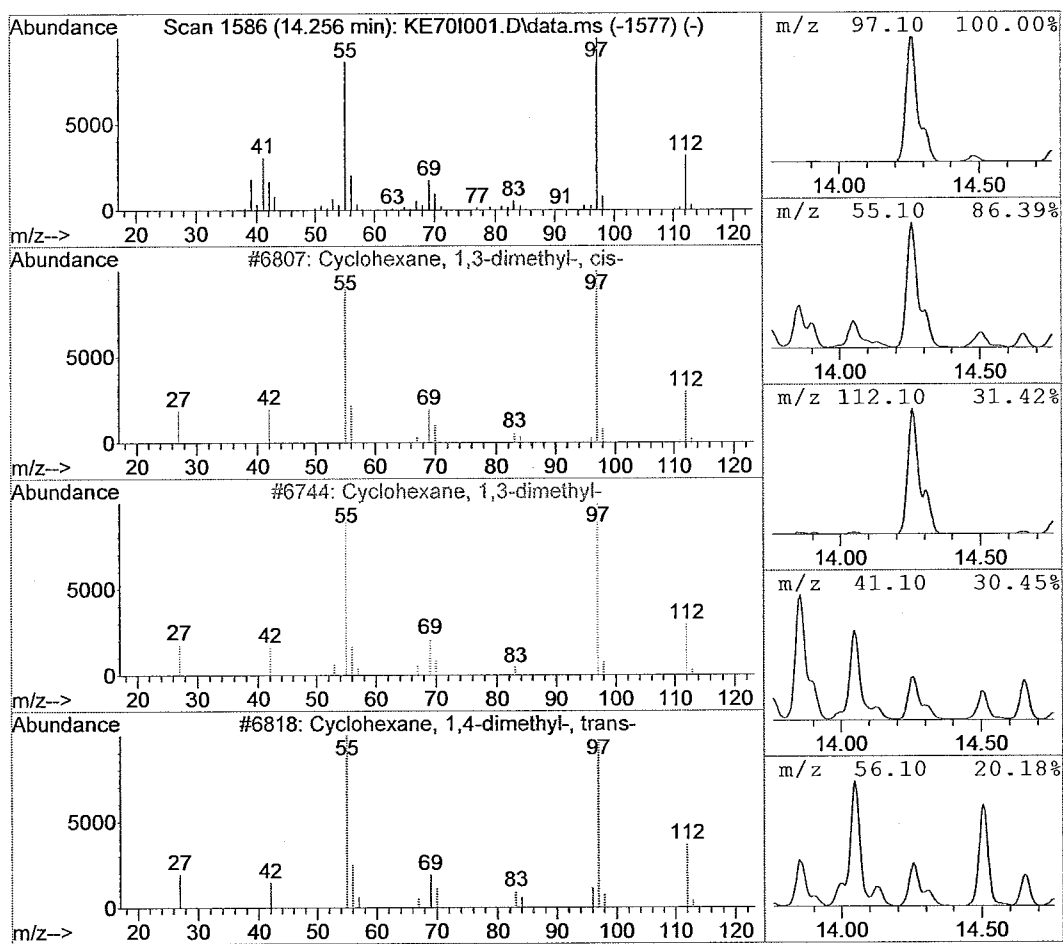
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 14.26 | 2.52 ppb | 1110273 | Chlorobenzene d5 | 8825629   |

| Hit# | of 20 | Tentative ID                       | Ref# | CAS#        | Qual  |
|------|-------|------------------------------------|------|-------------|-------|
| 1    |       | Cyclohexane, 1,3-dimethyl-, cis-   | 6807 | 000638-04-0 | 97.00 |
| 2    |       | Cyclohexane, 1,3-dimethyl-         | 6744 | 000591-21-9 | 95.00 |
| 3    |       | Cyclohexane, 1,4-dimethyl-, trans- | 6818 | 002207-04-7 | 91.00 |
| 4    |       | Cyclohexane, 1,4-dimethyl-         | 6741 | 000589-90-2 | 91.00 |
| 5    |       | Cyclohexane, 1,3-dimethyl-, trans- | 6813 | 002207-03-6 | 91.00 |



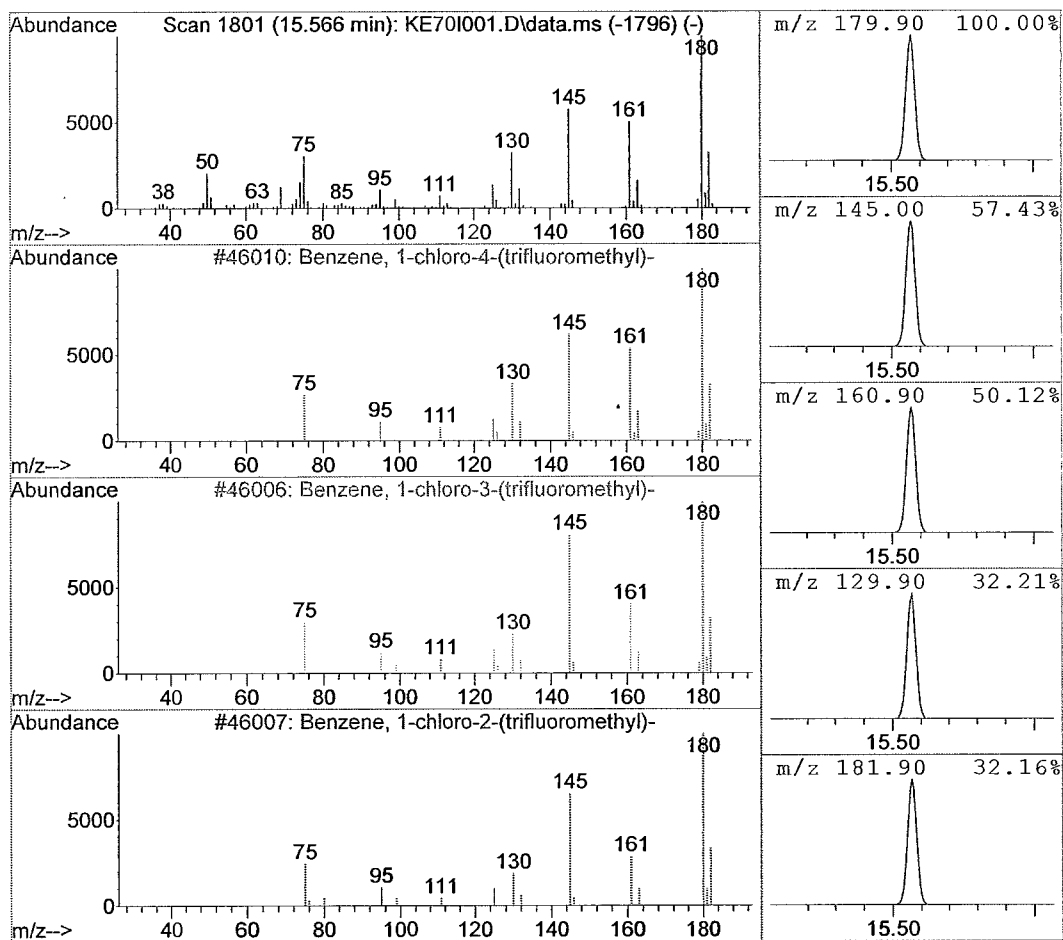
## Library Search Compound Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE70I001.D Vial: 13  
Acq Time : 12/20/2018 02:23 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Library : C:\DATABASE\NIST11.L

| R.T.  | Conc     | Area    | Relative to ISTD | ISTD Area |
|-------|----------|---------|------------------|-----------|
| 15.57 | 4.17 ppb | 1837942 | Chlorobenzene d5 | 8825629   |

| Hit# of 20 | Tentative ID                          | Ref#  | CAS#        | Qual  |
|------------|---------------------------------------|-------|-------------|-------|
| 1          | Benzene, 1-chloro-4-(trifluoromethyl) | 46010 | 000098-56-6 | 99.00 |
| 2          | Benzene, 1-chloro-3-(trifluoromethyl) | 46006 | 000098-15-7 | 96.00 |
| 3          | Benzene, 1-chloro-2-(trifluoromethyl) | 46007 | 000088-16-4 | 91.00 |
| 4          | 2-Fluoro-5-(trifluoromethyl)phenol    | 46021 | 141483-15-0 | 37.00 |
| 5          | Phenylamine, N,4,5-trimethyl-2-nitr   | 46177 | 017978-54-0 | 16.00 |



## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE71I001.D Vial: 13  
 Acq Time : 12/20/2018 03:02 Operator: BB  
 Sample : 1835256003 Inst : 5975-K  
 Misc : 1:20 DIL 10ML Multiplr: 1.00  
 MS Integration Params: rteint.p

Quant Time: Dec 20 14:49:41 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
 Title : TO-15  
 Last Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration  
 DataAcq Meth : TO-15.M

*only Acetone*  
*ethyl Acetate*  
*4-methyl-2-pentanone*  
*Toluene*  
*evaluated*

| Internal Standards      | R.T.  | QIon | Response | Conc  | Units | Area% |
|-------------------------|-------|------|----------|-------|-------|-------|
| 1) Bromochloromethane   | 9.41  | 130  | 249856   | 20.00 | ppb   | 82.80 |
| 21) 1,4-Difluorobenzene | 11.19 | 114  | 3259633  | 20.00 | ppb   | 86.60 |
| 44) Chlorobenzene d5    | 15.49 | 117  | 2794025  | 20.00 | ppb   | 99.51 |

| System Monitoring Compounds | R.T.  | QIon | Response | Conc  | Units | %Recovery |
|-----------------------------|-------|------|----------|-------|-------|-----------|
| 52) Bromofluorobenzene      | 17.13 | 95   | 1563080  | 19.91 | ppb   | 99.55%    |

| Target Compounds              | R.T.  | QIon | Response | Conc    | Units        | Qvalue |
|-------------------------------|-------|------|----------|---------|--------------|--------|
| 2) Dichlorodifluoromethane    | 0.00  | 85   |          |         | Not Detected |        |
| 3) Chloromethane              | 0.00  | 50   |          |         | Not Detected |        |
| 4) Freon 114                  | 0.00  | 135  |          |         | Not Detected |        |
| 5) Vinyl Chloride             | 0.00  | 62   |          |         | Not Detected |        |
| 6) 1,3-Butadiene              | 0.00  | 54   |          |         | Not Detected |        |
| 7) Bromomethane               | 0.00  | 94   |          |         | Not Detected |        |
| 8) Chloroethane               | 0.00  | 64   |          |         | Not Detected |        |
| 9) Acetone                    | 6.59  | 43   | 1233674  | 15.8836 | ppb          | 99     |
| 10) Trichlorofluoromethane    | 0.00  | 101  |          |         | Not Detected |        |
| 11) 1,1-Dichloroethene        | 0.00  | 61   |          |         | Not Detected |        |
| 12) Methylene Chloride        | 0.00  | 84   |          |         | Not Detected |        |
| 13) Freon 113                 | 0.00  | 151  |          |         | Not Detected |        |
| 14) Carbon Disulfide          | 0.00  | 76   |          |         | Not Detected |        |
| 15) trans-1,2-Dichloroethene  | 0.00  | 96   |          |         | Not Detected |        |
| 16) 1,1-Dichloroethane        | 0.00  | 63   |          |         | Not Detected |        |
| 17) methyl t-butyl ether      | 0.00  | 73   |          |         | Not Detected |        |
| 18) Vinyl Acetate             | 0.00  | 86   |          |         | Not Detected |        |
| 19) 2-Butanone                | 8.82  | 43   | 72449    | 0.7309  | ppb          | 95     |
| 20) cis-1,2-Dichloroethene    | 0.00  | 96   |          |         | Not Detected |        |
| 22) Ethyl Acetate             | 9.40  | 61   | 105735   | 6.2121  | ppb          | 91     |
| 23) Hexane                    | 0.00  | 57   |          |         | Not Detected |        |
| 24) Chloroform                | 0.00  | 83   |          |         | Not Detected |        |
| 25) Tetrahydrofuran           | 0.00  | 42   |          |         | Not Detected |        |
| 26) 1,2-Dichloroethane        | 0.00  | 62   |          |         | Not Detected |        |
| 27) 1,1,1-Trichloroethane     | 0.00  | 97   |          |         | Not Detected |        |
| 28) Benzene                   | 0.00  | 78   |          |         | Not Detected |        |
| 29) Carbon Tetrachloride      | 0.00  | 117  |          |         | Not Detected |        |
| 30) Cyclohexane               | 0.00  | 84   |          |         | Not Detected |        |
| 31) 1,2-Dichloropropane       | 0.00  | 63   |          |         | Not Detected |        |
| 32) Bromodichloromethane      | 0.00  | 83   |          |         | Not Detected |        |
| 33) Trichloroethene           | 0.00  | 130  |          |         | Not Detected |        |
| 34) Heptane                   | 12.16 | 71   | 62764    | 1.2016  | ppb          | 92     |
| 35) cis-1,3-Dichloropropene   | 0.00  | 75   |          |         | Not Detected |        |
| 36) 4-Methyl-2-Pentanone      | 12.70 | 43   | 676973   | 5.2610  | ppb          | 97     |
| 37) trans-1,3-Dichloropropene | 0.00  | 75   |          |         | Not Detected |        |
| 38) 1,1,2-Trichloroethane     | 0.00  | 97   |          |         | Not Detected |        |
| 39) Toluene                   | 13.68 | 91   | 1435617  | 8.9009  | ppb          | 99     |
| 40) 2-Hexanone                | 0.00  | 43   |          |         | Not Detected |        |
| 41) Dibromochloromethane      | 0.00  | 129  |          |         | Not Detected |        |
| 42) 1,2-Dibromoethane         | 0.00  | 107  |          |         | Not Detected |        |
| 43) Tetrachloroethene         | 0.00  | 166  |          |         | Not Detected |        |
| 45) Chlorobenzene             | 0.00  | 112  |          |         | Not Detected |        |
| 46) Ethylbenzene              | 0.00  | 91   |          |         | Not Detected |        |
| 47) m,p-Xylene                | 0.00  | 91   |          |         | Not Detected |        |
| 48) Bromoform                 | 0.00  | 173  |          |         | Not Detected |        |
| 49) Styrene                   | 0.00  | 104  |          |         | Not Detected |        |
| 50) 1,1,2,2-Tetrachloroethane | 0.00  | 83   |          |         | Not Detected |        |

(#) = qualifier out of range (m) = manual integration

KE71I001.D TO15KH18.m Thu Dec 20 14:54:14 2018

## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE71I001.D Vial: 13  
Acq Time : 12/20/2018 03:02 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : 1:20 DIL 10ML Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:49:41 2018

Results File: TO15KH18.RES

Quant Method : I:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator )  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration  
DataAcq Meth : TO-15.M

| Compound                     | R.T. | QIon | Response | Conc | Unit     | Qvalue |
|------------------------------|------|------|----------|------|----------|--------|
| 51) o-Xylene                 | 0.00 | 91   |          | Not  | Detected |        |
| 53) 4-Ethyl Toluene          | 0.00 | 105  |          | Not  | Detected |        |
| 54) 1,3,5-Trimethylbenzene   | 0.00 | 105  |          | Not  | Detected |        |
| 55) 1,2,4-Trimethylbenzene   | 0.00 | 105  |          | Not  | Detected |        |
| 56) Benzyl Chloride          | 0.00 | 91   |          | Not  | Detected |        |
| 57) m-Dichlorobenzene        | 0.00 | 146  |          | Not  | Detected |        |
| 58) p-Dichlorobenzene        | 0.00 | 146  |          | Not  | Detected |        |
| 59) o-Dichlorobenzene        | 0.00 | 146  |          | Not  | Detected |        |
| 60) 1,2,4-Trichlorobenzene   | 0.00 | 180  |          | Not  | Detected |        |
| 61) Hexachloro-1,3-butadiene | 0.00 | 225  |          | Not  | Detected |        |

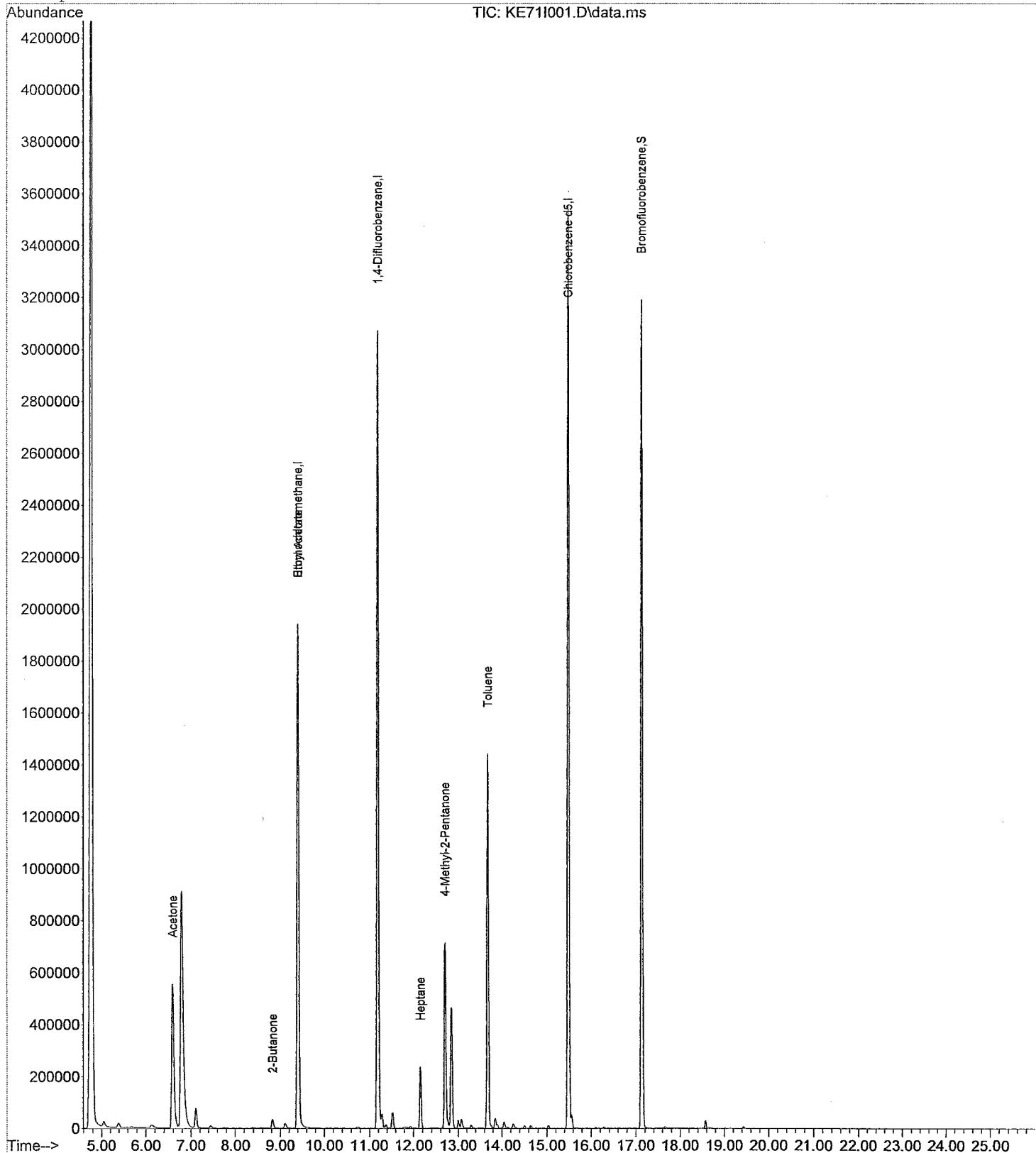
## Quantitation Report

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE71I001.D Vial: 13  
Acq Time : 12/20/2018 03:02 Operator: BB  
Sample : 1835256003 Inst : 5975-K  
Misc : 1:20 DIL 10ML Multiplr: 1.00  
MS Integration Params: rteint.p

Quant Time: Dec 20 14:49:41 2018

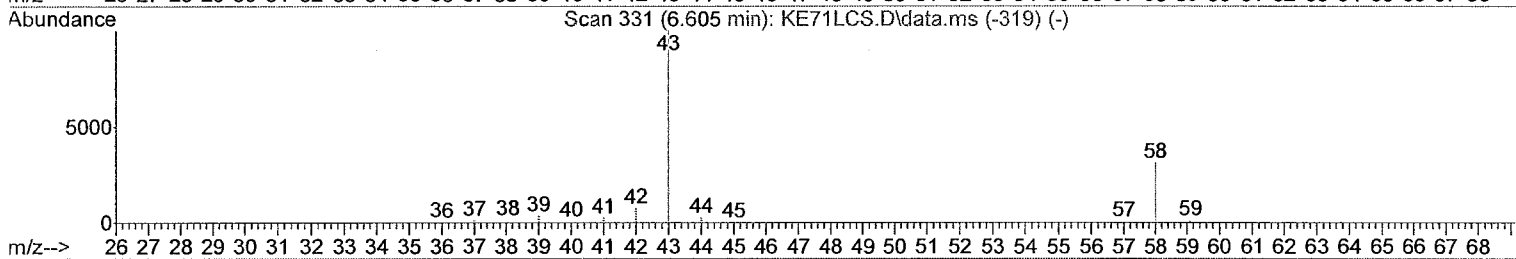
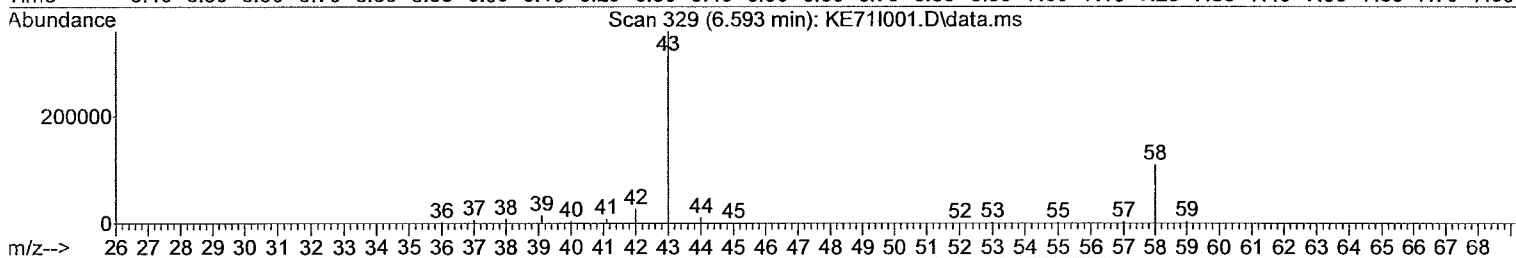
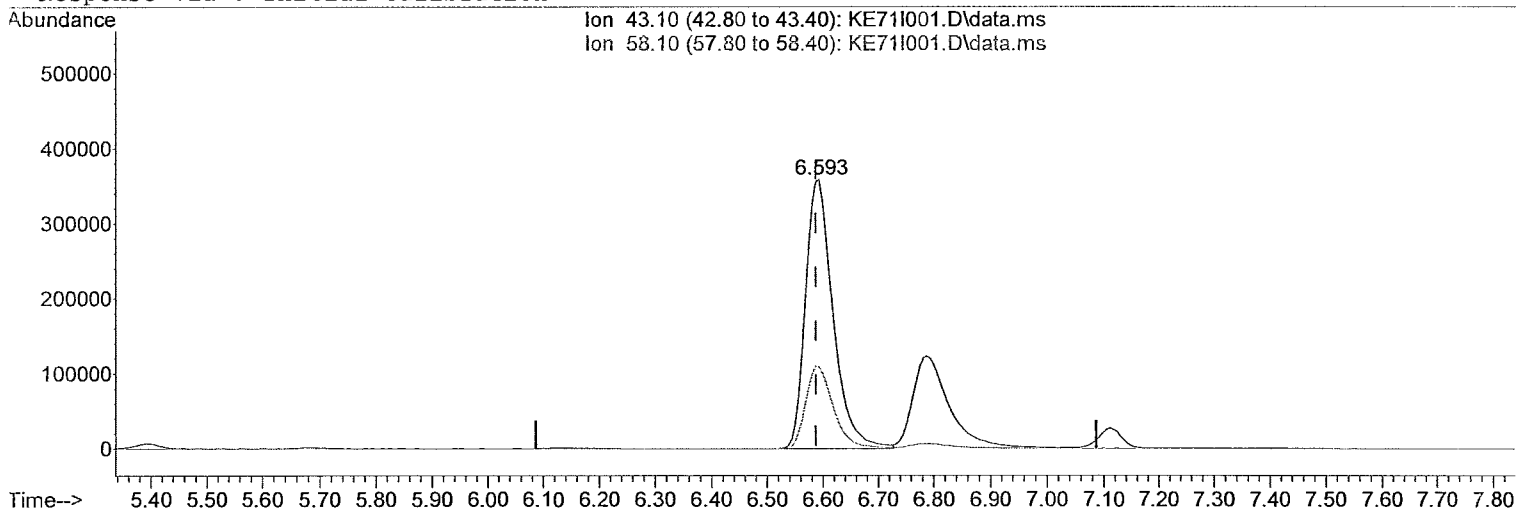
Results File: TO15KH18.RES

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15  
Last Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE711001.D  
Acq On : 12/20/2018 03:02  
Operator : BB  
Sample : 1835256003  
Inst : 5975-K  
Misc : 1:20 DIL 10ML  
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 20 07:37:49 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



TIC: KE711001.D\data.ms

## (9) Acetone

6.593min (+ 0.006) 15.88 ppb

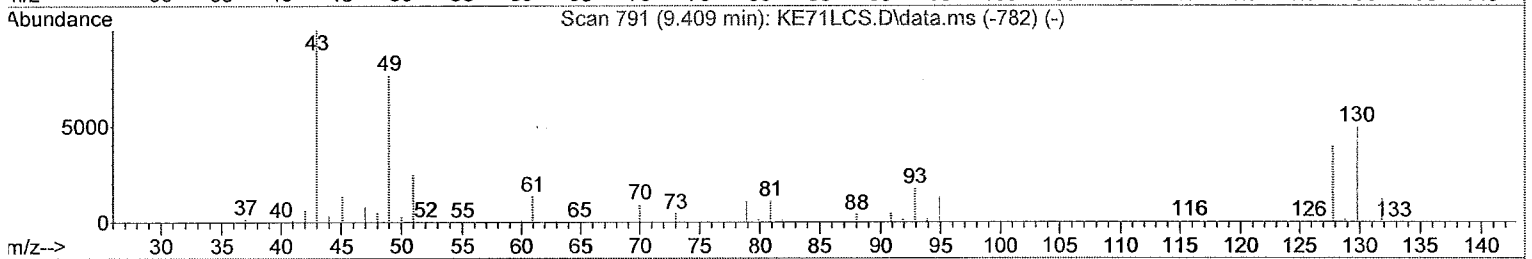
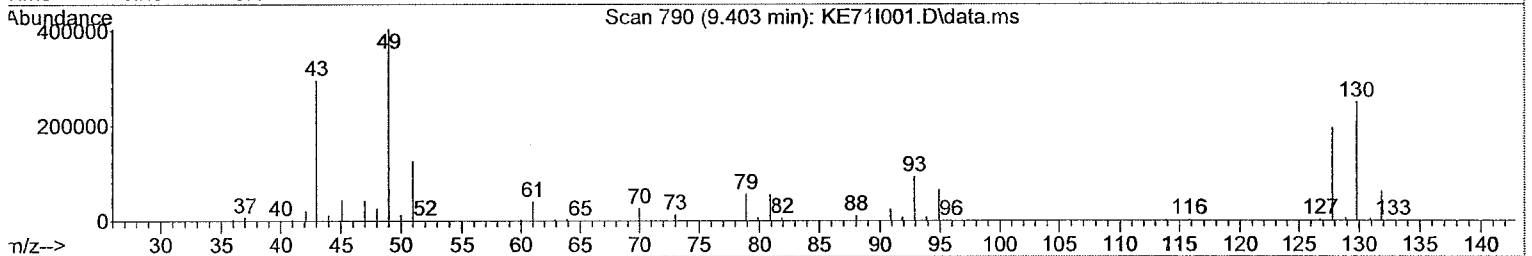
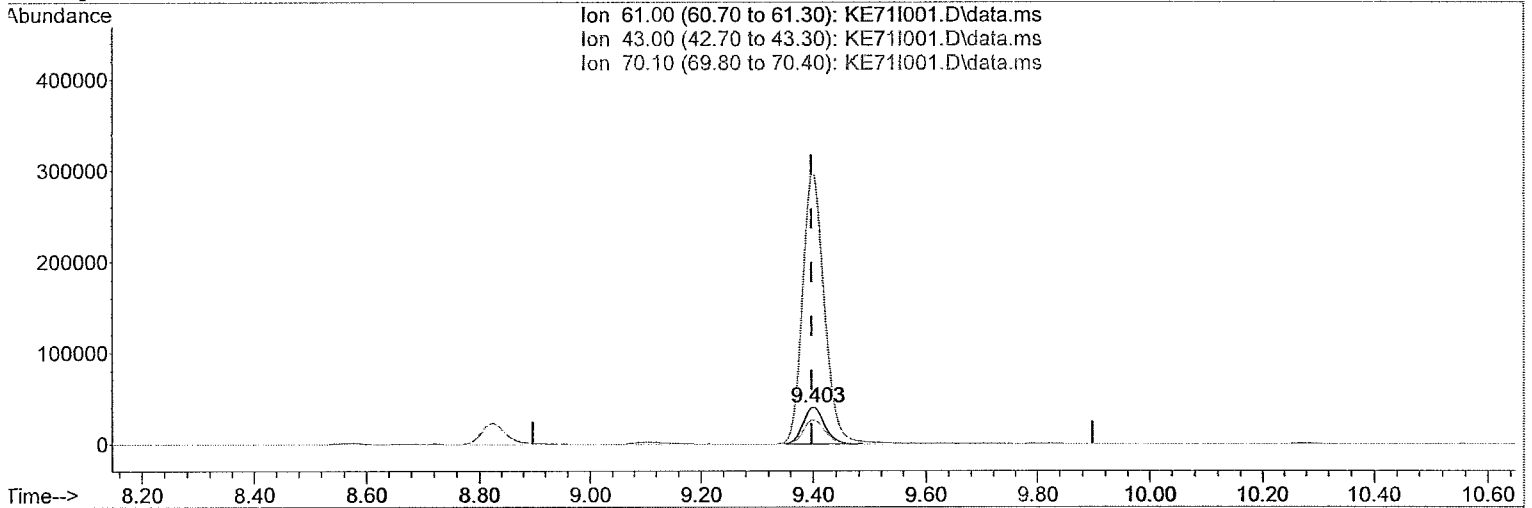
response 1233674

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 43.10 | 100.00 | 100.00 |
| 58.10 | 31.40  | 30.81  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

## Quantitation Report (Qedit)

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE711001.D  
Acq On : 12/20/2018 03:02  
Operator : BB  
Sample : 1835256003  
Inst : 5975-K  
Misc : 1:20 DIL 10ML  
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 20 07:37:49 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



TIC: KE711001.D\data.ms

## (22) Ethyl Acetate

9.403min (+ 0.006) 6.21 ppb

response 105735

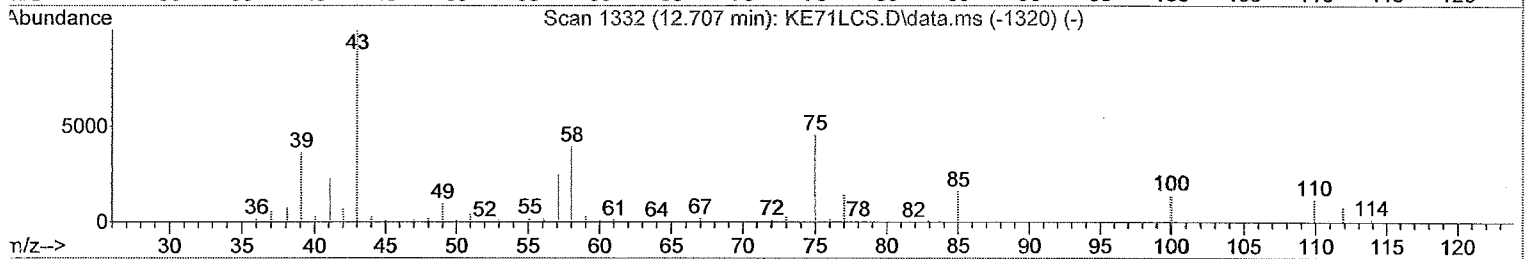
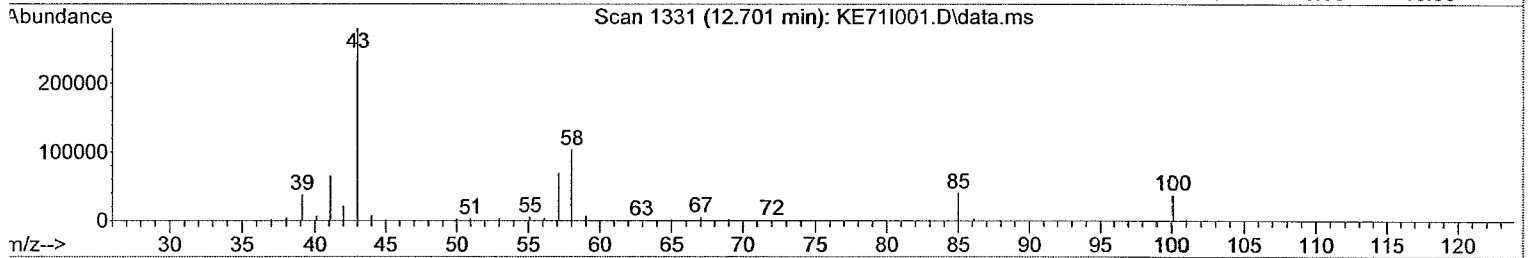
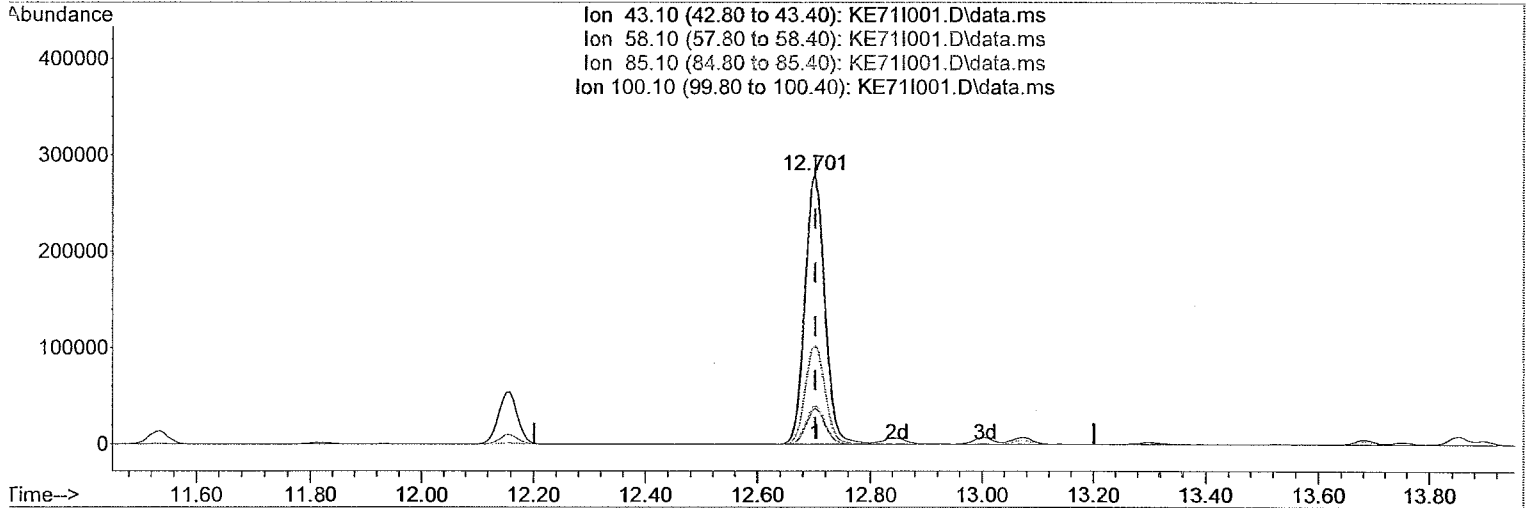
| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 61.00 | 100.00 | 100.00 |
| 43.00 | 718.20 | 752.13 |
| 70.10 | 71.90  | 66.67  |
| 0.00  | 0.00   | 0.00   |



# Quantitation Report (Qedit)

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
 Data File : KE71I001.D  
 Acq On : 12/20/2018 03:02  
 Operator : BB  
 Sample : 1835256003  
 Inst : 5975-K  
 Misc : 1:20 DIL 10ML  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 20 07:37:49 2018  
 Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
 Quant Title : TO-15  
 QLast Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration



TIC: KE71I001.D\data.ms

(36) 4-Methyl-2-Pentanone

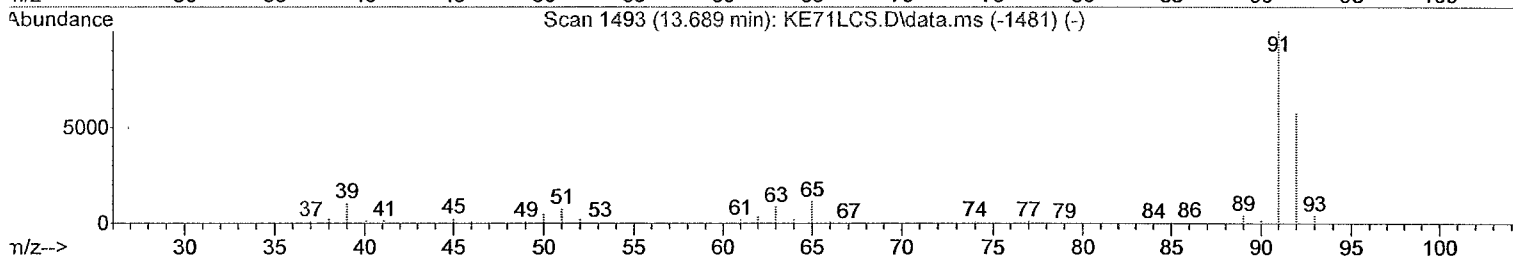
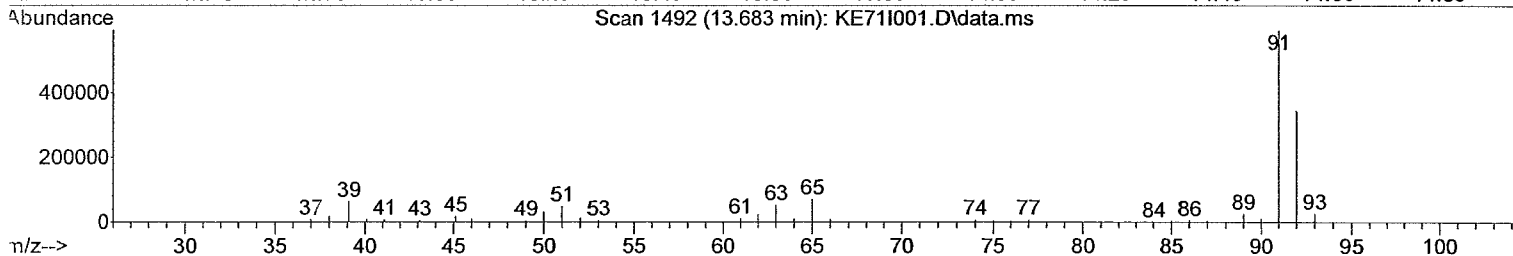
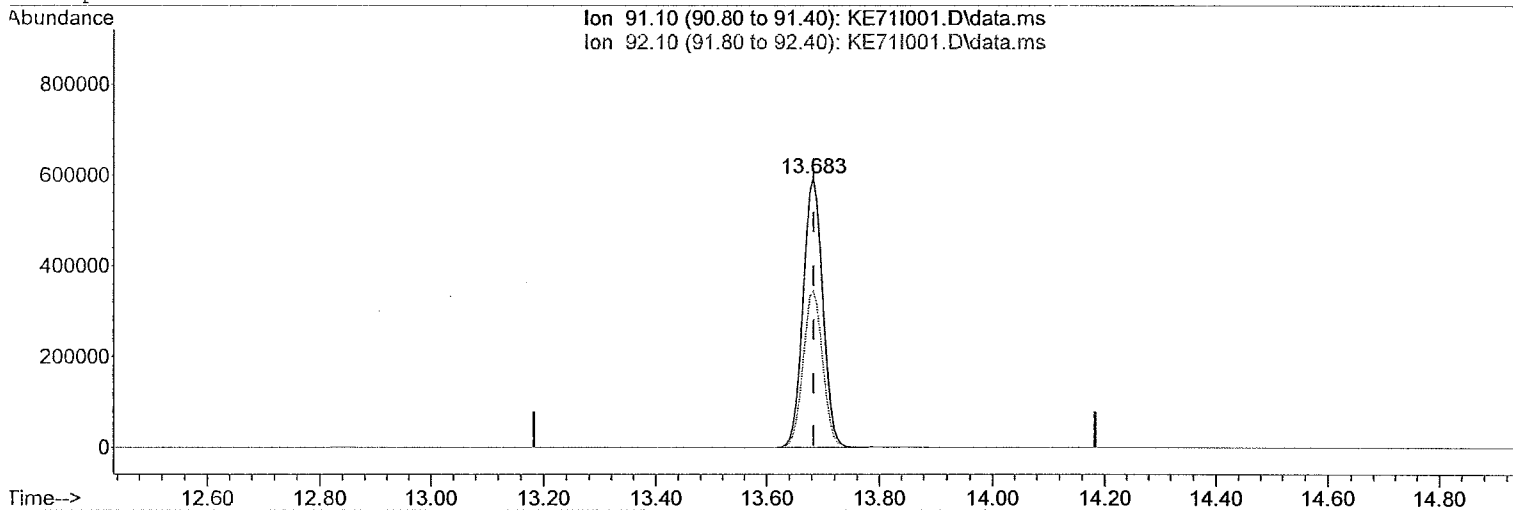
12.701min (+ 0.000) 5.26 ppb

response 676973

| Ion    | Exp%   | Act%   |
|--------|--------|--------|
| 43.10  | 100.00 | 100.00 |
| 58.10  | 38.80  | 37.34  |
| 85.10  | 16.10  | 14.24  |
| 100.10 | 14.30  | 12.82  |

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
Data File : KE711001.D  
Acq On : 12/20/2018 03:02  
Operator : BB  
Sample : 1835256003  
Inst : 5975-K  
Misc : 1:20 DIL 10ML  
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Dec 20 07:37:49 2018  
Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
Quant Title : TO-15  
QLast Update : Wed Dec 05 10:49:41 2018  
Response via : Initial Calibration



TIC: KE711001.D\data.ms

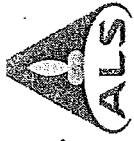
## (39) Toluene

13.683min (+ 0.000) 8.90 ppb

response 1435617

| Ion   | Exp%   | Act%   |
|-------|--------|--------|
| 91.10 | 100.00 | 100.00 |
| 92.10 | 58.60  | 58.12  |
| 0.00  | 0.00   | 0.00   |
| 0.00  | 0.00   | 0.00   |

# Batch Worklist



Batch: IVOA/4201

Rule: EPA TO-15, Air

Created: 12/20/2018 09:25

Analyst: B. Boy

Instrument: 5975-K

Status: RE

HBN: 229851



Workorder: 1835256 [ENV\_LVL1]

Workorder: 1835290 [ENV\_LVL2]

Workorder: 1835293 [ENV\_LVL4]

Workorder: 1835379 [ENV\_LVL4]

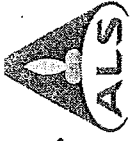
| Pos | Lab ID     | Sample ID                      | Prep Initial | Prep Final | Dust Weight | Type   | Mix | Container    | Procedure  | Mgr  | Expire Date | Due Date   | Run Date   |
|-----|------------|--------------------------------|--------------|------------|-------------|--------|-----|--------------|------------|------|-------------|------------|------------|
| 1   | 633626     | MB for HBN 229851 [VOA/4201]   |              |            |             | MB     | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 2   | 633627     | LCS for HBN 229851 [VOA/4201]  |              |            |             | LCS    | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 3   | 633628     | LCSD for HBN 229851 [VOA/4201] |              |            |             | LCSD   | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 4   | 633629     | RLVS for HBN 229851 [VOA/4201] |              |            |             | RLVS   | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 5   | 1835379001 | Air 1                          |              |            |             | SAMPLE | 1   | 1835379001-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 6   | 1835379002 | Air 3                          |              |            |             | SAMPLE | 1   | 1835379002-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 7   | 1835379003 | Air 4                          |              |            |             | SAMPLE | 1   | 1835379003-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 8   | 1835379004 | Air 5                          |              |            |             | SAMPLE | 1   | 1835379004-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 9   | 1835379005 | Air 6                          |              |            |             | SAMPLE | 1   | 1835379005-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 10  | 1835290001 | SV-1                           |              |            |             | SAMPLE | 1   | 1835290001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 11  | 1835290002 | SV-2                           |              |            |             | SAMPLE | 1   | 1835290002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 12  | 1835290003 | SV-3                           |              |            |             | SAMPLE | 1   | 1835290003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 13  | 1835290004 | SV-4                           |              |            |             | SAMPLE | 1   | 1835290004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 14  | 1835293001 | IA-8                           |              |            |             | SAMPLE | 1   | 1835293001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 15  | 1835293002 | OA-2                           |              |            |             | SAMPLE | 1   | 1835293002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 16  | 1835293003 | IA-6                           |              |            |             | SAMPLE | 1   | 1835293003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 17  | 1835293004 | IA-7                           |              |            |             | SAMPLE | 1   | 1835293004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 18  | 1835256003 | KT181212-13                    |              |            |             | SAMPLE | 1   | 1835256003-A | ETO15...1  | 5875 |             | 12/27/2018 |            |

## 5.6 GC/MS Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

| <u>GC/MS Technical Review Criteria</u>                                                                                                                            | <u>Analyst Initials</u> | <u>Reviewer Initials</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|
| <u>Batch(es)/SDG:</u> 229451 BB 12/26/15                                                                                                                          |                         |                          |
| <u>Sample Set IDs if Applicable:</u> 1835256, 5243, 5290                                                                                                          |                         |                          |
| <u>GC/MS Tuning passed criteria (BFB or DFTPP)</u>                                                                                                                | BB                      | R                        |
| <u>Calibration standards analyzed and meets criteria</u>                                                                                                          | BB                      | R                        |
| <u>Standards traceability checked and meets criteria</u>                                                                                                          | BB                      | R                        |
| <u>Standard curve coefficient evaluated and meets criteria</u>                                                                                                    | BB                      | R                        |
| <u>ICVs analyzed and meet acceptance criteria</u>                                                                                                                 | BB                      | R                        |
| <u>CCVs analyzed and meet acceptance criteria</u>                                                                                                                 | BB                      | R                        |
| <u>Method Blanks analyzed and meet acceptance criteria</u>                                                                                                        | BB                      | R                        |
| <u>Review of spectral assignments</u>                                                                                                                             | BB                      | R                        |
| <u>Relative Retention Time checked</u>                                                                                                                            | BB                      | R                        |
| <u>Internal Standards checked</u>                                                                                                                                 | BB                      | R                        |
| <u>Surrogate recoveries checked and appropriately addressed</u>                                                                                                   | BB                      | R                        |
| <u>Sample Frequency – Analyzed within appropriate tune window</u>                                                                                                 | BB                      | R                        |
| <u>Method Preparation Blanks analyzed and meet acceptance criteria</u>                                                                                            | BB                      | R                        |
| <u>MSs, MSDs, and/or MDs analyzed and calculations checked; applicable flags applied on QC reports; LCSs analyzed and meet acceptance criteria when performed</u> | BB                      | R                        |
| <u>RLVS analyzed</u>                                                                                                                                              | BB                      | R                        |
| <u>Preparation and analysis hold times met</u>                                                                                                                    | BB                      | R                        |
| <u>Preparation deviations and re-preparations noted when performed</u>                                                                                            | BB                      | R                        |
| <u>Analysis deviations and re-analyses noted when performed</u>                                                                                                   | BB                      | R                        |
| <u>Sample dilution factors noted on reports</u>                                                                                                                   | BB                      | R                        |
| <u>Electronic records in HBN transcription accuracy and completeness checked</u>                                                                                  | BB                      | R                        |
| <u>Preparation and analysis calculations checked</u>                                                                                                              | BB                      | R                        |
| <u>NCRs are completed as necessary NC/CAR#</u>                                                                                                                    | N/A                     | N/A                      |
| <u>Report forms are complete and accurate</u>                                                                                                                     | BB                      | R                        |
| <u>Manual integrations checked</u>                                                                                                                                | BB                      | R                        |

# Batch Worklist



Batch: IVOA/4201

Created: 12/20/2018 09:25

Instrument: 5975-K

HBN: 229851

Rule: EPA TO-15, Air

Analyst: B. Boy

Status: RE



Workorder: 1835256 [ENV\_LVL1]

Workorder: 1835290 [ENV\_LVL2]

Workorder: 1835293 [ENV\_LVL4]

Workorder: 1835379 [ENV\_LVL4]

| Pos | Lab ID     | Sample ID                      | Prep Initial | Prep Final | Dust Weight | Type   | Mix | Container    | Procedure  | Mgr  | Expire Date | Due Date   | Run Date   |
|-----|------------|--------------------------------|--------------|------------|-------------|--------|-----|--------------|------------|------|-------------|------------|------------|
| 1   | 633626     | MB for HBN 229851 [VOA/4201]   |              |            |             | MB     | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 2   | 633627     | LCS for HBN 229851 [VOA/4201]  |              |            |             | LCS    | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 3   | 633628     | LCSD for HBN 229851 [VOA/4201] |              |            |             | LCSD   | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 4   | 633629     | RLVS for HBN 229851 [VOA/4201] |              |            |             | RLVS   | 1   |              | ETO15...IQ | 6216 |             | 12/20/2018 | 12/19/2018 |
| 5   | 1835379001 | Air 1                          |              |            |             | SAMPLE | 1   | 1835379001-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 6   | 1835379002 | Air 3                          |              |            |             | SAMPLE | 1   | 1835379002-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 7   | 1835379003 | Air 4                          |              |            |             | SAMPLE | 1   | 1835379003-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 8   | 1835379004 | Air 5                          |              |            |             | SAMPLE | 1   | 1835379004-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 9   | 1835379005 | Air 6                          |              |            |             | SAMPLE | 1   | 1835379005-A | ETO15...1  | 5975 |             | 12/20/2018 | 12/19/2018 |
| 10  | 1835290001 | SV-1                           |              |            |             | SAMPLE | 1   | 1835290001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 11  | 1835290002 | SV-2                           |              |            |             | SAMPLE | 1   | 1835290002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 12  | 1835290003 | SV-3                           |              |            |             | SAMPLE | 1   | 1835290003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 13  | 1835290004 | SV-4                           |              |            |             | SAMPLE | 1   | 1835290004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 14  | 1835293001 | IA-8                           |              |            |             | SAMPLE | 1   | 1835293001-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 15  | 1835293002 | OA-2                           |              |            |             | SAMPLE | 1   | 1835293002-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 16  | 1835293003 | IA-6                           |              |            |             | SAMPLE | 1   | 1835293003-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 17  | 1835293004 | IA-7                           |              |            |             | SAMPLE | 1   | 1835293004-A | ETO15...1  | 6171 |             | 12/27/2018 |            |
| 18  | 1835256003 | KT181212-1                     |              |            |             | SAMPLE | 1   | 1835256003-A | ETO15...1  | 5875 |             | 12/27/2018 |            |

5.6 GC/MS Technical Review

Note: It is the peer reviewer's responsibility to ensure that appropriate criteria are used as defined in the HORIZON PROFILE. The evaluation criteria are prioritized as per Section 2.2 of this SOP. These items must be checked for all projects. The following checklist will be completed by both the analyst and the peer reviewer and scanned into the HBN folder with the raw data.

| <u>GC/MS Technical Review Criteria</u>                                                                                                                            | <u>Analyst<br/>Initials</u> | <u>Reviewer<br/>Initials</u> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------|
| <u>Batch(es)/SDG:</u> 229451                                                                                                                                      |                             |                              |
| <u>Sample Set IDs if Applicable:</u> 1435293                                                                                                                      |                             |                              |
| <u>GC/MS Tuning passed criteria (BFB or DFTPP)</u>                                                                                                                | BFB                         | R                            |
| <u>Calibration standards analyzed and meets criteria</u>                                                                                                          | BFB                         | R                            |
| <u>Standards traceability checked and meets criteria</u>                                                                                                          | BFB                         | R                            |
| <u>Standard curve coefficient evaluated and meets criteria</u>                                                                                                    | BFB                         | R                            |
| <u>ICVs analyzed and meet acceptance criteria</u>                                                                                                                 | BFB                         | R                            |
| <u>CCVs analyzed and meet acceptance criteria</u>                                                                                                                 | BFB                         | R                            |
| <u>Method Blanks analyzed and meet acceptance criteria</u>                                                                                                        | BFB                         | R                            |
| <u>Review of spectral assignments</u>                                                                                                                             | BFB                         | R                            |
| <u>Relative Retention Time checked</u>                                                                                                                            | BFB                         | R                            |
| <u>Internal Standards checked</u>                                                                                                                                 | BFB                         | R                            |
| <u>Surrogate recoveries checked and appropriately addressed</u>                                                                                                   | BFB                         | R                            |
| <u>Sample Frequency – Analyzed within appropriate tune window</u>                                                                                                 | BFB                         | R                            |
| <u>Method Preparation Blanks analyzed and meet acceptance criteria</u>                                                                                            | BFB                         | R                            |
| <u>MSs, MSDs, and/or MDs analyzed and calculations checked; applicable flags applied on QC reports; LCSs analyzed and meet acceptance criteria when performed</u> | BFB                         | R                            |
| <u>RLVS analyzed</u>                                                                                                                                              | BFB                         | R                            |
| <u>Preparation and analysis hold times met</u>                                                                                                                    | BFB                         | R                            |
| <u>Preparation deviations and re-preparations noted when performed</u>                                                                                            | BFB                         | R                            |
| <u>Analysis deviations and re-analyses noted when performed</u>                                                                                                   | BFB                         | R                            |
| <u>Sample dilution factors noted on reports</u>                                                                                                                   | BFB                         | R                            |
| <u>Electronic records in HBN transcription accuracy and completeness checked</u>                                                                                  | BFB                         | R                            |
| <u>Preparation and analysis calculations checked</u>                                                                                                              | BFB                         | R                            |
| <u>NCRs are completed as necessary NC/CAR#</u>                                                                                                                    | N/A                         | NA                           |
| <u>Report forms are complete and accurate</u>                                                                                                                     | BFB                         | R                            |
| <u>Manual integrations checked</u>                                                                                                                                | BFB                         | R                            |

# Response Factor Report 5975-K

Method Path : I:\K-5975-K\METHODS\  
Method File : T015KH18.m  
Title : T0-15  
Last Update : Tue Nov 13 11:55:11 2018  
Response Via : Initial Calibration

## Calibration Files

.5 =KD78S05.D 1 =KD77S1.D 2 =KD76S2.D 5 =KD75S5.D 10 =KD74S10.D 20 =KD73S20.D  
50 =KD88S50.D

| Compound                  | .5    | 1     | 2     | 5     | 10    | 20    | 50    | Avg   | %RSD    |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| -----                     |       |       |       |       |       |       |       |       |         |
| 1) I Bromochloromethane   |       |       |       |       |       |       |       |       |         |
| 2) Dichlorodifluo...      | 1.210 | 1.156 | 1.165 | 1.096 | 1.065 | 0.983 | 1.037 | 1.102 | E1 7.23 |
| 3) Chloromethane          | 3.303 | 3.110 | 3.122 | 2.987 | 3.066 | 2.760 | 2.739 | 3.013 | 6.75    |
| 4) Freon 114              | 8.355 | 7.891 | 7.973 | 7.583 | 7.628 | 7.282 | 7.374 | 7.726 | 4.83    |
| 5) Vinyl Chloride         | 3.637 | 3.497 | 3.494 | 3.416 | 3.582 | 3.370 | 3.270 | 3.467 | 3.62    |
| 6) 1,3-Butadiene          | 2.794 | 2.713 | 2.665 | 2.781 | 2.806 | 2.651 | 2.672 | 2.726 | 2.44    |
| 7) Bromomethane           | 3.466 | 3.314 | 3.301 | 3.314 | 3.312 | 3.157 | 3.218 | 3.297 | 2.91    |
| 8) Chloroethane           | 2.431 | 2.256 | 2.292 | 2.131 | 2.177 | 2.033 | 2.218 | 2.220 | 5.70    |
| 9) Acetone                | 7.135 | 6.648 | 5.973 | 5.800 | 5.588 | 6.158 | 6.217 |       | 9.27    |
| 10) Trichlorofluor...     | 1.019 | 0.975 | 0.976 | 0.937 | 0.934 | 0.912 | 1.118 | 0.982 | E1 7.12 |
| 11) 1,1-Dichloroet...     | 6.242 | 5.990 | 5.991 | 5.748 | 5.765 | 5.687 | 6.593 | 6.002 | 5.39    |
| 12) Methylene Chlo...     | 4.107 | 3.512 | 3.380 | 3.053 | 2.934 | 2.920 | 3.181 | 3.298 | 12.72   |
| 13) Freon 113             | 6.272 | 6.072 | 6.144 | 5.803 | 5.772 | 5.681 | 6.877 | 6.089 | 6.73    |
| 14) Carbon Disulfide      | 7.273 | 7.507 | 8.020 | 7.994 | 8.299 | 8.340 | 9.246 | 8.097 | 7.92    |
| 15) trans-1,2-Dich...     | 3.754 | 3.512 | 3.657 | 3.504 | 3.479 | 3.430 | 3.926 | 3.609 | 4.97    |
| 16) 1,1-Dichloroet...     | 6.865 | 6.698 | 6.758 | 6.459 | 6.359 | 6.345 | 7.586 | 6.724 | 6.40    |
| 17) methyl t-butyl...     | 1.038 | 0.967 | 1.004 | 0.964 | 0.965 | 0.957 | 1.175 | 1.010 | E1 7.77 |
| 18) Vinyl Acetate         | 0.823 | 0.870 | 0.916 | 0.908 | 0.920 | 0.912 | 1.043 | 0.913 | 7.32    |
| 19) 2-Butanone            | 8.794 | 8.147 | 7.845 | 7.577 | 7.487 | 7.436 | 8.258 | 7.935 | 6.24    |
| 20) cis-1,2-Dichlo...     | 3.779 | 3.783 | 3.781 | 3.670 | 3.645 | 3.601 | 4.106 | 3.766 | 4.44    |
| -----                     |       |       |       |       |       |       |       |       |         |
| ISTD-----                 |       |       |       |       |       |       |       |       |         |
| 21) I 1,4-Difluorobenzene |       |       |       |       |       |       |       |       |         |
| 22) Ethyl Acetate         | 0.106 | 0.101 | 0.104 | 0.100 | 0.101 | 0.102 | 0.117 | 0.104 | 5.69    |
| 23) Hexane                | 0.493 | 0.476 | 0.495 | 0.487 | 0.482 | 0.490 | 0.591 | 0.502 | 7.95    |
| 24) Chloroform            | 0.611 | 0.602 | 0.601 | 0.582 | 0.572 | 0.572 | 0.662 | 0.600 | 5.18    |
| 25) Tetrahydrofuran       | 0.331 | 0.323 | 0.340 | 0.329 | 0.324 | 0.324 | 0.355 | 0.332 | 3.50    |
| 26) 1,2-Dichloroet...     | 0.411 | 0.401 | 0.410 | 0.392 | 0.388 | 0.386 | 0.441 | 0.404 | 4.69    |
| 27) 1,1,1-Trichlor...     | 0.618 | 0.603 | 0.627 | 0.613 | 0.605 | 0.607 | 0.720 | 0.627 | 6.67    |
| 28) Benzene               | 0.839 | 0.833 | 0.839 | 0.813 | 0.795 | 0.794 | 0.911 | 0.832 | 4.79    |
| 29) Carbon Tetrach...     | 0.582 | 0.580 | 0.615 | 0.614 | 0.621 | 0.630 | 0.766 | 0.630 | 10.02   |

# Response Factor Report 5975-K

Method Path : I:\K-5975-K\METHODS\  
Method File : TO15KH18.m  
Title : TO-15

|     |                   |       |       |       |       |       |       |       |       |       |
|-----|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 30) | Cyclohexane       | 0.456 | 0.428 | 0.425 | 0.400 | 0.397 | 0.391 | 0.452 | 0.421 | 6.25  |
| 31) | 1,2-Dichloropr... | 0.325 | 0.322 | 0.327 | 0.313 | 0.311 | 0.311 | 0.362 | 0.324 | 5.44  |
| 32) | Bromodichlorom... | 0.519 | 0.537 | 0.554 | 0.554 | 0.566 | 0.585 | 0.722 | 0.577 | 11.66 |
| 33) | Trichloroethene   | 0.417 | 0.411 | 0.422 | 0.408 | 0.405 | 0.407 | 0.499 | 0.424 | 7.90  |
| 34) | Heptane           | 0.303 | 0.301 | 0.317 | 0.310 | 0.309 | 0.317 | 0.386 | 0.320 | 9.24  |
| 35) | cis-1,3-Dichlo... | 0.394 | 0.398 | 0.438 | 0.440 | 0.452 | 0.476 | 0.584 | 0.455 | 14.11 |
| 36) | 4-Methyl-2-Pen... | 0.786 | 0.757 | 0.783 | 0.754 | 0.761 | 0.796 | 0.889 | 0.790 | 5.92  |
| 37) | trans-1,3-Dich... | 0.311 | 0.312 | 0.355 | 0.376 | 0.389 | 0.405 | 0.464 | 0.373 | 14.47 |
| 38) | 1,1,2-Trichlor... | 0.359 | 0.336 | 0.338 | 0.322 | 0.316 | 0.318 | 0.368 | 0.337 | 6.05  |
| 39) | Toluene           | 0.964 | 0.966 | 0.984 | 0.960 | 0.952 | 0.958 | 1.144 | 0.990 | 6.94  |
| 40) | 2-Hexanone        |       | 0.612 | 0.669 | 0.682 | 0.694 | 0.715 | 0.781 | 0.692 | 8.04  |
| 41) | Dibromochlorom... | 0.438 | 0.442 | 0.488 | 0.502 | 0.524 | 0.542 | 0.654 | 0.513 | 14.31 |
| 42) | 1,2-Dibromoethane | 0.456 | 0.443 | 0.480 | 0.471 | 0.465 | 0.471 | 0.546 | 0.476 | 6.95  |
| 43) | Tetrachloroethene | 0.480 | 0.476 | 0.477 | 0.467 | 0.472 | 0.477 | 0.584 | 0.490 | 8.48  |

|     |   |                   |       |       |       |       |       |       |       |       |
|-----|---|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| 44) | I | Chlorobenzene d5  |       |       |       |       |       |       |       |       |
| 45) |   | Chlorobenzene     | 1.010 | 0.931 | 0.970 | 0.933 | 0.914 | 0.900 | 1.168 | 0.975 |
| 46) |   | Ethylbenzene      | 1.627 | 1.520 | 1.558 | 1.517 | 1.480 | 1.474 | 1.960 | 1.591 |
| 47) |   | m,p-Xylene        | 1.276 | 1.203 | 1.236 | 1.187 | 1.156 | 1.168 | 1.607 | 1.262 |
| 48) |   | Bromoform         |       | 0.371 | 0.434 | 0.470 | 0.476 | 0.483 | 0.613 | 0.474 |
| 49) |   | Styrene           |       | 0.758 | 0.885 | 0.861 | 0.808 | 0.789 | 0.995 | 0.849 |
| 50) |   | 1,1,2,2-Tetrac... | 0.914 | 0.846 | 0.920 | 0.884 | 0.793 | 0.705 | 0.830 | 0.842 |
| 51) |   | o-Xylene          | 1.313 | 1.233 | 1.250 | 1.167 | 1.112 | 1.093 | 1.460 | 1.233 |
| 52) | S | Bromofluoroben... | 0.539 | 0.547 | 0.599 | 0.594 | 0.551 | 0.544 | 0.559 | 0.562 |
| 53) |   | 4-Ethyl Toluene   |       | 1.377 | 1.612 | 1.778 | 1.615 | 1.394 | 1.644 | 1.570 |
| 54) |   | 1,3,5-Trimethy... |       | 1.407 | 1.581 | 1.611 | 1.414 | 1.197 | 1.399 | 1.435 |
| 55) |   | 1,2,4-Trimethy... |       | 1.188 | 1.417 | 1.540 | 1.423 | 1.146 | 1.251 | 1.327 |
| 56) |   | Benzyl Chloride   |       | 0.222 | 0.348 | 0.551 | 0.743 | 0.828 | 0.838 | 0.588 |
| 57) |   | m-Dichlorobenzene |       | 0.475 | 0.592 | 0.781 | 0.787 | 0.676 | 0.686 | 0.666 |
| 58) |   | p-Dichlorobenzene |       | 0.360 | 0.460 | 0.647 | 0.694 | 0.624 | 0.616 | 0.567 |
| 59) |   | o-Dichlorobenzene |       | 0.488 | 0.620 | 0.747 | 0.759 | 0.607 | 0.556 | 0.630 |
| 60) |   | 1,2,4-Trichlor... |       | 0.008 | 0.021 | 0.041 | 0.063 | 0.093 | 0.103 | 0.055 |
| 61) |   | Hexachloro-1,3... |       | 0.150 | 0.190 | 0.225 | 0.247 | 0.272 | 0.227 | 0.219 |

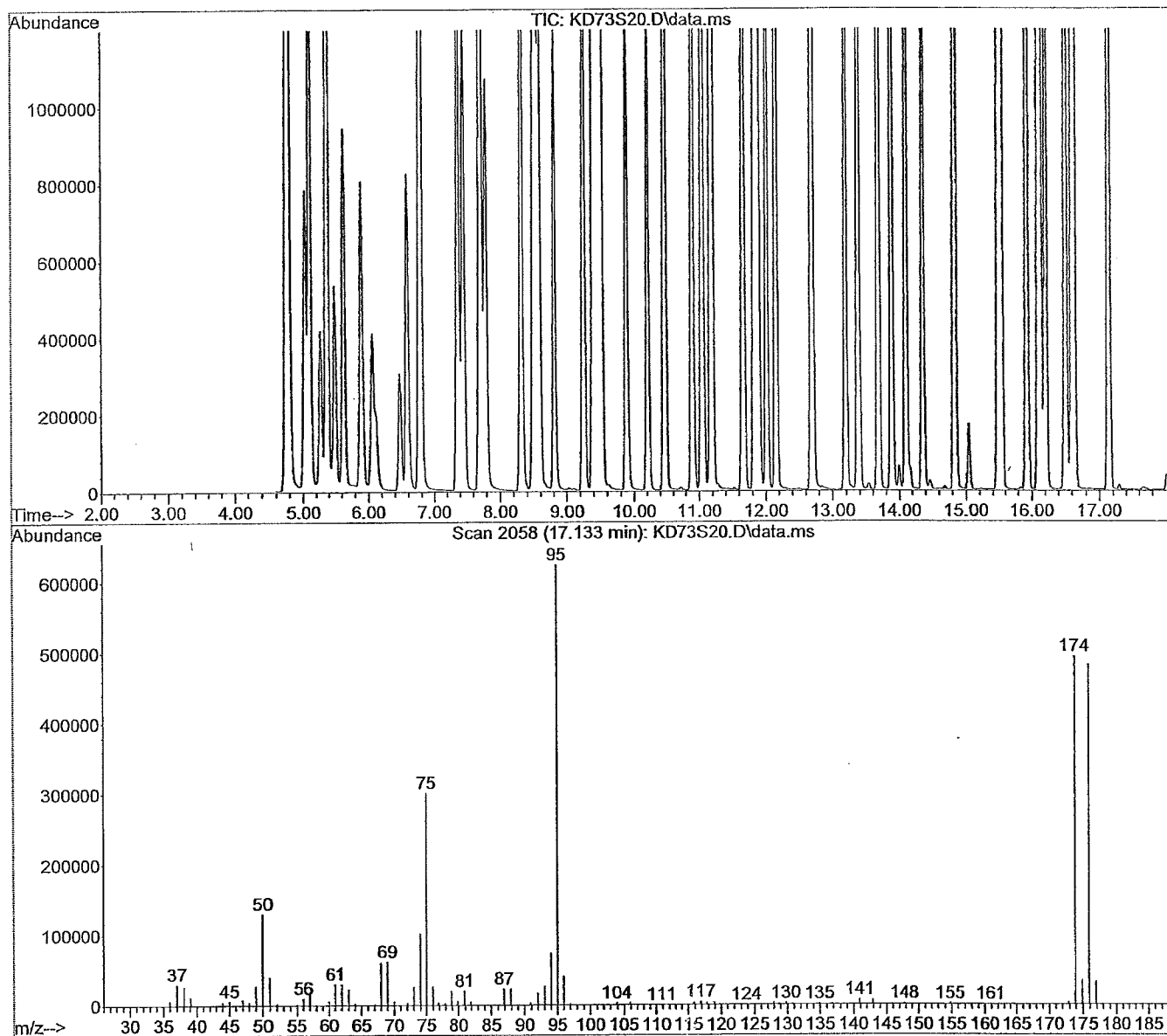
(#) = Out of Range



BFB

Data File : P:\K-5975-K\2018\NOV18\12NOV18\KD73S20.D Vial: 4  
Acq Time : 11/12/2018 17:26 Operator: BB  
Sample : 20 PPB Inst : 5975-K  
Misc : (400ml) 44730 Multiplr: 1.00  
MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)  
Title : TO-15



Peak Apex is scan: Scan 2058

| Target | Rel. to | Lower  | Upper  | Rel.   | Raw    | Result    |
|--------|---------|--------|--------|--------|--------|-----------|
| Mass   | Mass    | Limit% | Limit% | Abn%   | Abn    | Pass/Fail |
| 50     | 95      | 8      | 30     | 20.77  | 129664 | PASS      |
| 75     | 95      | 30     | 66     | 48.22  | 301056 | PASS      |
| 95     | 95      | 100    | 100    | 100.00 | 624320 | PASS      |
| 96     | 95      | 5      | 9      | 6.54   | 40816  | PASS      |
| 173    | 174     | 0.00   | 2      | 0.61   | 2991   | PASS      |
| 174    | 95      | 50     | 120    | 79.13  | 494016 | PASS      |
| 175    | 174     | 5      | 9      | 7.03   | 34728  | PASS      |
| 176    | 174     | 93     | 101    | 97.53  | 481792 | PASS      |
| 177    | 176     | 5      | 9      | 6.70   | 32288  | PASS      |

Scan 2058 (17.133 min): KD73S20.D\data.ms

PPB

| m/z    | Abundance |
|--------|-----------|
| 36.00  | 5784.0    |
| 37.00  | 29920.0   |
| 38.10  | 26176.0   |
| 39.10  | 11047.0   |
| 39.90  | 670.0     |
| 43.10  | 780.0     |
| 44.00  | 4287.0    |
| 45.00  | 5821.0    |
| 46.10  | 365.0     |
| 47.00  | 8078.0    |
| 48.00  | 3772.0    |
| 49.00  | 26976.0   |
| 50.00  | 129664.0  |
| 51.00  | 39952.0   |
| 52.00  | 1785.0    |
| 55.00  | 1534.0    |
| 56.00  | 10029.0   |
| 57.00  | 18488.0   |
| 58.00  | 916.0     |
| 60.00  | 5689.0    |
| 61.00  | 29784.0   |
| 62.00  | 29760.0   |
| 63.00  | 22456.0   |
| 64.00  | 2214.0    |
| 65.00  | 384.0     |
| 67.00  | 1573.0    |
| 68.00  | 59856.0   |
| 69.00  | 61440.0   |
| 70.00  | 5137.0    |
| 72.00  | 2758.0    |
| 73.00  | 25728.0   |
| 74.00  | 101488.0  |
| 75.00  | 301056.0  |
| 76.00  | 26200.0   |
| 76.90  | 3068.0    |
| 77.90  | 2150.0    |
| 78.90  | 19496.0   |
| 79.90  | 5473.0    |
| 80.90  | 20112.0   |
| 81.90  | 4060.0    |
| 82.90  | 784.0     |
| 86.00  | 694.0     |
| 86.90  | 23072.0   |
| 87.90  | 22648.0   |
| 90.90  | 3070.0    |
| 92.00  | 16768.0   |
| 93.00  | 26760.0   |
| 94.00  | 73592.0   |
| 95.00  | 624320.0  |
| 96.00  | 40816.0   |
| 97.00  | 1535.0    |
| 102.80 | 457.0     |
| 103.90 | 3032.0    |
| 104.90 | 1127.0    |
| 105.90 | 2880.0    |
| 106.80 | 748.0     |
| 109.90 | 567.0     |
| 110.80 | 665.0     |
| 111.80 | 639.0     |
| 112.90 | 662.0     |
| 114.80 | 656.0     |
| 115.90 | 2315.0    |
| 116.90 | 4373.0    |
| 117.80 | 2645.0    |
| 118.90 | 3567.0    |
| 123.80 | 382.0     |
| 127.90 | 2232.0    |
| 128.80 | 999.0     |
| 129.80 | 2283.0    |
| 130.80 | 936.0     |
| 134.90 | 1295.0    |
| 136.80 | 1075.0    |
| 139.80 | 353.0     |
| 140.90 | 6950.0    |
| 141.90 | 804.0     |
| 142.90 | 6571.0    |
| 143.90 | 495.0     |
| 144.90 | 681.0     |
| 145.80 | 834.0     |
| 146.80 | 423.0     |
| 147.80 | 1616.0    |
| 148.90 | 350.0     |
| 149.70 | 458.0     |
| 153.00 | 358.0     |
| 153.90 | 382.0     |
| 154.80 | 1395.0    |
| 156.90 | 1135.0    |
| 158.90 | 638.0     |
| 160.90 | 704.0     |

|        |          |
|--------|----------|
| 172.10 | 409.0    |
| 172.90 | 2991.0   |
| 173.90 | 494016.0 |
| 174.90 | 34728.0  |
| 175.90 | 481792.0 |
| 176.90 | 32288.0  |
| 177.90 | 968.0    |

BFB

Data File : P:\K-5975-K\2018\DEC18\19DEC18\KE52BFB.D

Vial: 3

Acq Time : 12/19/2018 11:42

Operator: BB

Sample : BFB

Inst : 5975-K

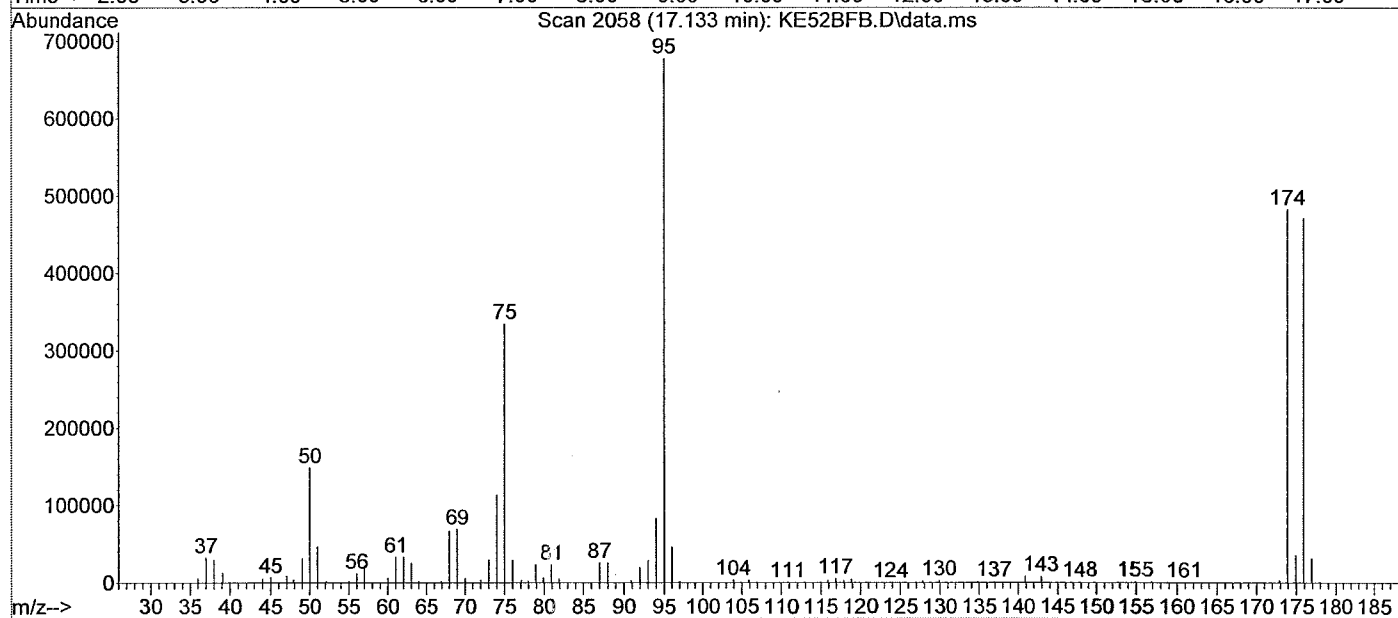
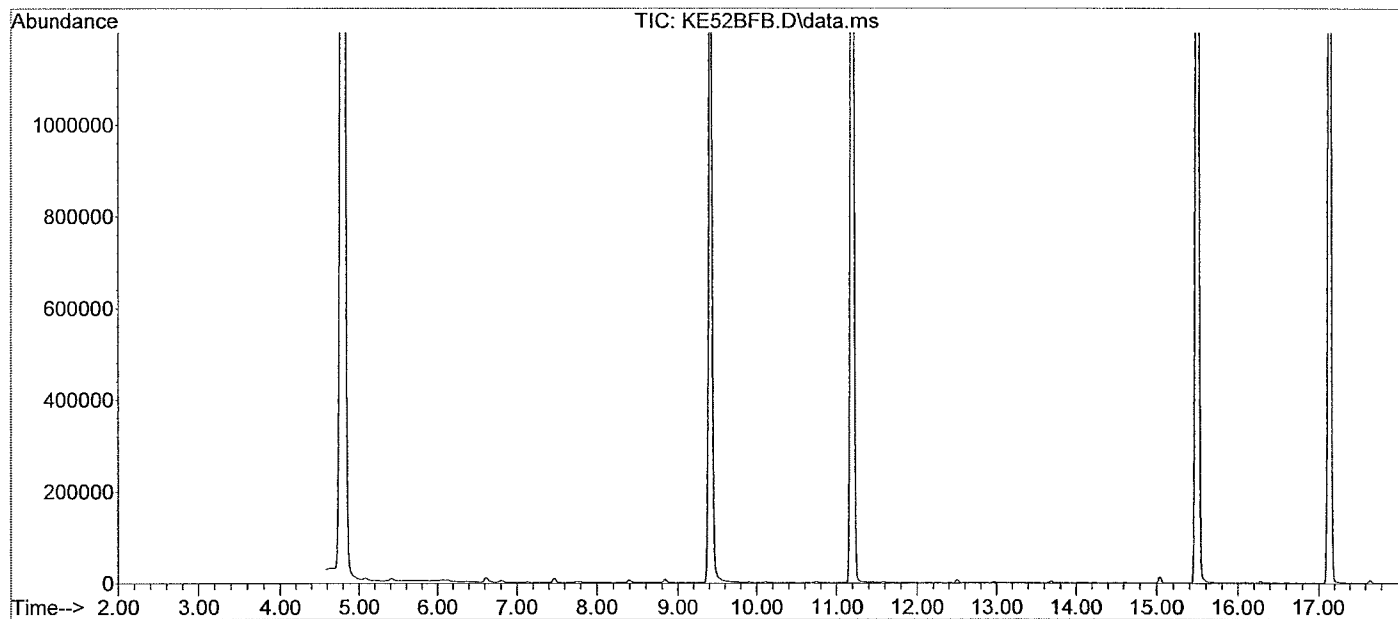
Misc : 44228

Multiplr: 1.00

MS Integration Params: rteint.p

Method : P:\K-5975-K\METHODS\TO15KH18.m (RTE Integrator)

Title : TO-15



Peak Apex is scan: Scan 2058

| Target | Rel. to | Lower  | Upper  | Rel.   | Raw    | Result    |
|--------|---------|--------|--------|--------|--------|-----------|
| Mass   | Mass    | Limit% | Limit% | Abn%   | Abn    | Pass/Fail |
| 50     | 95      | 8      | 30     | 21.90  | 148352 | PASS      |
| 75     | 95      | 30     | 66     | 49.37  | 334400 | PASS      |
| 95     | 95      | 100    | 100    | 100.00 | 677376 | PASS      |
| 96     | 95      | 5      | 9      | 6.76   | 45800  | PASS      |
| 173    | 174     | 0.00   | 2      | 0.61   | 2928   | PASS      |
| 174    | 95      | 50     | 120    | 71.19  | 482240 | PASS      |
| 175    | 174     | 5      | 9      | 7.26   | 34992  | PASS      |
| 176    | 174     | 93     | 101    | 97.61  | 470720 | PASS      |
| 177    | 176     | 5      | 9      | 6.58   | 30960  | PASS      |

can 2058 (17.133 min): KE52BFB.D\data.ms  
=B

| m/z    | Abundance |
|--------|-----------|
| 36.00  | 5497.0    |
| 37.00  | 32384.0   |
| 38.00  | 29216.0   |
| 39.10  | 12561.0   |
| 40.00  | 767.0     |
| 43.00  | 418.0     |
| 44.00  | 4864.0    |
| 45.00  | 6490.0    |
| 46.00  | 575.0     |
| 47.00  | 8668.0    |
| 47.90  | 3966.0    |
| 49.00  | 30880.0   |
| 50.00  | 148352.0  |
| 51.00  | 46280.0   |
| 52.10  | 1595.0    |
| 55.00  | 2000.0    |
| 56.00  | 11889.0   |
| 57.00  | 21952.0   |
| 57.90  | 915.0     |
| 60.00  | 6138.0    |
| 61.00  | 33032.0   |
| 62.00  | 32728.0   |
| 63.00  | 25064.0   |
| 64.00  | 2267.0    |
| 66.90  | 1783.0    |
| 68.00  | 66440.0   |
| 69.00  | 69064.0   |
| 70.00  | 5365.0    |
| 72.00  | 3321.0    |
| 73.00  | 29496.0   |
| 74.00  | 113376.0  |
| 75.00  | 334400.0  |
| 76.00  | 28832.0   |
| 77.10  | 2982.0    |
| 77.90  | 2047.0    |
| 78.90  | 23456.0   |
| 79.90  | 6101.0    |
| 80.90  | 23304.0   |
| 81.90  | 5115.0    |
| 82.90  | 565.0     |
| 86.00  | 658.0     |
| 87.00  | 25712.0   |
| 88.00  | 25192.0   |
| 90.90  | 2684.0    |
| 92.00  | 19408.0   |
| 93.00  | 28712.0   |
| 94.00  | 83376.0   |
| 95.00  | 677376.0  |
| 96.00  | 45800.0   |
| 97.00  | 1570.0    |
| 103.90 | 3566.0    |
| 104.90 | 1024.0    |
| 105.90 | 3222.0    |
| 106.90 | 723.0     |
| 109.80 | 593.0     |
| 110.80 | 779.0     |
| 111.80 | 568.0     |
| 112.90 | 879.0     |
| 114.90 | 738.0     |
| 115.90 | 2900.0    |
| 116.90 | 5111.0    |
| 117.90 | 2659.0    |
| 118.90 | 4189.0    |
| 123.80 | 380.0     |
| 127.80 | 2455.0    |
| 128.80 | 1317.0    |
| 129.90 | 2710.0    |
| 130.80 | 1003.0    |
| 134.80 | 1230.0    |
| 136.90 | 1444.0    |
| 139.80 | 388.0     |
| 140.90 | 7829.0    |
| 141.90 | 880.0     |
| 142.90 | 8021.0    |
| 143.80 | 502.0     |
| 144.90 | 803.0     |
| 145.80 | 815.0     |
| 146.80 | 450.0     |
| 147.90 | 1343.0    |
| 148.90 | 369.0     |
| 149.80 | 721.0     |
| 152.80 | 576.0     |
| 153.90 | 453.0     |
| 154.90 | 1495.0    |
| 156.90 | 1074.0    |
| 158.90 | 700.0     |
| 160.90 | 728.0     |
| 172.90 | 2928.0    |
| 173.90 | 482240.0  |

|        |          |
|--------|----------|
| 174.90 | 34992.0  |
| 175.90 | 470720.0 |
| 176.90 | 30960.0  |
| 177.90 | 913.0    |

## Evaluate Continuing Calibration Report

Data Path : P:\K-5975-K\2018\DEC18\19DEC18\  
 Data File : KE53LCS.D  
 Acq On : 12/19/2018 12:21  
 Operator : BB  
 Sample : 10 PPB LCS  
 Inst : 5975-K  
 Misc : (200ml) 45202 44228  
 ALS Vial : 2 Sample Multiplier: 1

Quant Time: Dec 19 13:06:58 2018  
 Quant Method : I:\K-5975-K\METHODS\TO15KH18.m  
 Quant Title : TO-15  
 QLast Update : Wed Dec 05 10:49:41 2018  
 Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 30% Max. Rel. Area : 150%

|      | Compound                  | AvgRF  | CCRF   | %Dev  | Area% | Dev(min) |
|------|---------------------------|--------|--------|-------|-------|----------|
| 1 I  | Bromochloromethane        | 1.000  | 1.000  | 0.0   | 92    | 0.00     |
| 2    | Dichlorodifluoromethane   | 11.018 | 11.022 | -0.0  | 95    | 0.01     |
| 3    | Chloromethane             | 3.013  | 3.469  | -15.1 | 104   | 0.00     |
| 4    | Freon 114                 | 7.726  | 8.122  | -5.1  | 98    | 0.01     |
| 5    | Vinyl Chloride            | 3.467  | 3.802  | -9.7  | 98    | 0.00     |
| 6    | 1,3-Butadiene             | 2.726  | 2.957  | -8.5  | 97    | 0.00     |
| 7    | Bromomethane              | 3.297  | 3.506  | -6.3  | 97    | 0.00     |
| 8    | Chloroethane              | 2.220  | 2.303  | -3.7  | 97    | 0.00     |
| 9    | Acetone                   | 6.217  | 5.816  | 6.5   | 92    | 0.00     |
| 10   | Trichlorofluoromethane    | 9.817  | 9.243  | 5.8   | 91    | 0.00     |
| 11   | 1,1-Dichloroethene        | 6.002  | 5.721  | 4.7   | 91    | 0.00     |
| 12   | Methylene Chloride        | 3.298  | 2.863  | 13.2  | 90    | 0.00     |
| 13   | Freon 113                 | 6.089  | 5.374  | 11.7  | 86    | 0.00     |
| 14   | Carbon Disulfide          | 8.097  | 7.777  | 4.0   | 86    | 0.00     |
| 15   | trans-1,2-Dichloroethene  | 3.609  | 3.275  | 9.3   | 87    | 0.00     |
| 16   | 1,1-Dichloroethane        | 6.724  | 6.247  | 7.1   | 90    | 0.00     |
| 17   | methyl t-butyl ether      | 10.100 | 8.931  | 11.6  | 85    | 0.00     |
| 18   | Vinyl Acetate             | 0.913  | 0.859  | 5.9   | 86    | 0.00     |
| 19   | 2-Butanone                | 7.935  | 7.429  | 6.4   | 91    | 0.00     |
| 20   | cis-1,2-Dichloroethene    | 3.766  | 3.451  | 8.4   | 87    | 0.00     |
| 21 I | 1,4-Difluorobenzene       | 1.000  | 1.000  | 0.0   | 98    | 0.00     |
| 22   | Ethyl Acetate             | 0.104  | 0.092  | 11.5  | 90    | 0.00     |
| 23   | Hexane                    | 0.502  | 0.459  | 8.6   | 94    | 0.00     |
| 24   | Chloroform                | 0.600  | 0.519  | 13.5  | 89    | 0.00     |
| 25   | Tetrahydrofuran           | 0.332  | 0.302  | 9.0   | 92    | 0.00     |
| 26   | 1,2-Dichloroethane        | 0.404  | 0.357  | 11.6  | 90    | 0.00     |
| 27   | 1,1,1-Trichloroethane     | 0.627  | 0.542  | 13.6  | 88    | 0.00     |
| 28   | Benzene                   | 0.832  | 0.710  | 14.7  | 88    | 0.00     |
| 29   | Carbon Tetrachloride      | 0.630  | 0.565  | 10.3  | 90    | 0.00     |
| 30   | Cyclohexane               | 0.421  | 0.364  | 13.5  | 90    | 0.00     |
| 31   | 1,2-Dichloropropane       | 0.324  | 0.281  | 13.3  | 89    | 0.00     |
| 32   | Bromodichloromethane      | 0.577  | 0.508  | 12.0  | 88    | 0.00     |
| 33   | Trichloroethene           | 0.424  | 0.355  | 16.3  | 86    | 0.00     |
| 34   | Heptane                   | 0.320  | 0.280  | 12.5  | 89    | 0.00     |
| 35   | cis-1,3-Dichloropropene   | 0.455  | 0.396  | 13.0  | 86    | 0.00     |
| 36   | 4-Methyl-2-Pentanone      | 0.790  | 0.711  | 10.0  | 92    | 0.00     |
| 37   | trans-1,3-Dichloropropene | 0.373  | 0.334  | 10.5  | 84    | 0.00     |
| 38   | 1,1,2-Trichloroethane     | 0.337  | 0.278  | 17.5  | 86    | 0.00     |
| 39   | Toluene                   | 0.990  | 0.841  | 15.1  | 87    | 0.00     |
| 40   | 2-Hexanone                | 0.692  | 0.613  | 11.4  | 87    | 0.00     |
| 41   | Dibromochloromethane      | 0.513  | 0.451  | 12.1  | 85    | 0.00     |
| 42   | 1,2-Dibromoethane         | 0.476  | 0.399  | 16.2  | 85    | 0.00     |
| 43   | Tetrachloroethene         | 0.490  | 0.395  | 19.4  | 82    | 0.00     |

|    |   |                           |       |       |       |     |                 |
|----|---|---------------------------|-------|-------|-------|-----|-----------------|
| 44 | I | Chlorobenzene d5          | 1.000 | 1.000 | 0.0   | 102 | 0.00            |
| 45 |   | Chlorobenzene             | 0.975 | 0.762 | 21.8  | 85  | 0.00            |
| 46 |   | Ethylbenzene              | 1.591 | 1.227 | 22.9  | 85  | 0.00            |
| 47 |   | m,p-Xylene                | 1.262 | 0.954 | 24.4  | 84  | 0.00            |
| 48 |   | Bromoform                 | 0.474 | 0.374 | 21.1  | 80  | 0.00            |
| 49 |   | Styrene                   | 0.849 | 0.642 | 24.4  | 81  | 0.00            |
| 50 |   | 1,1,2,2-Tetrachloroethane | 0.842 | 0.645 | 23.4  | 83  | 0.00            |
| 51 |   | o-Xylene                  | 1.233 | 0.904 | 26.7  | 83  | 0.00            |
| 52 | S | Bromofluorobenzene        | 0.562 | 0.545 | 3.0   | 101 | 0.00            |
| 53 |   | 4-Ethyl Toluene           | 1.570 | 1.303 | 17.0  | 82  | 0.00            |
| 54 |   | 1,3,5-Trimethylbenzene    | 1.435 | 1.151 | 19.8  | 83  | 0.00            |
| 55 |   | 1,2,4-Trimethylbenzene    | 1.327 | 1.139 | 14.2  | 82  | 0.00            |
| 56 |   | Benzyl Chloride           | 0.588 | 0.556 | 5.4   | 76  | 0.00 <i>est</i> |
| 57 |   | m-Dichlorobenzene         | 0.666 | 0.602 | 9.6   | 78  | 0.00            |
| 58 |   | p-Dichlorobenzene         | 0.567 | 0.538 | 5.1   | 79  | 0.00            |
| 59 |   | o-Dichlorobenzene         | 0.630 | 0.577 | 8.4   | 78  | 0.00            |
| 60 |   | 1,2,4-Trichlorobenzene    | 0.055 | 0.033 | 40.0# | 53  | 0.00 <i>est</i> |
| 61 |   | Hexachloro-1,3-butadiene  | 0.219 | 0.162 | 26.0  | 67  | 0.00 <i>est</i> |

(#) = Out of Range

SPCC's out = 0 CCC's out = 0

015KH18.m Thu Dec 20 09:21:22 2018



## GC/MS QA-QC Check Report

une File : P:\K-5975-K\2018\DEC18\19DEC18\KE53LCS.D

une Time : 19 Dec 2018 12:21 pm

aily Calibration File : P:\K-5975-K\2018\DEC18\19DEC18\KE53LCS.D

| File      | Sample     | Surrogate Recovery % | 277824 | 3704570 | 2871380 |
|-----------|------------|----------------------|--------|---------|---------|
| E54LCSD.D |            |                      |        |         |         |
|           | 10 PPB LCS | 97                   | 280576 | 3666931 | 2804694 |
| E55RLVS.D |            |                      |        |         |         |
|           | 0.5 PPB RL | 101                  | 256960 | 3463997 | 2925244 |
| E57BLK.D  |            |                      |        |         |         |
|           | BLANK      | 96                   | 225536 | 3019956 | 2228811 |
| E68I002.D |            |                      |        |         |         |
|           | 1835293002 | 96                   | 247232 | 3355268 | 2534724 |
| E69I004.D |            |                      |        |         |         |
|           | 1835293004 | 95                   | 277184 | 3371825 | 2595226 |
| E72I003.D |            |                      |        |         |         |
|           | 1835293003 | 97                   | 241280 | 3118895 | 2668385 |
| E74I004.D |            |                      |        |         |         |
|           | 1835293004 | 96                   | 224192 | 2966214 | 2522375 |
| E75I001.D |            |                      |        |         |         |
|           | 1835293001 | 93                   | 240128 | 3028147 | 2493547 |
| E76I003.D |            |                      |        |         |         |
|           | 1835293003 | 91                   | 279808 | 3231665 | 2661733 |

fails) - fails 24hr time check \* - fails criteria

Created: Thu Dec 27 07:33:42 2018 5975-K