ASKIN & HOOKER, LLC

COMBINED 2020 ANNUAL P-8 PERFORMANCE MONITORING REPORT AND 5-YEAR SUPPLEMENTAL REMEDIAL ACTION REVIEW

FORMER GENERAL INSTRUMENT CORPORATION FACILITY SHERBURNE, NEW YORK (#709010)

JANUARY 28, 2021

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1 INTRODUCTION

WSP USA Inc. (WSP), on behalf of Vishay GSI, Inc. (VGSI; a corporate successor of General Instrument Corporation [GIC]), has prepared this combined annual groundwater performance monitoring report and 5-year remedial action review for the former GIC facility in Sherburne, New York (Figure 1). The performance monitoring is the remaining[1,2], portion of a much larger sampling program, begun in the late 1990s, designed to evaluate the efficacy of a permeable reactive barrier (PRB) constructed to treat dissolved chlorinated volatile organic compounds (CVOCs) migrating westward from the site. The program included a network of monitoring wells positioned both upgradient and downgradient of the barrier. Concerns about the performance of the barrier in the early 2000s led to development of an expanded monitoring well network, additional groundwater investigation, and eventually to a supplemental remedial action in 2009 to address CVOCs that remained upgradient of the PRB. That remedial action was effective at addressing the affected groundwater in the treatment areas, except for one location upgradient of the barrier near monitoring well P-8 (Sheet 1). A follow-up investigation was conducted and, based on the results, a second supplemental remedial action (designated as the P-8 supplemental remedial action) was completed in 2014 to address the recalcitrant CVOCs.

This report details of the annual P-8 supplemental remedy performance monitoring program, including the 2020 sampling results and an assessment of the overall efficacy of the treatment. As demonstrated in this report, the P-8 remedial action was successful at treating the recalcitrant CVOCs at the site and has achieved the established remedial goals. WSP proposes to suspend the monitoring program and to meet with the New York State Department of Environmental Conservation (NYSDEC) either in-person (if conditions are appropriate) or via a call in first half of 2021 to discuss the administrative path forward to closure.

All the work at the site is being performed in accordance with the Order on Consent (#A701578810), signed by GIC on August 1, 1989, and a *Record of Decision* (ROD), issued for the site in December 1994 by the NYSDEC. The activities outlined in this report are based on select portions of the approved *Combined Pre-Design Investigation Report and P-8 Area Supplemental Remedial Investigation Work Plan*, dated January 9, 2014; the *Combined June 2015 Semiannual Groundwater Sampling Report and P-8 Supplemental Remedial Action Performance Monitoring Report and 12-Month Review*, dated January 5, 2016; and were conducted in accordance with WSP's standard operating procedures (SOPs; Appendix A).

1.1 REPORT ORGANIZATION

This report is organized into seven sections, including this introduction:

- Section 2 describes the site location and operational history of the facility, provides background on the previous investigation and remedial measures implemented at the site, and summarizes the remedial performance sampling programs, including recent modifications;
- Section 3 outlines the scope of work for the modified P-8 performance monitoring activities that include the sampling of well P-8 within the treatment area and, for 2020, all remaining wells at the site;
- Section 4 presents the findings of the modified performance monitoring program, including the groundwater elevations and analytical results for the remaining monitoring wells;
- Section 5 details the interpretation of the analytical results from samples collected from locations both within and outside the P-8 treatment area;

[1] The performance monitoring program associated with the permeable reactive barrier and the subsequent 2009 remedial action were modified 2017. The changes included an end to the barrier-specific and 2009 supplemental remediation performance monitoring programs, and the subsequent abandoned of all but six groundwater monitoring wells at the site. Sampling of the remaining six wells, which is part of the P-8 supplemental remedial action performance monitoring program, is detailed in this report. See Section 2.2 for additional information.

[2] Initial modifications to the groundwater sampling programs are discussed in the *Combined June 2015 Semiannual Groundwater Sampling Report and P-8 Supplemental Remedial Action Performance Monitoring Report and 12-Month Review*, dated January 5, 2016 (P-8 12-Month Review; WSP 2016).

- Section 6 presents the assessment of the efficacy of the treatment program, the conclusions including evidence that the supplemental treatment has achieved the stated remedial goals, and recommendations for suspending the sampling program;
- Section 7 presents the references cited in the document; and
- Section 8 lists the acronyms used in the text.

It is important to note that this report details the results of the *modified* sampling program, per the NYSDEC's November 7, 2017, response and approval of WSP's October 2017 proposed program modifications. The details of the modified sampling program, which includes sampling the six remaining wells at the site, are presented below.

2 BACKGROUND

The former GIC site is located at 1 Kenyon Press Drive in Sherburne, Chenango County, New York (Figure 1). Originally developed in 1947 for the Technical Appliance Corporation of America, the 5.5-acre site was purchased by Jerrold Electronic Corporation in 1962 and by GIC in 1969. General Instrument used the facility to produce aluminum television antennas, antenna controllers, and other small electronics from 1969 until manufacturing operations ceased in 1983. The facility was decommissioned and subsequently sold in 1989 to Kenyon Press, Inc., a commercial printing company. Kenyon Press, which was in business at the site following their purchase, reportedly ended operations at the former GIC facility in November 2018.

The major physical features of the site include a 75,000-square-foot main building formerly used for manufacturing, warehousing, and administration, and a 4,900-square-foot plating building formerly used for plating, etching, and vapor degreasing (Sheet 1). The site also includes two other buildings, a 1,600-square-foot garage near the southeast corner of the main building that was formerly used as a maintenance shop, and a 2,800-square-foot wooden shed near the western property line that was formerly used to store machinery and materials.

The site is surrounded by a bulk petroleum storage facility, and Mirabito Convenience Store[3] (and gasoline station) to the north; light commercial property to the east and south; the Delaware Lackawanna & Western Railroad (DL&W) Railroad to the west; and further to the west by agricultural fields (Sheet 1). VGSI currently leases a portion of the agricultural fields west of the site to allow access for investigation and remedial activities.

2.1 PREVIOUS INVESTIGATION AND REMEDIATION

General Instrument ceased operations and closed the Sherburne facility in 1983. An investigation conducted as part of the closure activities revealed organic and inorganic compounds in soil samples collected from the northwest corner of the facility near the former plating room (Sheet 1). General Instrument excavated and removed the contaminated onsite soils shortly after the soil evaluation was concluded and, in 1985, initiated a groundwater investigation that included the installation of nine groundwater monitoring wells and six piezometers. The results of the investigation indicated the presence of tetrachloroethene (PCE), trichloroethene (TCE), and several other CVOCs in groundwater along the western (downgradient) edge of the property.

The site was designated by the NYSDEC as a Class 2 inactive hazardous waste site in 1987 and GIC agreed, via a 1989 consent agreement, to perform a remedial investigation/feasibility study (RI/FS). The RI/FS, conducted by Stearns and Wheler, LLC (S&W), of Cazenovia, New York, was completed in 1993. The RI identified CVOCs in the soil beneath the plating building; free-phase petroleum product (fuel oil) floating on the groundwater near the northwest loading dock; and a CVOC-affected groundwater plume in the uppermost water-bearing unit extending west beneath a portion of the adjacent property.

A ROD was issued by the NYSDEC in December 1994 approving remedies S&W developed as part of a remedial design and remedial action plan (RD/RA) to address the issues identified in the RI/FS. The RD/RA included the installation of a soil vapor extraction system to treat the unsaturated soil beneath the plating building and a groundwater recovery and treatment system to address the free-phase petroleum (Sheet 1). Both systems were installed, operated, and eventually decommissioned in the mid to late 1990s by S&W after the NYSDEC agreed that their respective cleanup targets had been achieved.

The remedial action developed by S&W for the dissolved CVOC groundwater plume was a passive *in situ* PRB, which was designed to reductively dechlorinate the affected groundwater. In 1997, based on their interpretation of a funnel-and-gate pilot test, S&W installed a full-scale, granular zero-valent iron (ZVI) PRB consisting of two parallel walls oriented roughly north-south and perpendicular to their interpretation of regional groundwater flow (Sheet 1). The longer of the two walls is approximately 410 feet long and was designed to cover the entire breadth of the CVOC-affected groundwater plume. The second, smaller (120-foot-long) wall was installed approximately 30 feet east of the main wall section to provide additional groundwater treatment where the highest CVOC concentrations were expected (i.e., along the core of the affected groundwater plume). Both walls are comprised of granular ZVI extending through the uppermost water-bearing unit from about 3 feet below

[3] Formerly named the Quickway Convenience Store and Gasoline Station.

ground surface (bgs) to approximately 21 feet bgs where they are keyed into a clay unit that underlies the aquifer. Both walls are approximately 1-foot thick. Stearns and Wheler installed a network of groundwater wells in and around the PRB and monitored the performance of the PRB on a quarterly basis for a period of approximately two years after the installation, and twice per year thereafter.

2.1.1 ADDITIONAL INVESTIGATION

The NYSDEC expressed concerns in 2001 regarding the performance of the PRB, including apparent shifts in the groundwater flow directions and changes in the CVOC distribution. To address these concerns, WSP (at the request of VGSI) completed a technical review and developed a conceptual site model using historical groundwater data (ESC Engineering, 2004a and 2004b). The results indicated a slight groundwater mound located east (upgradient) of the barrier, which appeared to be diverting a portion of the groundwater plume around the ends of the PRB along two flow lines designated as the northern and southern flow lines. Samples from additional wells installed by WSP in 2005 (MW-31 through MW-39) indicated some systematic decrease of CVOC concentrations along the northern and southern flow lines with the concentrations near the ends and further downgradient of the barrier one to two orders of magnitude below those in samples from the area around P-8 and MW-17 (i.e., upgradient of the PRB where the highest concentrations of CVOCs were consistently detected; ESC Engineering, 2006). The data suggested that, while the PRB was not performing exactly as designed, the bulk of the untreated CVOCs had not flowed around the ends of the barrier and instead remained upgradient of the treatment system.

WSP followed the technical review and groundwater well installation with pre-design investigations conducted in 2008. The investigations were intended to refine the extent of the CVOCs and evaluate potential remedial alternatives for the CVOC-affected groundwater bypassing the PRB. The results revealed that the relatively high concentrations of CVOCs at MW-17 and P-8 were limited in extent and indicated that no significant concentrations of CVOCs were present in the former source area on the main site (WSP Engineering of New York, 2009a; Sheet 1). The CVOCs that were detected in and around MW-17 and P-8 were dominated by dechlorination breakdown products, such as 1,2-dichloroethene (1,2-DCE) and vinyl chloride. Analysis of the carbon stable isotope ratios in the CVOCs further indicated that the compounds had biodegraded from TCE. Concurrent biological census data and geochemical data suggested that the intrinsic oxidation-reduction (redox) conditions and indigenous halorespiring microbial population could be sufficiently enhanced through the addition of an electron donor to stimulate reductive dechlorination.

2.1.2 SUPPLEMENTAL REMEDIATION

WSP implemented a supplemental remedial action plan (SRAP) in October 2009 based on the results of the 2008 pre-design investigation. The SRAP was designed to augment the PRB's treatment of the CVOC-affected groundwater that remained upgradient of the barrier (WSP Engineering of New York, 2009b). The bioremediation amendment 3-D MicroEmulsion® (3DMe) was injected into the subsurface to adjust the redox conditions and spur microbial growth within the saturated zone through the introduction of an electron donor source. The 3DMe amendment selected was a low-viscosity formulation that allowed for treatment below surface barriers such as the DL&W Railroad at the site (Sheet 1).

Two supplemental treatment areas, designated the northern and southern treatment areas, were identified based on the pre-design investigation data. The northern treatment area, centered on monitoring wells MW-17 and P-8, was treated with 108 injection points in a 10-foot by 10-foot grid covering approximately 11,800 square feet (ft^2) near the northern terminus of the PRB (i.e., along the northern flow line; Sheet 1). The southern treatment area was treated with 30 injection points (covering approximately 3,000 ft^2) positioned around wells MW-22, MW-31, and MW-32 in a pattern parallel to the southern flow line. Approximately 25,000 gallons (about 170 gallons per injection point) of the 3DMe amendment were injected into the subsurface using temporary direct-push injectors. Performance monitoring activities were conducted for two years after the October 2009 implementation of the SRAP to demonstrate the effectiveness of the injection program.

WSP completed a review of the SRAP performance monitoring data in May 2012 to assess whether the treatment goals had been achieved. As detailed in the *Combined October and December 2011 Semiannual Groundwater Sampling and Supplemental Remedial Action Review Report*, total CVOC concentrations in the northern treatment zone and areas directly downgradient had been reduced to trace concentrations and significant reductions had occurred in the southern treatment zone (WSP Engineering of New York, 2012a; Sheet 1). Bio-assays and monitored natural attenuation (MNA) samples collected over the last two quarters of 2011 showed that the halorespiring microbial populations had stabilized and that redox conditions

remained sufficient to drive ongoing enhanced reductive dechlorination. WSP concluded that the SRAP had achieved its goals in all but one monitoring point, P-8.

Groundwater samples collected from monitoring well P-8 did not exhibit the same level of CVOC mass reduction observed in the samples collected from other northern treatment area wells (Sheet 1). The compound TCE was consistently detected in post-SRAP performance monitoring samples at concentrations (8.3 to 386 micrograms per liter [µg/l]) above the evaluation criteria[4] (5 µg/l). Similarly, the concentration of *cis*-1,2-DCE (75 to 1,430 µg/l) remained above the evaluation criteria (5 µg/l) throughout the same period. The isotopic analyses of both compounds differed from the fractionation trends in the other wells in the surrounding treatment zone. These data indicated that the SRAP treatment did not have the intended effect in the area around the well.

WSP suspected that the recalcitrant CVOCs were related to lithologic differences near well P-8 and the hydraulic variations at the site (Sheet 1). Comparatively fine-grained soils (e.g., silt and silty clay; the surrounding area is silty sand and gravel) were encountered near the water table interface when the well was installed. These finer soils likely contained relatively high concentrations of adsorbed CVOCs from contact with affected groundwater earlier in the history of the plume before the dissolved CVOCs decreased to their current levels. WSP had also observed a correlation between the CVOC concentrations and the seasonal rise and fall of the water table in the post-SRAP performance monitoring data and, after further investigation, in the historical PRB groundwater monitoring results. Increased concentrations of CVOCs were detected in the P-8 samples after these soils were wetted by the rising water table.

WSP hypothesized that the adsorbed CVOCs were being mobilized via contact with the now lower concentration groundwater (via a concentration gradient – also known as back diffusion) resulting in a persistent influx of CVOCs to the groundwater. WSP also theorized that the lower permeability of the soil surrounding the well had limited the distribution and effectiveness of the SRAP injections.

2.1.3 P-8 SUPPLEMENTAL REMEDIAL ACTION PRE-DESIGN

WSP conducted a membrane interface probe (MIP) investigation in November 2012 to delineate the extent of CVOC-affected media around P-8 (Sheet 1). The MIP was selected for its capability of providing a continuous, real-time assessment of the relative level of chlorinated compounds in both saturated and unsaturated soils. The work, which was conducted in accordance with WSP's *Pre-Design Work Plan*, dated September 11, 2012, included the installation of 14 MIP borings, and designated MP-1 through MP-14, in a loose grid around the well (see enlargement of P-8 area on Sheet 2). Additional borings were installed, as necessary (using the real-time data as a guide to steer the investigation), until the extent of CVOCs in both soil and groundwater were fully defined.

The results of the investigations not only revealed elevated MIP responses indicating an area of affected media near well P-8, but outlined a zone of coincident heterogeneous soil (Sheet 2). The affected area, as defined[5] by the elevated MIP responses in borings MP-7, MP-9, MP-4 and MP-10, all contained a significantly higher fraction of fines (e.g., organic silts and clays) in the upper few feet of the soil profile as compared to the surrounding area. Moreover, the highest concentrations of CVOCs were detected within these soils and, when compared to the groundwater monitoring data, appeared to be directly related with the fluctuations in the water table. The results from MIP boring MP-7, for example, showed elevated MIP responses corresponding to a stratigraphic sequence of silt and organic-rich clay in the shallow portion of the soil profile (straddling the water table surface) with the peak MIP responses correlated to the 8-year average groundwater elevation and the historical high stands (based on the PRB and post-SRAP monitoring data for the site). The MIP responses decreased as the sediments coarsened to silty and sandy gravel with depth. Similar responses were noted in the other MIP borings outlining the heterogeneity. These data confirmed WSP's hypothesis that the recalcitrant CVOCs observed in the samples from P-8 were related to the interaction between the water table and the heterogeneous soils within the smear zone of the affected area.

[4] New York State Ambient Water Quality Standards or Guidance for Class GA water provided in the New York State Department of Environmental Conservation Division of Water, Technical, and Operation Guidance Series (1.1.1), dated June 1998, and in the April 2000 Addendum.

[5] The bounds of the heterogeneity were defined by the MIP borings, but are not depicted on Sheet 2 for clarity. See *the Combined Pre-Design Investigation Report and P-8 Supplement Remediation Work Plan*, dated January 9, 2014, for additional information.

The findings of the investigation were presented, along with WSP's proposal for a focused, supplemental remedial action to address the recalcitrant CVOCs (i.e., a polishing treatment), in the *Combined Pre-Design Investigation Report and P-8 Area Supplemental Remediation Work Plan* (P-8 Work Plan), dated January 9, 2014. The NYSDEC approved the scope of work in a letter dated, January 29, 2014.

2.1.4 P-8 SUPPLEMENTAL REMEDIAL ACTION AND 12-MONTH REVIEW

WSP implemented the approved P-8 supplemental remedial action in May 2014. The action included a focused injection program[6] in and around the soil heterogeneity where the elevated CVOC concentrations were detected during the MIP investigation, and pre- and post-treatment performance monitoring of the groundwater within the injection zone to demonstrate the efficacy of the remedy. To maximize efficient delivery of amendment, WSP established a closely-spaced injection grid pattern and used SRS-Z®, a commercial formulation variant of the National Aeronautical and Space Administration's patented EZVI® amendment, manufactured by Terra Systems, Inc., of Claymont, Delaware. The amendment, an *in situ* chemical reductant, contains two remedial technologies proven to be effective at the former GIC site: ZVI and a fermentable carbon food source to enhance anaerobic bioremediation. The SRS-Z® amendment is specifically designed for greater penetration into low-permeability soils than typical grout-style ZVI amendments. In addition, the emulsified ZVI, once injected, is relatively immobile within the subsurface. The iron can remain reactive, depending on the specific conditions, for three to five years allowing continued treatment of the CVOCs, as they diffuse from less permeable locations within the soil matrix.

The treatment zone consisted of 25 injection points within an area of approximately 1,225 ft^2, which encompassed the areal extent of the highest CVOC concentrations in groundwater and the interpreted soil heterogeneity delineated during the pre-design investigation (Sheet 2). The injection points, designated IN-139 through IN-163, were spaced approximately 7 feet apart within the grid. The amendment was introduced from the top of the anticipated water table during seasonal high stands (approximately 1,046 feet above mean sea level [AMSL; 3 to 5 feet bgs]) to the base of the upper water-bearing zone at approximately 1,029 feet AMSL (17 to 19 feet bgs). The treatment was timed to coincide with the relatively high groundwater elevations in the spring to maximize distribution of the amendment. Approximately 1,500 gallons (approximately 60 gallons per point) of pre-mixed SRS-Z® amendment was delivered to the treatment area using temporary injectors. The SRS-Z® application was immediately followed with an application of sodium bicarbonate-buffered potable water (i.e., chase water) to maximize delivery efficiency throughout the treatment zone. Approximately 1,536 gallons of sodium bicarbonate buffer solution containing 650 pounds of total sodium bicarbonate was injected immediately after the SRS-Z® application.

Pre-treatment (baseline) groundwater samples were collected from monitoring wells P-8 and MW-17 in May 2014 immediately before the injections began (Sheet 2). Performance monitoring of the P-8 supplemental remedial action included four quarters of groundwater sampling at these two wells beginning in September 2014 and continuing through June 2016. The samples were analyzed for volatile organic compounds (VOCs), general chemistry parameters (i.e., MNA parameters) indicative of dechlorinating conditions, microbial census, and compound-specific isotope analysis (CSIA) of carbon in site-related CVOCs (i.e., PCE, TCE, *cis*- and trans-1,2-DCE, and vinyl chloride; when present in the samples).

In January 2016, WSP submitted the *Combined Semiannual SRAP Monitoring and P-8 12-Month Review*. The results of the P-8 quarterly performance monitoring showed that the SRS-Z® injection was having the intended effect on the recalcitrant VOCs around P-8, with substantive changes in the dissolved CVOC composition as compared to the May 2014 pre-injection baseline results (Sheet 2). The 2014 and 2015 VOC sampling results indicated mass influx of CVOCs during periods of high groundwater elevations. These findings were expected as CVOCs in the source area become remobilized by the oscillation of the water table. Higher than expected concentrations of CVOCs were observed in nearby well MW-17 due to the migration of remobilized CVOCs from the treatment area.

These findings were supported by the geochemical data, which showed an increase in the dissolved organic carbon (DOC) leading to increasingly reducing conditions. Isotopic results reflected enrichment in the daughter products relative to the baseline results at various times; and the biological census results indicated dramatic increases in key microbes, functional genes and total microbial biomass.

[6] The P-8 supplemental remedial action is an extension of the original 2009 SRAP (i.e., a polishing treatment for the northern treatment area) designed to address recalcitrant CVOCs identified near well P-8 and, as such, uses 2009 metrics for success (i.e., 50-percent reduction of the dissolved CVOCs) established by the NYSDEC. See the *Combined Pre-Design Investigation Report and P-8 Area Supplemental Remedial Investigation Work Plan*, dated January 9, 2014, for additional information.

The conclusion of the 12-month review was that the injections were working as designed. The treatment raised the concentrations of organic carbon and ferrous iron, reduced the oxidation-reduction potential, and the abundances of dechlorinating microbes and genes that code for key enzymes needed for complete degradation of TCE to innocuous end products increased. Initial post-treatment groundwater sampling results indicated a concurrent decline in the dissolved concentrations of total CVOCs within the treatment area with the corresponding isotopic results indicated enrichment of both the parent and daughter compounds. These early results provided strong evidence that reductive dechlorination was occurring.

Subsequent data indicated an anticipated rebound in the overall CVOC concentrations in samples from wells P-8 and MW-17 largely due to the demonstrated historical relationship between the seasonal fluctuations in the water table and periodic increases in CVOCs. The geochemical, biologic, and isotopic data continued to indicate that the amendment remained active, despite the influx of CVOCs. WSP concluded that the increases in total CVOC concentrations were transient fluctuations in an expected (overall) downward concentration trend as the CVOC mass in the vadose zone was treated by the *in situ* SRS-Z®. Additional data, however, were necessary to clearly demonstrate the anticipated reductions in the CVOC mass (the results of the additional sampling beyond the 12-month review are presented below).

2.2 MODIFICATIONS TO THE PERFORMANCE MONITORING SCHEDULES

A concurrent analysis of the long-term PRB and SRAP performance monitoring results was completed during the P-8 treatment 12-month review. The long-term trend and distribution of CVOC concentrations were, at the time of the analysis, generally consistent with historical observations and interpretations, including those of the 2012 SRAP review. Groundwater elevation results consistently indicated that the PRB continued to influence the overall groundwater flow pattern by diverting a portion of the flow around both ends of the barrier, regardless of seasonal water table fluctuations. The post-SRAP CVOC concentrations in wells situated along flow lines both north and south of the PRB were consistently lower than at any time before the supplemental treatment.

The monitoring programs were modified, based on these favorable geochemical conditions and observed declines in VOC concentrations, to both discontinue sampling at a subset of the monitoring wells and the reduce the sampling frequency for the remaining wells in the network (see details of historical modifications to the performance monitoring programs in Section 2.2 below). Specifically, the monitoring program was modified as follows:

- The P-8 supplemental treatment performance monitoring program was extended through 2016; the sampling frequency was reduced from four times per year to three times per year (i.e. triannual), occurring in April, August, and December.
- The number of analyses per event was streamlined eliminating unnecessary redox indicators; the remaining analysis focused indicators of active reductive dechlorination and the end products of such reactions.
- The number of biological samples was reduced to focus on active dechlorinating microbes, the necessary functional genes, and indicators of overall microbial health.
- The frequency of the PRB and SRAP performance monitoring program was reduced to annual, and modified to exclude both wells upgradient of the PRB (e.g. MW-08, MW-18) and wells along the central portion of the barrier (e.g. MW-23, MW-26, MW-27, MW-29, MW-30, MW-35, MW-36, P-3 and P-10) where CVOCs had not been detected for nearly a decade.

At the completion of the 2016 sampling period, WSP and VGSI proposed additional modifications to the 2017 groundwater monitoring programs:

- The P-8 supplemental treatment performance monitoring program was extended through 2017 on a triannual basis (i.e., April, August and December).
- Monitoring well MW-17 was removed[7] from the P-8 triannual performance monitoring program.

[7] The concentration of CVOCs in samples collected from MW-17 had attenuated to levels below the evaluation criteria, and the corresponding geochemical and biological data indicated that reductive dechlorination had significantly diminished.

2.2.1 2017 MODIFIED PERFORMANCE MONITORING PROGRAM

The results of the 2017 modified performance monitoring program were generally consistent with historical observations and interpretations, including those of the 2012 SRAP review. Substantive decreases in the dissolved CVOC concentrations around P-8 (following the rebound evident in winter 2014 and 2015) were supported by the isotopic results, which reflected periodic ^{13}C enrichment in the daughter products relative to the parent material, as well as a long term progressive isotopic enrichment of *cis*-1,2-DCE and vinyl chloride through time. The biological census results indicated modest declines abundances of key microbes, functional genes and total microbial biomass at P-8, which were expected based on the observed reductions in VOC concentrations. Taken together, these data were interpreted as strong evidence that the SRS-Z® injection was having the intended effect and additional modifications to the performance monitoring programs were proposed at the end of 2017.

WSP submitted a request to the Department prior to the 3rd triannual sampling event at the end of 2017. That request, subsequently approved[8] by the NYSDEC, included the following modifications:

- The PRB performance monitoring program was discontinued and most of the monitoring wells at the site (i.e., MW-2, MW-8, MW-14, MW-18, MW-20, MW-21, MW-24, MW-25, MW-28, MW-33, MW-35 through MW-39, P-3, P-10 and P-11) were identified for decommissioning (the wells were abandoned in February 2018).
- The frequency of the P-8 area performance monitoring was reduced to an annual basis, beginning in April[9] 2018; three wells (MW-17, MW-31, and P-8) are sampled for CVOCs using the same methods as previous monitoring events (e.g. passive diffusion bag [PDB] sampling); monitoring wells MW-22, MW-32, and MW-34 have been maintained but are not sampled as part of the annual P-8 performance monitoring program.
- The frequency of sampling for select MNA parameters at P-8 was reduced to an annual basis.
- All six remaining wells (i.e., MW-17, MW-22, MW-31, MW-32, MW-34 and P-8) were to be sampled for analysis of VOCs in April 2020 as part of a 5-year review of the P-8 area supplemental treatment performance.

The sections that follow in this report details the sampling of all six remaining wells for VOCs, the P-8 supplemental remedial performance monitoring program results, and a discussion of the overall treatment performance.

[8] WSP submitted a request to discontinue the permeable reactive barrier groundwater monitoring program and modify the P-8 area supplemental treatment performance monitoring program in a letter dated October 23, 2017. The request was approved by the NYSDEC (with some modifications to keep three additional wells, see above) in a letter dated November 7, 2017.

[9] April was chosen, in cooperation with the NYSDEC, as the monitoring period to provide the most conservative evaluation of the data (as indicated by the previous sampling results).

3 PERFORMANCE MONITORING

WSP completed the modified performance monitoring at the site on April 28, 2020. The work included the annual sampling of monitoring well P-8 to determine the current conditions within the P-8 supplemental treatment area, and sampling of the balance of the monitoring wells at the site (MW-17, MW-22, MW-31, MW-32, and MW-34) as part of the NYSDEC-requested assessment of the overall groundwater conditions at the site (Sheet1). Samples for analysis of VOCs were collected from all six wells using PDBs placed in the wells during the previous sampling event in April 2019. The deployment and recovery of the PDBs are detailed below. Additional analytical groundwater samples were collected from monitoring well P-8 (as part of the remedy evaluation) in accordance with low flow sampling techniques specified in the U.S. Environmental Protection Agency's (EPA's) *Low-flow (Minimal Drawdown) Groundwater Sampling Procedures* (EPA 1996) and WSP's SOP 11 (Appendix A). The samples were collected (after the PDB was removed) for the analysis of select monitored MNA parameters, CSIA, and microbial ecology.

The modified groundwater monitoring program, including pre-sampling synoptic depth-to-groundwater measurements at all the wells, was performed following the sampling procedures outlined in Jan 2014 Combined Pre-Design Investigation Report and P-8 Area Supplemental Remediation Work Plan. The methods for each activity are presented below and the results are summarized in Tables 1 through 5. Historical elevations and analytical results are included on Tables 2, 4, and 5 to aid in evaluating the current groundwater data.

3.1 GROUNDWATER ELEVATION MEASUREMENTS

Depth-to-groundwater measurements were collected from the six remaining onsite monitoring wells to determine groundwater elevations for the site. Each well was uncapped and allowed to stand for a minimum of 15 minutes (for equilibration with the atmosphere) and then gauged using an electronic water level indicator. The gauging was conducted in advance of the PDB recovery and the collection of the analytical samples (described below) to ensure static water level conditions before the sampler was removed. Measurements were made to the nearest 0.01-foot with the results recorded in the field notebook.

The depth-to-groundwater measurements are presented in Table 1 and were used to calculate groundwater elevations for each well. Historical groundwater elevations in the remaining six site wells dating back to 2004 are included in Table 2 for comparison.

3.1.1 GROUNDWATER ELEVATION RESULTS

The April 2020 groundwater elevations in the six gauged monitoring wells ranged from a low of 1,044.77 feet AMSL in monitoring well MW-34 near the northern end of the PRB to a high of 1,045.38 feet AMSL at monitoring well MW-31 near the southern end of the barrier (Sheet 1; Table 1). The elevations were up to 0.25 foot lower than those measured in during the previous sampling event in April 2019, but within the historical range of elevations (including the previously-described seasonal trends) for these wells (Table 2).

The existing monitoring well network comprises a transect roughly parallel to the PRB and perpendicular to the historical westerly groundwater flow direction (Sheet 1). The well positions, while good for monitoring the water quality in the areas of interest, do not lend themselves to calculating the hydraulic gradient (*dh/dl*) or generating a meaningful groundwater elevation contour map. No site gradient was calculated or elevation contour map prepared for this report.

3.2 GROUNDWATER ANALYTICAL SAMPLING PROCEDURES

WSP collected groundwater samples for analysis of VOCs from the six remaining wells at the site (P-8, MW-17, MW-22, MW-31, MW-32 and MW-34; Sheet 3). Those samples were collected from each well using PDB samplers obtained from ALS

Environmental, an analytical laboratory in Rochester, New York, that were deployed[10] at the end of the previous sampling event. The PDB samplers used at the site consisted of 24-inch long, 1.25-inch diameter, heat-sealed, low density polyethylene permeable membranes pre-filled with 220 milliliters of laboratory-grade analyte-free, de-ionized water. The samplers were fitted with stainless-steel weights and suspended in each well using dedicated Teflon®-coated steel lift lines secured to the well casing. Each sampler was positioned at the midpoint of the well's screened interval to allow equilibration with the surrounding formation water. The analytical samples were collected from the PDBs by retrieving each sampler, slicing it open at one end using decontaminated field scissors, and pouring the contents into the appropriate laboratory-supplied, pre-cleaned sample vials. The sampling included, as detailed below, the collection of a blind duplicate and matrix-spike/matrix-spike duplicate samples for quality assurance/quality control (QA/QC) purposes, in accordance with WSP's SOP 4 (Appendix A).

Groundwater samples for analysis of select MNA parameters, CSIA, and an assessment of the microbial population were collected from well P-8 (after the PDB was removed from the well for the VOC sampling and the water levels were allowed to stabilize) using low flow sampling techniques (Sheet 1). The well was first purged and, later, sampled using QED Environmental Systems, Inc. (QED) MP15 MicroPurge® Controllers (to adjust the flow rates) and CO2-driven QED Sample Pro® bladder pumps equipped with dedicated polyethylene bladders and tubing. The bladder pump was positioned at the midpoint of the monitoring well screen and purged at a rate between 0.2 and 0.5 liter per minute. Temperature, pH, specific conductance, dissolved oxygen (DO), turbidity, oxidation-reduction potential (ORP), and drawdown were monitored every 5 minutes during the purge process using a Horiba U-52 water quality meter equipped with a flow-through cell. Purging continued until water quality parameters stabilized (±10-percent for temperature, turbidity, DO, and ORP; ±0.1 unit for pH; ±3-percent for specific conductance; and drawdown variance less than 0.3 foot) and the turbidity readings were less than 50 nephelometric units. The analytical samples were collected directly from the pump discharge tubing after the field parameters stabilized. All the low flow sampling work was performed in accordance with WSP's SOP 11 and the EPA's *Low Flow (Minimal Drawdown) Groundwater Sampling Procedures* (EPA 1996; Appendix A). The low flow sampling field form for the monitoring well P-8 is included in Appendix B.

The analytical samples recovered from the PDBs and the low flow sampling of well P-8 were labeled, packed on ice, and shipped by overnight carrier to one of three analytical laboratories, depending on the parameters (Sheet 1). The water quality (VOC) samples recovered from the PDBs were shipped to SGS North America[11], Inc. (SGS), of Dayton, New Jersey, for analysis of VOCs by U.S. Environmental Protection Agency (EPA) Method 8260. The MNA samples were shipped to Pace Analytical Services, LLC, in Greensburg, Pennsylvania, for analysis of ethene, ethane, and methane by Method AM20GAX; DOC (field-filtered with an in-line 0.45-micron filter) by EPA Method number 9060; and CSIA by method number AM-24-DL-C. The microbial samples were shipped to Microbial Insights, Inc., in Knoxville, Tennessee, for assessment by quantitative polymerase chain reaction (qPCR) of the indigenous halorespiring microbes *Dehalobacter spp*. (DHBt) and *Dehalococcoides spp*. (DHC); and, the associated key functional (dechlorination) enzymes, tceA reductase, BAV1 vinyl chloride reductase, and vinyl chloride reductase. The populations of methanogens and total eubacteria abundances were also evaluated by Microbial Insights. All samples were maintained and shipped in accordance with WSP's SOP 3 (Appendix A).

Laboratory results for the VOC analysis are included in Appendix C with results for the MNA and CSIA, and the microbial assays presented in Appendices D, E, and F, respectively.

3.2.1 QUALITY CONTROL PROCEDURES

WSP collected the following QA/QC samples at the rate specified in WSP's SOP 4:

- trip blanks (labeled with the prefix "TB" or as "trip blanks") were submitted with the shipment of samples for VOCs analysis to SGS; the trip blanks were included at a rate of one blank per shipment containing samples for VOC analysis;
- equipment blanks (labeled with the prefix "EB") were collected by pouring laboratory-supplied deionized water over the decontaminated sample equipment; the blanks were collected at a rate of one per day per sampling apparatus (no equipment blanks were collected for the dedicated, single-use PDB samplers);

[10] The PDBs were placed in the wells (and later retrieved and sampled) in accordance with the methods outlined in a letter to the NYSDEC from WSP, dated November 16, 2006; the User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells (Vroblesky, 2001); and in accordance with WSP's SOP 11 (Appendix A).

[11] Formerly known as SGS Accutest, Inc.

- blind duplicates were collected during each sampling event at the rate of one duplicate per 20 samples; and
- matrix spike/matrix spike duplicate (MS/MSD) sample pairs were collected from at a rate of one MS/MSD pair per 20 samples collected.

Data validation was performed by Laboratory Data Consultants, Inc. (LDC), of Carlsbad, California, in accordance with the EPA *Contract Laboratory Program National Functional Guidelines*[12]. Data validation reports for the groundwater monitoring are included in Appendix G.

3.2.2 WASTE MANAGEMENT

Groundwater generated during sampling (i.e., purge water), decontamination rinsate, and other investigation-derived wastes (IDW) generated during the groundwater monitoring activities were contained in appropriately-labeled US Department of Transportation-compliant 55-gallon steel drums. All IDW was managed under existing waste profiles and was disposed of as hazardous waste in accordance with all local, state, and federal requirements and WSP's SOP 5 (Appendix A).

[12] Data validation was not conducted on CSIA or qPCR analysis. National Functional Guidelines are not available for these procedures.

4 MONITORING RESULTS

The groundwater sampling results are detailed below in two sections: the water quality (VOC) data, which discuss the site-related compounds detected in samples from all six remaining wells; and, for the supplemental performance sampling at well P-8, the findings of the additional MNA, CSIA, and microbial ecology analyses. The latter grouping, because of their complex and interrelated nature, are discussed as part of the overall analysis. The CSIA and biological assay (qPCR) data, for example, which are directly related and provide insight into the level and mechanisms of degradation, are presented together rather than in stand-alone sections. The intent is to provide a framework for reference while tracking the progress of the remedy.

The presentation of the results assumes a level of background familiarity with the methodologies and data evaluation approaches and, thus, only brief, in-line descriptions of the significance of the data are included. Detailed explanatory sections for the more complex analyses, such as the isotopic evaluation and microbial essays, are presented in the *2014 Combined Pre-Design Investigation Report and P-8 Supplemental Remediation Work Plan* and previous remedial performance monitoring reports.

4.1 VOLATILE ORGANIC COMPOUND SAMPLING RESULTS

The April 2020 groundwater monitoring results revealed only two site-related[13] CVOCs at concentrations above their respective evaluation criteria (Table 3). Concentrations of the dechlorination daughter products *cis*-1,2-DCE (9.2 to 22.3 µg/l) and vinyl chloride (3.3 to 12.3 µg/l) were detected in the samples from monitoring well P-8 within the remedial treatment area; and, in the samples from monitoring wells MW-22, MW-32, and MW-31, all of which are near the southern end of the PRB (Sheet 3). The highest concentrations of total CVOCs were detected in the P-8 sample; however, the concentration differences between the wells was negligible. The total CVOC concentrations from well P-8 (32.1 µg/l) were only slightly greater than the total CVOCs from well MW-22 (27.1 µg/l) or MW-32 (23.2 µg/l). Notably, the concentrations of all the CVOCs detected, including the vinyl chloride in wells P-8, MW-22, and MW-32, were only slightly greater than the evaluation criteria.

No other site-related CVOCs, including the parent compound TCE, were detected in the samples at concentrations above the evaluation criteria. These findings include the samples from wells MW-17 and MW-34 at the northern end of the PRB (i.e., in the 2009 SRAP northern treatment area) adjacent to and downgradient of the P-8 treatment area (Sheet 3). The significance of the water quality results from well P-8 and the portions of the site beyond the treatment area are discussed in Section 5 below.

4.1.1 NATURAL ATTENUATION, ISOTOPIC, AND BIOLOGICAL SAMPLING RESULTS

The P-8 remedial performance evaluation included *in situ* measurements and analyses of select parameters designed to assess geochemical and thermodynamic conditions, determine if the halorespiring microbes (and their functional genes) are present, and evaluate whether reductive dechlorination is occurring within the treatment zone. The field measurement conducted at well P-8 prior to the analytical sampling indicate a moderately strong reducing environment (ORP value of -87 millivolts [mV]) with nondetectable concentrations of DO (i.e., the groundwater is anaerobic; Sheet 3; Table 5). Temperature and the circumneutral pH measurements (necessary to promote dechlorination) of groundwater at well P-8 were also within the range of values historically observed at the site. These results are comparable with previous post-remediation findings for groundwater within the treatment area (including those detailed in the *2016 Combined Semiannual SRAP Monitoring and P-8 12-Month Review)* and are consistent with the intent of the remedial injections to create suitable conditions for reductive dechlorination.

MICROBIAL CENSUS AND DISSOLVED GASES EVALUATION

The microbial ecology samples from monitoring well P-8 contained a modest population of one of the two previously-detected indigenous halorespiring microorganisms (Sheet 3). The microbe DHC was present in the groundwater at levels of

[13] The April 2020 volatile organic compound were analyzed for several petroleum-related hydrocarbons, including benzene, toluene, and naphthalene. This analysis was conducted for consistency with past sampling events, which focused on evaluating the extent of a petroleum release at the facility that occurred in the 1980s. None of the petroleum-related compounds were detected at concentrations above the method detection limit (Table 4; Appendix B).

4.24E+03 cells per milliliter (cells/ml; Table 5). This population count, although lower (up to two orders of magnitude) than post-treatment levels measured in 2014 and 2015, is consistent the abundances of DHC detected over the past three years. The continued presence of DHC, while below the 1.0E+04 cells/ml threshold typically indicative of a flourishing microbial community, is important as it is one of the few halorespiring microbes capable of reducing chlorinated compounds like PCE and TCE through vinyl chloride to their innocuous end products of ethene and ethane (these compounds were detected in the dissolved gas analysis; see below). The assay revealed that the population of the second indigenous dechlorinating microbe DHBt, which was present in the pre-treatment samples and was detected at relatively modest abundances (2.13E+02 to 5.65E+03 cells/ml) through the first three years following the remedial injections, was reduced to trace levels (4.63E+0 cells/ml) in the December 2017 samples and to nondetectable levels in the April 2019 and 2020 samples. These reductions in DHBt, a microbe that is capable of dechlorinating PCE or TCE to *cis*-1,2-DCE (but generally not beyond *cis*-1,2-DCE), contrast with the balance of the biological results. The total Eubacteria count, which is a measurement of total bacterial biomass (1.14E+06 cells/ml), remained relatively high (as compared to the baseline) and there was an appreciable population of methanogens (6.31E+03 cells/ml) and dissolved methane (see below). Both are generally seen as proxies of the overall ecological health of the system (the biomass increased after the SRS-Z® injections) and, in the case of the methanogens (obligate anaerobes), support the geochemical measurements detailed above indicating a post-treatment reducing environment suitable for microbial growth.

The ecology samples from monitoring well P-8 were also evaluated for the presence and abundances of key functional genes (e.g., enzymes) necessary for hydrogenolysis (Sheet 3). The results revealed relatively low levels of tceA reductase (5.6E+00 cells/ml), and BAV1 vinyl chloride reductase (1.1E+00 cells/ml) with no detectable vinyl chloride reductase (Table 5). These abundances are lower than that detected during the previous monitoring event in 2019, but remain above the levels detected in the pre-treatment (baseline) samples collected in May 2014. Their presence in the water-bearing zone indicates that CVOC reduction through vinyl chloride remains possible. Moreover, they are an important line of evidence that, along with the dissolved gas and isotopic results, supports the interpretation that microbially-mediated dechlorination is occurring within the treatment area.

The MNA data and dissolved gases analyses for the well P-8 samples exhibited results consistent with the previous post-treatment monitoring data (Sheet 3). The DOC was measured at a concentration of 4.3 milligrams per liter (mg/l), which is approximately the same concentrations detected in the treatment area over the past 4 years (Table 5). This level of DOC, although lower than the concentrations[14] following the injections, remain sufficient to drive the microbial dechlorination process. The dissolved gases analysis likewise revealed a relatively robust concentration of methane (10,000 µg/l), consistent with the presence of methanogens and comparable to previous post-treatment levels; and, more importantly, modest concentrations of the dechlorination end products ethane (17 µg/l) and ethene (9.5 µg/l). The continued presence of ethene and ethane in all the post-treatment monitoring samples, along with the ecology data and the isotopic results presented below, are strong evidence that the reduction through vinyl chloride is occurring (i.e., the reductive pathway is complete).

ISOTOPIC RESULTS

The CSIA results for the sample from monitoring well P-8 show definitive evidence of reductive dechlorination (Sheet 3). The $\delta^{13}C$ value for the two remaining CVOCs, *cis*-1,2-DCE (-3.68 per mil [‰]) and vinyl chloride (-12.97 ‰), are substantially enriched (more positive; generally indicative of sequential dechlorination) than the depleted baseline values of -28.30 ‰ and -38.60 ‰ for *cis*-1,2-DCE and vinyl chloride, respectively (values that are isotopically depleted with respect to the as-manufactured parent compound isotopic range; Table 5). The April 2020 findings not only demonstrate reductive dechlorination, they are part of a post-treatment trend that, when viewed over time, reveals a systematic enrichment corresponding to the CVOC concentrations decreases over the same period (Table 4). The relationship between the VOC and CSIA results, and the overall importance of the isotopic data is discussed further in Section 5 below.

[14] The current concentrations of DOC are lower than those observed immediately after the P-8 treatment. This is likely the result of the bioconsumption of the dissolved, readily-available "quick-burn" fermentable carbon that was introduced as part of the amendment (i.e., the relatively higher levels of DOC were quickly consumed by the microorganisms in the water-bearing zone). The current residual concentrations, which are consistent with the slow-release of longer-chain fatty acids introduced in the injectate, are sufficient (as evidenced by the associated data) to continue to drive the dehalogenation process.

5 INTERPRETATION

The April 2020 remedial performance groundwater sampling confirm earlier findings detailed in the 2016 Combined Semiannual SRAP Monitoring and P-8 12-Month Review and the subsequent groundwater monitoring reports. Specifically, the April 2020 remedial performance groundwater sampling revealed results that indicate the P-8 supplemental remedial action is achieving the remedial goals. The post-treatment groundwater geochemistry within the injection area, the alteration of which was described in previous monitoring reports, remains suitable for reductive dechlorination. The water-bearing zone near well P-8 is anaerobic, as evidenced by the nondetectable levels of DO and the presence of obligate anaerobes; strongly reducing (methanogenesis thermodynamic range), as indicated by the -87 mV ORP values; and, exhibits a pH that is optimum for halorespiring microbes to flourish and effectively mineralize the CVOCs (Sheet 3). The sampling also indicated modest amounts of DOC consistent with the slow-release carbon component in the SRS-Z® amendment; and, notable populations of DHC, a key halorespiring microbe[15], and the functional genes necessary for reductive dechlorination through vinyl chloride. The abundance of this microbe and the enzymes in the April 2020 sample is lower than the peak populations detected in the 2016 performance monitoring samples (the current population is equivalent to the levels detected in the May 2014 baseline sample), but remains sufficiently robust (as indicated by the VOC and isotopic analyses below) to systematically degrade the CVOCs at the site, including TCE, to their innocuous end products. The reduction in DHC abundance correlates, as expected, with the diminishing concentrations of CVOCs remaining in the P-8 treatment area.

The biologic and geochemical changes reflected in the remedial performance groundwater samples from well P-8 following the injections directly impacted the dissolved chlorinated mass at the site (Sheet 3). Those impacts are best visualized by reviewing the current data in the context of the historical results, as presented in Figures 2 and 3. Figure 2 depicts the concentrations of TCE, and the daughter products *cis*-1,2-DCE and vinyl chloride, in the groundwater samples from well P-8 extending from June 2004 through the current monitoring period. The portion of the figure before the 2014 P-8 supplemental remedial treatment highlights the persistence of TCE and *cis*-1,2-DCE (and their relationship to the water levels) even after the 2009 SRAP treatment: decreases in the amount of dissolved chlorinated mass were invariably followed by a rebound in the concentrations. The effective recalcitrance of these compounds, which is detailed in previous reports (and in the background section above), led to the MIP investigation, the identification of the heterogeneity, and the eventual SRS-Z® supplemental treatment.

The performance monitoring following the P-8 treatment revealed definitive changes in concentrations of the individual CVOCs detected in the pre-treatment (baseline) samples that, when combined, show a steady (overall) decline in the amount of dissolved chlorinated mass. Those changes, illustrated in Figure 3, included anticipated decreases in the concentrations of TCE and *cis*-1,2-DCE immediately following the May 2014 SRS-Z® injections, followed by a rebound in the levels of these two compounds observed in March 2015 (Figure 3; Table 4). The rebound is consistent with the dynamics of the water-bearing zone before the injections: untreated, sorbed CVOCs were remobilized to groundwater after the seasonal high stand in the winter and spring of 2014 (Table 2; Figure 2). This interpretation is supported by the corresponding isotopic[16] data, also depicted on Figure 3, which parallels the CVOC results. Specifically, the isotopic data shows the initial enrichment of 13C in TCE, *cis*-1,2-DCE, and vinyl chloride in the groundwater at the time of treatment indicating reductive dechlorination, followed by a reversal of the trend as new source material (i.e., untreated CVOCs) was flushed from the vadose zone into the system.

The magnitude of subsequent rebound sequences within the treatment area lessen over time. The concentrations of TCE in the samples from well P-8, for example, increase following post-treatment seasonal high water stands in late 2015 and 2016, but the amplitude is dampened (Figure 3). The high water stands resulted in rebounds with peaks of just 14.2 µg/l in April 2016 and 17.1 µg/l in December 2016, both of which are order of magnitude decrease from the concentrations in the 2015 samples (Table 4; Figure 2). WSP concluded that the systematically reduced levels of rebound are result of amendment introduction in the smear zone (i.e., the amendment is brought into contact with the capillary fringe via the high water table) and its simultaneous treatment of the TCE (and other CVOCs) that does partition into the groundwater. The concentrations of TCE decline to trace (2017) and eventually nondetectable (2019) concentrations with no apparent rebound after the seasonal

[15] The decline of halorespiring microbe DHBt populations to nondetectable concentrations in the 2019 and 2020 performance monitoring samples tracks the decreasing amounts of dissolved TCE, only trace or nondetectable concentrations of which were detected in samples from 2017 through 2020. These findings are consistent with the documented DHBt reductive dechlorination facilitation of select highly-chlorinated VOCs (i.e., parent compounds TCE) with lower efficacy for less chlorinated daughter products, such as *cis*-1,2-DCE or vinyl chloride.

[16] Note that the δ13C axis in Figure 3 is reversed to aid in visualizing isotopic enrichment (i.e., becoming less negative) as an intuitively destructive process.

groundwater fluctuation, described in previous reports as a decoupling of the two mechanisms. These are important findings as they indicate the remedial injections destroyed the TCE within the P-8 treatment area (i.e., a 100-percent destruction rate), including those compounds that were sorbed to the soil matrix within the capillary fringe.

The *cis*-1,2-DCE concentrations in the post-injection performance samples from well P-8 are relatively high and more variable than the TCE, likely due (in part) to the reductive dechlorination of TCE (i.e., the TCE is being converted to 1,2-DCE; Figure 3). The concentrations nevertheless follow the same overall trend decreasing (with some minor variations) from a post-treatment high of 1,810 µg/l in March 2015 to the current trace concentration of 19.8 µg/l, a 99-percent decrease (Tables 3 and 4; Figure 2). The corresponding CSIA results for *cis*-1,2-DCE shows a systematic fractionation from a δ13C value of -28.30 ‰, consistent with the typical as-manufactured (parent) compound isotopic range of -24 to -30 ‰, to a highly-enriched δ13C value of -3.68 ‰ (Table 5; Figure 3). These data demonstrate that the compound, which persisted through the 2009 SRAP treatment, is being reduced by the 2014 P-8 supplemental remedial injections. That is, the *cis*-1,2-DCE is not migrating out of the treatment zone or being attenuated by some other physical mechanism (e.g., sorption, dilution, etc.), but is, instead, being reductively dechlorinated. These findings are supported by the VOC results from nearby monitoring wells MW-17 and MW-34. Not only were the VOCs detected in the post-treatment samples from well MW-17 (due to displacement of affected groundwater during the injections) mineralized, there was no evidence of the migration of affected groundwater from the P-8 treatment area. Likewise, the post-treatment samples from MW-34 did not reveal any downgradient migration from the treatment area of MW-17.

The vinyl chloride followed a similar, but delayed pattern. The concentrations of vinyl chloride in the P-8 samples increased from 4.3 µg/l in the May 2014 baseline (pre-treatment) samples to a peak[17] of 369 µg/l in December 2015, approximately nine months after the TCE rebound (Sheet 3; Table 4; Figure 3). The later peak is likely due to the time delay in the dechlorination sequence: TCE is first converted to *cis*-1,2-DCE, which in turn, is (later) degraded to vinyl chloride. The concentrations have declined since December 2015 to concentrations (12.3 µg/l) 97-percent lower than the peak and only slightly above the evaluation criteria of 2 µg/l. The vinyl chloride CSIA data for the post-treatment monitoring period is analogous to the isotopic results for *cis*-1,2-DCE. The δ13C value, substantially depleted in the baseline samples (-38.60 ‰) and again in the March 2015 samples (-36.61 ‰), well below the typical as-manufactured (parent) compound isotopic range, is systematically enriched to a of δ13C value of -12.97 ‰. The fractionation of vinyl chloride over time, like that of *cis*-1,2-DCE, is definitive proof that the compound is being systematically dechlorinated. These data are consistent with the VOC and dissolved gas findings from P-8 and are supported by the VOC results from nearby wells MW-17 and MW-34, which contain no evidence of vinyl chloride migration.

5.1 ADDITIONAL VOC SAMPLING

The water quality sample results for the remainder of the onsite wells revealed only minor concentrations of dissolved CVOCs outside of the P-8 supplemental treatment area. The results from wells MW-17 and MW-34 revealed only *cis*-1,2-DCE at trace concentrations below the evaluation criteria: no other CVOCs were detected (Sheet 3). These findings are consistent with the 24-month review of the 2009 SRAP (detailed in the May 2012 Combined *October and December 2011 Sampling and Supplemental Remedial Action Review Report)*, which found that the SRAP injections in the northern treatment area were effective at destroying the dissolved chlorinated mass and that the post-injection geochemical and thermodynamic conditions were suitable for supporting ongoing microbially-mediated treatment, if necessary. That ongoing treatment capacity was necessary following the P-8 supplemental remedial action: affected groundwater was displaced from the treatment area and was detected in the samples from MW-17 immediately following the injections. The concentrations of TCE and *cis*-1,2-DCE (up to 35.4 µg/l and 306 µg/l, respectively, in December 2014), and vinyl chloride (up to 20.6 µg/l in June 2015) in the displaced groundwater were, as detailed in previous reports, subsequently destroyed (i.e., 100-percent reduction rate for all three compounds; Table 4). Importantly, no affected groundwater was detected in the performance monitoring samples from MW-34, which is downgradient (along the northern flow line) of both MW-17 and the P-8 treatment area. These findings, as

[17] The December 2015 groundwater monitoring was conducted during the transition between quarterly and triannual sampling frequencies and included the collection of VOC samples only. Samples for the select MNA parameters, CSIA, and microbial ecology were collected during the first triannual sampling event in April 2016.

noted above, support the interpretation that the CVOC mass was being reductively dechlorinated and was not migrating downgradient.

The samples from wells positioned near the southern end of the PRB, MW-22, MW-31, and MW-32, contained concentrations of just two CVOCs, *cis*-1,2-DCE and vinyl chloride (MW-22 and MW-32), at concentrations only slightly above the ambient water quality standards (Sheet 3; Table 3). The detection of these relatively low levels of CVOCs is comparable with earlier monitoring results, both from samples collected as part of the 2009 SRAP performance monitoring program, and those collected since the 2014 P-8 supplemental treatment was implemented. WSP's interpretations of these detections is consistent with previous analysis: they do not represent a new source but, instead, are post-SRAP treatment residual concentrations. WSP anticipates that the CVOCs in these three wells, all three of which are within the 2009 SRAP southern treatment zone, will continue to attenuate over time.

6 CONCLUSIONS AND ADJUSTMENTS TO THE PERFORMANCE MONITORING PROGRAM

The P-8 supplemental remedial action, based on the groundwater performance monitoring data collected for this and previous sampling events, created the conditions for the attenuation of the affected groundwater. The direct measurements and analytical samples revealed favorable post-treatment geochemical and thermodynamic conditions, and a relatively robust microbial community that includes DHC (and its key dechlorination enzymes). Water quality analyses from well P-8 confirm the previously-described decoupling of the CVOC concentration rebound and seasonal groundwater high stands, and the corresponding isotopic data definitively demonstrate that the compounds are being reductively dechlorinated. The concentrations of CVOCs remaining in the samples from well P-8, and those from select other wells outside the treatment area are only marginally above the evaluation criteria.

Specifically, WSP observed the following findings in the remedial performance monitoring results for the P-8 supplemental treatment area:

- The VOC analysis indicates that samples from monitoring well P-8 contained just only two daughter product CVOCs, *cis*-1,2-DCE and vinyl chloride, at concentrations slightly above the ambient water quality standards; the concentrations of the compounds were reduced by 99 and 97-percent, respectively, from their post-treatment peak levels.
- No concentrations of the parent compound TCE were detected above laboratory reporting limits in the April 2020 P-8 supplemental treatment area samples (i.e., 100-percent destruction rate).
- Samples from wells installed in the 2009 (SRAP) southern treatment zone (MW-22, MW-31, and MW-22) contained *cis*-1,2-DCE and vinyl chloride (MW-22 and MW-32) at concentrations slightly above the evaluation criteria; the concentrations are consistent with historical results and are interpreted (as indicated in earlier reports) to be post-treatment residuals.
- The samples from wells MW-17 contained only trace amounts of *cis*-1,2-DCE at concentrations below the evaluation criteria; the previous concentrations of this compound (and others) interpreted to be the result of affected groundwater displacement during the injections are not present and were determined to be mineralized (100-percent destruction).
- The microbial ecology samples from monitoring well P-8 revealed post-treatment populations of DHC that are consistent with abundances of this microbe detected in monitoring samples collected in 2017 and 2019; these data comport with the VOC, dissolved gas, and isotopic findings and provide evidence that reductive dechlorination is occurring and the degradation pathway is complete.
- The results revealed tceA reductase and BAV1 vinyl chloride reductase at abundances that are lower than that detected in during the previous sampling event in 2019, but remain above the levels detected in the pre-treatment (baseline) samples; Their presence not only indicates that CVOC reduction through vinyl chloride is possible, it provides evidence that, along with the dissolved gas and isotopic results, supports the interpretation that microbially-mediated dechlorination is occurring within the treatment area.
- The census data did not reveal detectable populations of the indigenous halorespiring microbe DHBt in the samples from monitoring well P-8, which corresponds to the nondetectable concentrations of TCE (DHBt is capable of dechlorinating PCE or TCE to *cis*-1,2-DCE, but not is well suited to breakdown beyond the 1,2-DCE step).
- A substantive population of methanogens (obligate anaerobes) is present within the treatment zone confirming the direct measurements indicating reducing conditions are present in the P-8 treatment zone; the presence of methanogens (along with the relatively high abundances of total Eubacteria) are generally indicative of a healthy microbial environment within the water-bearing zone.
- The dissolved solids analyses revealed DOC concentrations consistent with the slow-release phase associated with the SRS-Z® amendment; the levels are lower than those immediately following the injections (during the quick-release phase of the amendment) but remain sufficient to drive the microbial dechlorination process.

- The isotopic analysis of samples collected from well P-8 show a systematic post-treatment enrichment trends in the δ13 values for *cis*-1,2-DCE and vinyl chloride (corresponding to the post-remediation concentration decreases in both compounds detailed in the VOC results) culminating with highly-enriched δ13 values (-3.68 ‰ and vinyl chloride -12.97 ‰, respectively) in the April 2020 results; these findings are a line of evidence indicating that reductive dechlorination in the P-8 treatment area is occurring.
- The samples from well P-8 revealed the presence of the modest concentrations of the innocuous product ethene and ethane; the continued presence of ethene and ethane in all the post-treatment monitoring samples, along with the ecology data and the isotopic results, are strong evidence that the reduction through vinyl chloride is occurring (i.e., the reductive pathway is complete).

6.1 CONCLUSIONS AND RECOMMENDATIONS

The data collected as part of the P-8 supplemental remedial action performance monitoring demonstrate that the treatment addressed the recalcitrant CVOCs. The results show a decoupling of the relationship of the CVOCs to the seasonal water fluctuations and substantive, long-term reductions in the chlorinated mass. The current and historical performance monitoring results indicate that TCE was destroyed and the 97-percent or more decreases of both *cis*-1,2-DCE and vinyl chloride. The concentrations of the latter two compounds remain just marginally above the evaluation criteria. The *cis*-1,2-DCE was detected at concentrations less than 20 µg/l and the vinyl chloride detection was less than 13 µg/l. The magnitude of the reductions exceeds the objectives of the P-8 treatment detailed in the *2014 Combined Pre-Design Investigation Report and P-8 Area Supplemental Remedial Investigation Work Plan*. Specifically, the reductions exceed the (minimum) 50-percent reduction in the amount of dissolved CVOCs, which was established as the metric for success[18] by the NYSDEC as part of the 2009 SRAP treatment (the P-8 supplemental remedial action, as a focused polishing treatment, was an extension of the 2009 remedial action).

WSP anticipates that, based on the persistence of the geochemical conditions and the presence of the halorespiring organisms, the remaining (trace) amounts of CVOCs within the injection area will continue to be reductively dechlorinated and eventually mineralized. WSP's overall conclusion is that the P-8 remedial action was efficacious at treating the recalcitrant CVOCs at the site.

6.2 CHANGES TO THE MONITORING PROGRAM AND PROPOSED ADMINISTRATIVE CLOSURE MEETING

The P-8 supplemental remedial action performance monitoring program was ultimately scheduled for five years following the treatment. The final sampling event in the planned program was completed in April 2020. WSP proposes, based on the achievement of the objectives and the overall success of the remedial actions, to discontinue the remedial performance monitoring program. The trace concentrations of CVOCs remaining within the treatment area are comparable to post-treatment residual levels in wells around the PRB and, thus, do not warrant further monitoring.

WSP also proposes suspending monitoring at the wells outside of the P-8 treatment area. The samples from wells MW-17 and MW-34 do not contain any CVOCs at concentrations above the evaluation criteria, and the concentrations in wells MW-22, MW-31, and MW-32 are residual concentrations that have been relatively stable for up to 10 years. Continued monitoring of these wells will not provide data useful in the determination of the site future.

WSP will coordinate with the NYSDEC on the administrative closure activities following the suspension of the monitoring programs, if approved. WSP proposes to meet with the Department either in-person (if conditions are appropriate) or via a call in first half of 2021 to discuss the path forward. WSP will develop a schedule for any required deliverables based on the consensus of the meeting.

[18] The objective of the SRAP was the reduction of the overall CVOC mass within the treatment zones by more than 50-percent, as specified in the Condition Approval letter from the NYSDEC to WSP, dated October 2, 2009.

ACRONYMS

µg/l	micrograms per liter
1,2-DCE	1,2-dichloroethene
3DMe	3-D MicroEmulsion®
AMSL	above mean sea level
bgs	below ground surface
CSIA	Compound Specific Isotope Analysis
CVOCs	Chlorinated volatile organic compounds
DHBt	Dehalobacter spp.
DHC	Dehalococcoides spp.
DL&W	Delaware Lackawanna & Western Railroad
DO	dissolved oxygen
DOC	dissolved organic carbon
EPA	Environmental Protection Agency
ft^2	square feet
GIC	General Instrument Corporation
mg/l	milligrams per liter
mV	millivolts
MIP	Membrane Interface Probe
MNA	monitored natural attenuation
NTU	nephelometric turbidity unit
NYSDEC	New York State Department of Environmental Conservation
ORP	oxidation-reduction potential
PCE	tetrachloroethene
PDB	passive diffusion bag
PRB	permeable reactive barrier
QA/QC	quality assurance/quality control
qPCR	Quantitative polymerase chain reaction
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
S&W	Stearns & Wheler, LLC
SOPs	standard operating procedures
SRAP	Supplemental Remedial Action Plan
TCE	trichloroethene
VGSI	Vishay GSI, Inc.
VOCs	volatile organic compounds
ZVI	zero-valent iron

REFERENCES

- ESC Engineering of New York, P.C. 2004a. Technical Review and Proposed Activities, Former General Instrument Corporation Site, Sherburne, New York. March 3.
- ESC Engineering of New York, P.C. 2004b. Preliminary Data Gathering and Semiannual Groundwater Sampling Report, Former General Instrument Corporation Site, Sherburne, New York. August 4.
- ESC Engineering of New York, P.C. 2006. Additional Groundwater Investigation Report, Former General Instrument Corporation Site, Sherburne, New York. August 30.
- U.S. EPA, Region 1. 1996. Low Stress (Low Flow) Purging and Sampling Procedure for the Collection of Ground Water Samples from Monitoring Wells, Revision 2. July 30.
- U.S. EPA. 2009. A Guide for Assessing Biodegradation and Source Identification of Organic Groundwater Contaminants Using Compound Specific Isotope Analysis (CSIA). U.S. Environmental Protection Agency, Washington, D.C., EPA/600/R-08/148.
- Vroblesky, Don A. 2001. User's Guide to Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells, Part 1: Deployment, Recovery, Data Interpretation, and Quality Control and Assurance. U.S. Geological Survey Water-Resources Investigations Report 01-460.
- WSP Engineering of New York, P.C. 2009a. Pre-Design and Supplemental Remedial Alternatives Report, Former General Instrument Corporation Site, Sherburne, New York. February 9.
- WSP Engineering of New York, P.C. 2009b. Supplemental Remedial Action Work Plan, Former GIC Facility, Sherburne, New York, August 10.
- WSP Engineering of New York, P.C. 2012a. Combined October and December Semiannual Groundwater Sampling and Supplemental Remedial Action Review Report, Former General Instrument Corporation Site, Sherburne, New York, May 2.
- WSP, 2014, Combined Pre-Design Investigation Report and P-8 Area Supplemental Remediation Work Plan, January 9.
- WSP. 2015. Combined P-8 Supplemental Remedial Action Report and May 2014 Semiannual Groundwater Sampling Report, April 22.
- WSP. 2016. Semiannual Groundwater Sampling Report and P-8 Supplemental Remedial Action Performance Monitoring Report and 12-month Review. January 5.

FIGURES

DWG. Name:
Proj.#_31401203

Checked:

Approved:

Drawn By:
RLO 3/23/18

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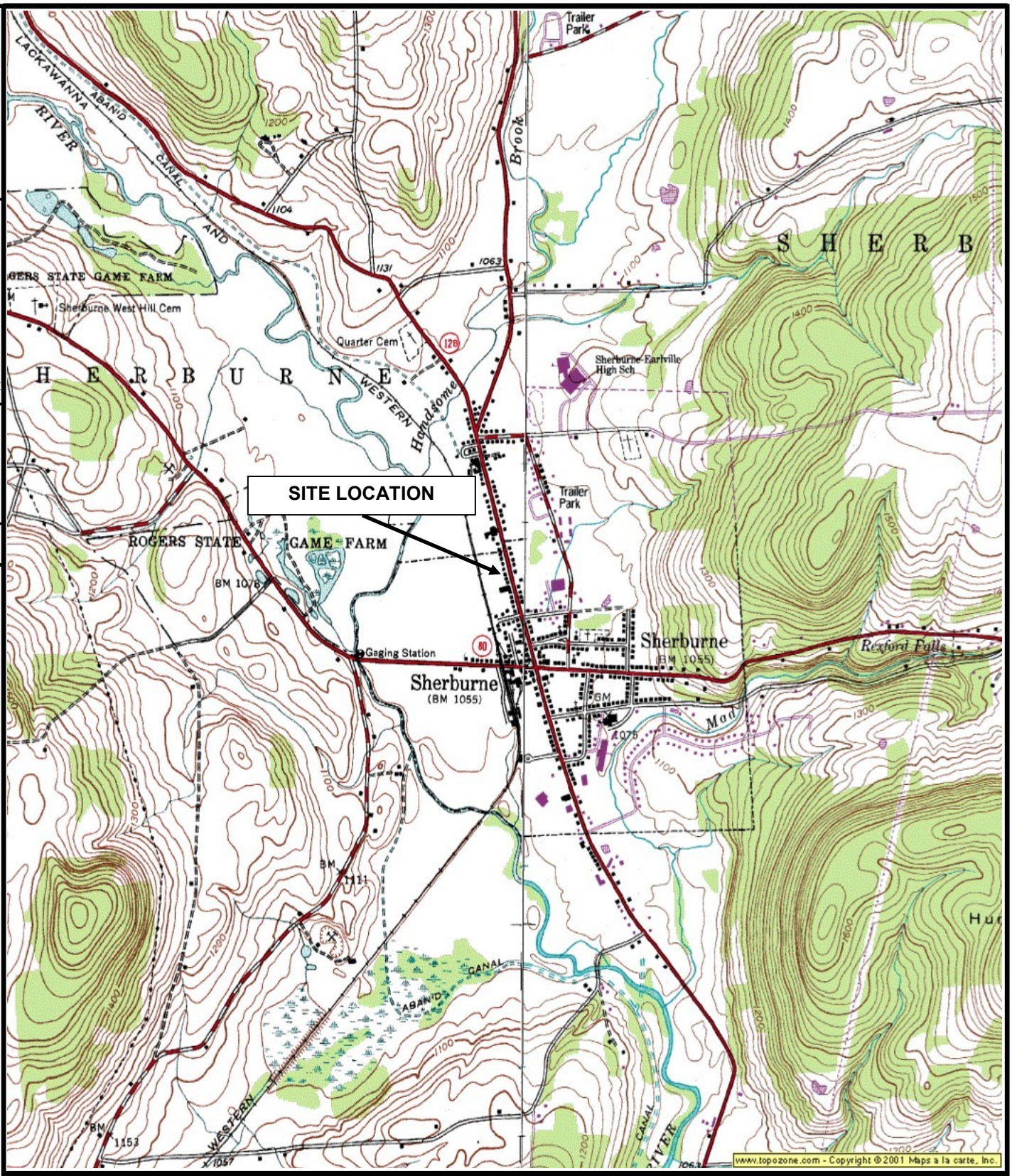

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EARLVILLE, NEW YORK 1988
SCALE 1:24,000

QUADRANGLE LOCATION

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0 1000 2000 4000

SCALE, FEET

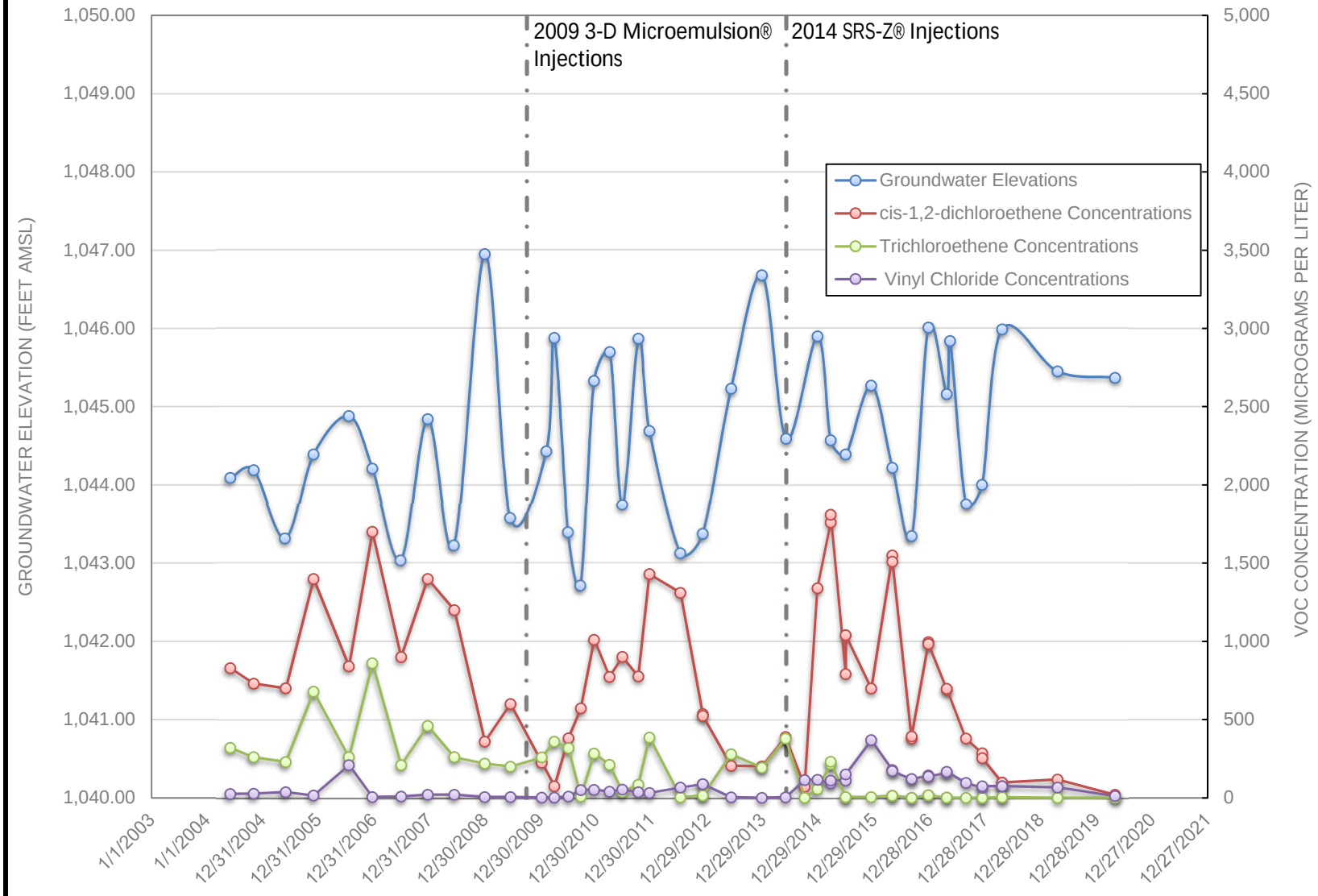
WSP USA Inc.
100 SUMMER STREET
13TH FLOOR
BOSTON, MASSACHUSETTS 02110
TEL: +1 617.426.7330

FIGURE 1

SITE LOCATION MAP

FORMER GENERAL INSTRUMENT
CORPORATION SITE
SHERBURNE, NEW YORK

PREPARED FOR
ASKIN & HOOKER, LLC
SPARTA, NEW JERSEY



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BOSTON, MASSACHUSETTS 0211
(617) 426-7330

Figure 2
Groundwater Elevation and Select CVOC Concentration Trends for Monitoring Well P-8 (2004 to 2020)
Former General Instrument Corporation Site
Sherburne, New York

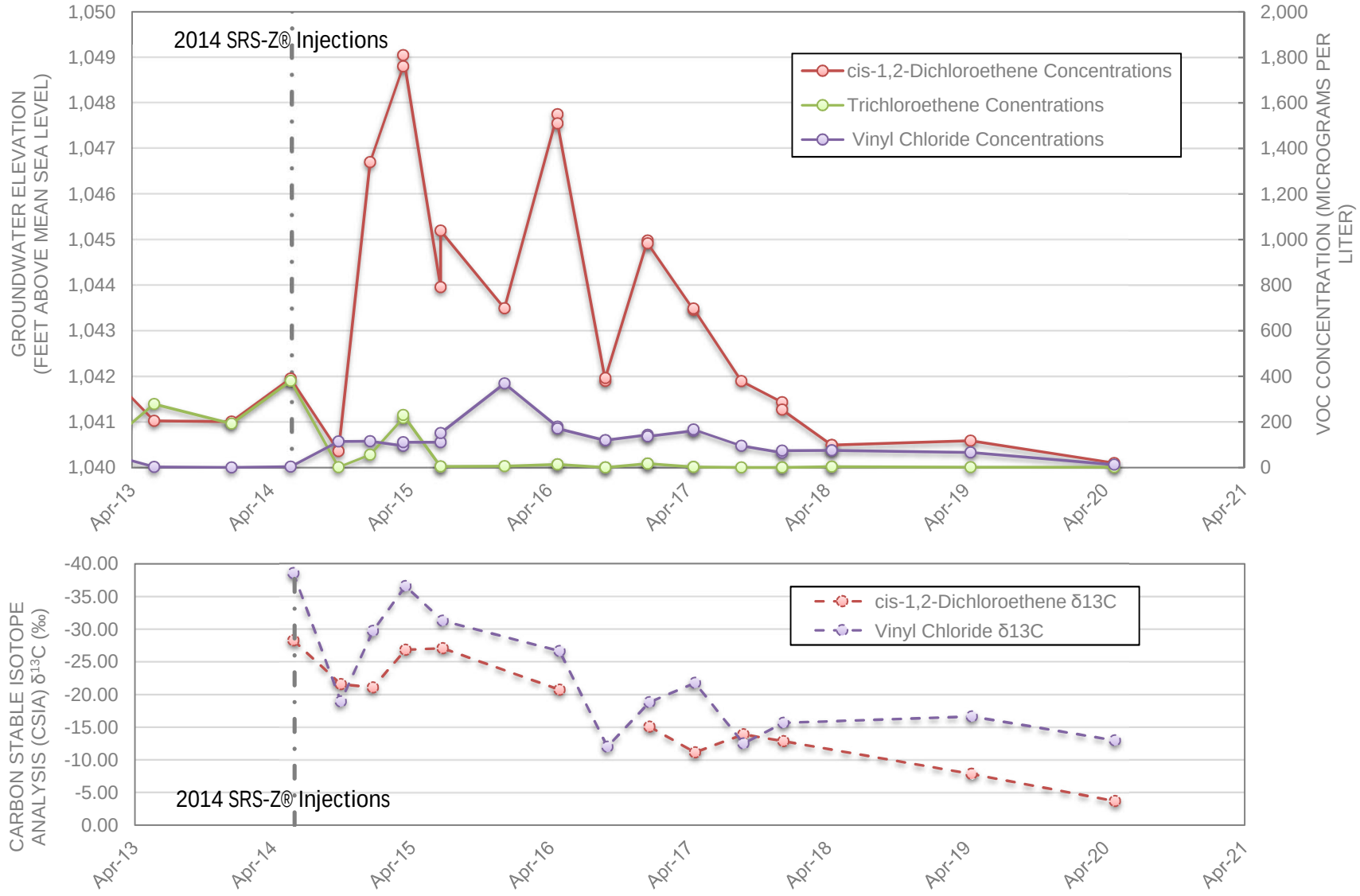

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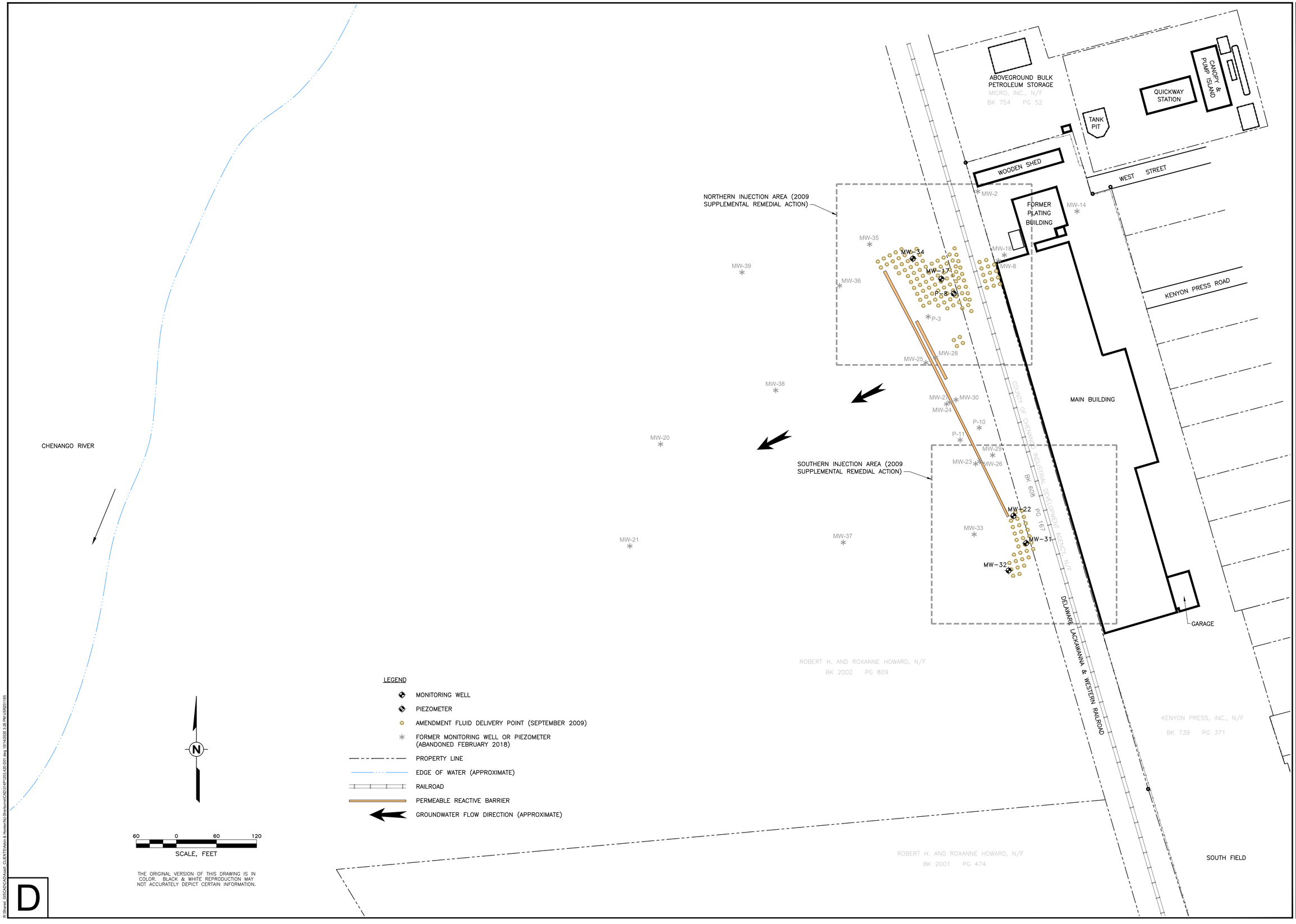
Figure 3
CVOC and CSIA Trends for Monitoring Well P-8 (2013 to 2020)
Former General Instruments Corporation Site
Sherburne, New York

SHEETS



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REVISIONS

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SITE PLAN

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SHEET 1

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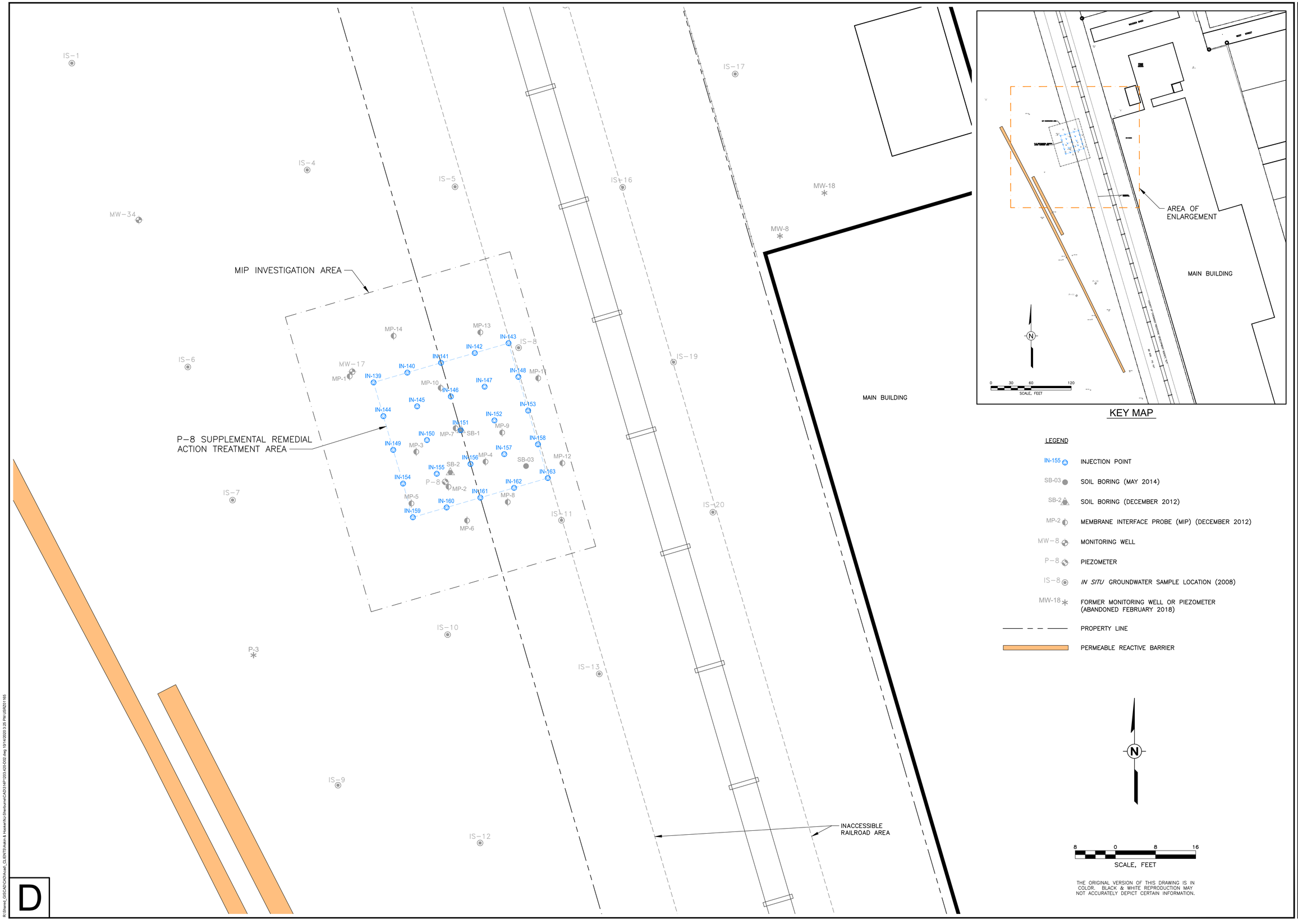

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SHEET 2

Drawing Number
314P1203.420-D02

LEGEND

- MONITORING WELL
- PIEZOMETER
- FORMER MONITORING WELL OR PIEZOMETER (ABANDONED FEBRUARY 2018)
- PROPERTY LINE
- EDGE OF WATER (APPROXIMATE)
- RAILROAD
- PERMEABLE REACTIVE BARRIER
- GROUNDWATER FLOW DIRECTION (APPROXIMATE)

MW-22	
04/28/20	
cis-1,2-DCE	*22.3*
trans-1,2-DCE	1
TCE	ND
VC	*3.8*

- SAMPLE DESIGNATION
- SAMPLING DATE
- CONCENTRATION IN MICROGRAMS PER LITER (µg/l)
  BLUE ITALIC VALUES EXCEED EVALUATION CRITERIA

  "ND" INDICATES COMPOUND NOT DETECTED ABOVE LABORATORY REPORTING LIMITS

  "J" INDICATES ESTIMATED CONCENTRATION BELOW LABORATORY REPORTING LIMITS

DCE DICHLOROETHENE
TCE TRICHLOROETHENE
VC VINYL CHLORIDE

NOTES:

1. EVALUATION CRITERIA ARE FROM THE NEW YORK STATE AMBIENT WATER QUALITY STANDARDS OR GUIDANCE VALUES FOR CLASS GA GROUNDWATER PROVIDED IN THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION DIVISION OF WATER TECHNICAL AND OPERATIONAL GUIDANCE SERIES (1.1.1), DATED JUNE 1998, AND THE APRIL 2000 ADDENDUM.
2. THE EVALUATION CRITERIA FOR SITE RELATED VOCS ARE: 5 µg/l FOR cis AND trans-1,2-DICHLOROETHENE, AND TRICHLOROETHENE; AND 2 µg/l FOR VINYL CHLORIDE.

CHENANGO RIVER

ABOVEGROUND BULK PETROLEUM STORAGE
MICRO, INC., N/F
BK 754 PG 52

QUICKWAY STATION
CANOPY & PUMP ISLAND
TANK PIT
WOODEN SHED
WEST STREET
KENYON PRESS ROAD
FORMER PLATING BUILDING
MAIN BUILDING
GARAGE
SOUTH FIELD

COUNTY OF CHENANGO INDUSTRIAL DEVELOPMENT AGENCY
PG 167

DELAWARE LACKAWANNA & WESTERN RAILROAD

ROBERT H. AND ROXANNE HOWARD, N/F
BK 2002 PG 809

ROBERT H. AND ROXANNE HOWARD, N/F
BK 2001 PG 474

KENYON PRESS, INC., N/F
BK 739 PG 371

MW-2 MW-8 MW-14 MW-17 MW-18 MW-20 MW-21 MW-22 MW-23 MW-24 MW-25 MW-26 MW-28 MW-29 MW-30 MW-31 MW-32 MW-33 MW-34 MW-35 MW-36 MW-37 MW-38 MW-39 P-3 P-8 P-10 P-11

MW-34	
04/28/20	
cis-1,2-DCE	ND
trans-1,2-DCE	ND
TCE	ND
VC	ND

MW-17		
	04/28/20	04/28/20 (DUP)
cis-1,2-DCE	1.5	1.6
trans-1,2-DCE	ND	ND
TCE	ND	ND
VC	ND	ND

P-8	
04/28/20	
cis-1,2-DCE	*19.8*
trans-1,2-DCE	ND
TCE	ND
VC	*12.3*

MW-22	
04/28/20	
cis-1,2-DCE	*22.3*
trans-1,2-DCE	1
TCE	ND
VC	*3.8*

MW-31	
04/28/20	
cis-1,2-DCE	*9.2*
trans-1,2-DCE	ND
TCE	0.74 J
VC	ND

MW-32	
04/28/20	
cis-1,2-DCE	*19.9*
trans-1,2-DCE	ND
TCE	ND
VC	*3.3*

N

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PERFORMANCE MONITORING RESULTS
SITE-RELATED CHLORINATED VOCs (APRIL 2020)

FORMER GENERAL INSTRUMENT CORP. SITE
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SPARTA, NEW JERSEY

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SHEET 3

Drawing Number
314P1203.420–D03

TABLES

Table 1

Water Level Measurements
Former General Instrument Corporation Site
Sherburne, New York (a)

Well ID	Ground Elevation (AMSL)	Reference Elevation (AMSL)	April 28, 2020		
			Depth To Water (ft)	Groundwater Elevation (AMSL)	Depth Below Ground Surface (ft)
MW-17	1,047.85	1,050.74	5.51	1,045.23	2.62
MW-22	1,048.09	1,051.24	5.94	1,045.30	2.79
MW-31	1,048.40	1,050.54	5.16	1,045.38	3.02
MW-32	1,047.42	1,048.92	3.68	1,045.24	2.18
MW-34	1,046.39	1,048.38	3.61	1,044.77	1.62
P-8	1,048.81	1,051.32	5.95	1,045.37	3.44

a/ All measurements in feet (ft); elevations are feet above Mean Sea Level (AMSL).

Table 2

Historical Groundwater Elevation Measurements - 2004 to Present
Former General Instrument Corporation Site
Sherburne, New York (a)

Date	MW-17	MW-22	MW-31	MW-32	MW-34	P-8
06/02/04	1,044.07	1,044.13	-	-	-	1,044.09
11/02/04	1,044.14	1,044.19	-	-	-	1,044.19
06/01/05	1,043.28	1,043.40	-	-	-	1,043.31
12/01/05	1,044.36	1,044.45	1,044.45	1,044.42	1,044.20	1,044.39
07/20/06	1,044.85	1,044.88	1,044.89	1,044.87	1,044.62	1,044.88
12/22/06	1,044.16	1,044.25	1,044.28	1,044.24	1,043.90	1,044.21
06/29/07	1,043.02	1,043.09	1,043.12	1,043.10	1,042.70	1,043.03
12/20/07	1,044.81	1,044.87	1,044.86	1,044.89	1,044.54	1,044.84
06/12/08	1,043.18	1,043.31	1,043.34	1,043.02	1,042.84	1,043.22
12/29/08	1,046.95	1,046.68	1,046.62	1,046.61	1,046.80	1,046.95
06/16/09	1,043.53	1,043.66	1,043.69	1,043.64	1,043.17	1,043.57
02/06/10	1,044.37	1,044.31	1,044.43	1,044.37	1,044.00	1,044.43
03/30/10	1,045.94	1,045.79	1,045.86	1,045.92	1,045.60	1,045.88
06/30/10	1,043.35	1,043.35	1,043.45	1,043.41	1,042.97	1,043.39
09/20/10	1,042.69	1,042.67	1,042.79	1,042.75	1,042.34	1,042.71
12/16/10	1,045.33	1,045.15	1,045.25	1,045.23	1,044.94	1,045.33
03/29/11	1,045.76	1,045.54	1,045.64	1,045.62	1,045.36	1,045.70
06/20/11	1,043.69	1,043.71	1,043.83	1,043.81	1,043.40	1,043.74
10/04/11	1,045.84	1,045.73	1,045.82	1,045.82	1,045.53	1,045.87
12/15/11	1,044.68	1,044.64	1,044.75	1,044.73	1,044.36	1,044.69
07/06/12	1,043.08	1,043.10	1,043.19	1,043.19	1,042.73	1,043.12
11/29/12	1,043.35	1,043.33	1,043.43	1,043.41	1,043.02	1,043.37
06/03/13	1,044.21	1,045.11	1,045.21	1,045.18	1,044.68	1,045.23
12/23/13	1,046.66	1,046.36	1,046.44	1,046.42	1,046.47	1,046.68
05/31/14	1,044.53	1,044.26	1,044.33	1,044.14	1,043.86	1,044.59
12/23/14	1,044.85	1,044.91	1,044.99	1,044.88	1,044.49	1,045.90
03/19/15	1,044.51	-	-	-	-	1,044.57
06/26/15	1,044.30	1,044.33	1,044.44	1,044.29	1,043.87	1,044.39
12/10/15	1,044.99	1,044.84	1,045.06	1,044.92	1,044.36	1,045.27
04/27/16	1,044.12	1,044.15	1,044.24	1,044.12	1,043.69	1,044.22
08/30/16	1,043.28	1,043.40	1,043.50	1,043.58	1,042.83	1,043.34
12/20/16	1,045.99	1,045.89	1,045.95	1,045.19	1,045.57	1,046.01
04/19/17	1,045.18	1,045.07	1,045.16	1,045.06	1,044.66	1,045.16
05/11/17	1,045.90	1,045.68	1,045.75	1,045.65	1,045.40	1,045.84
08/23/17	1,043.60	1,043.70	1,043.81	1,043.66	1,043.11	1,043.75
12/07/17	-	-	-	-	-	1,044.00
04/17/18	1,045.89	1,045.85	1,045.93	1,045.84	1,045.56	1,045.99
04/17/19	1,045.35	-	1,045.63	-	-	1,045.45
04/28/20	1,045.23	1,045.30	1,045.38	1,045.24	1,044.77	1,045.37
Average Elevation	**1,044.55**	**1,044.53**	**1,044.69**	**1,044.58**	**1,044.25**	**1,044.63**

Table 2

Historical Groundwater Elevation Measurements - 2004 to Present
Former General Instrument Corporation Site
Sherburne, New York (a)

Notes:

a/ All measurements are in feet above Mean Sea Level.

b/ The well head at MW-8 was converted to a flush-mount pad on June 8, 2005. The original ground elevation before conversion was 1048.36 feet above Mean Sea Level, and the original reference elevation was 1050.50 above Mean Sea Level.

c/ Monitoring well MW-18 contained 0.11 feet of free-phase product in November 2004, 0.17 feet in June 2005, 0.05 feet in July 2006, an unmeasured thickness in December 2006, and 0.01 feet in June 2007. No measurable free-phase product was observed on December 20, 2007, or during subsequent sampling events.

d/ The depth to water measurement and calculated groundwater elevation at P-8 in December 2014 are considered inaccurate due to the presence of SRS-Z® amendment in the well. See text for explanation.

Table 3

Annual Modified P-8 Performance Monitoring Groundwater Sampling Results - All Wells
Former General Instrument Corporation Site
Sherburne, New York (a)

		P-8 Remedial Performance Monitoring Wells				Other Site Wells		
Well ID:	**Evaluation Criteria (b)**	**MW-17**		**MW-34**	**P-8**	**MW-22**	**MW-32**	**MW-31**
Sample ID:		**MW-17**	**MW-0420**	**MW-34**	**P-8**	**MW-22**	**MW-32**	**MW-31**
Date:		4/28/20	4/28/20	4/28/20	4/28/20	4/28/20	4/28/20	4/28/20
VOCs (µg/l)								
cis -1,2-Dichloroethene	5	1.5	1.6	1.0 U	**19.8**	**22.3**	**19.9**	**9.2**
trans-1,2-Dichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0	1.0 U	1.0 U
Trichloroethene	5	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.7 J
Vinyl chloride	2	1.0 U	1.0 U	1.0 U	**12.3**	**3.8**	**3.3**	1.0 U
Total VOCs:	-	**1.5**	**1.6**	**ND**	**32.1**	**27.1**	**23.2**	**9.9**
Total CVOCs:	-	**1.5**	**1.6**	**ND**	**32.1**	**27.1**	**23.2**	**9.9**

Notes:

a/ Concentrations highlighted in bold text and gray shading exceed evaluation criteria; ID = identification; VOCs = volatile organic compounds; µg/l = micrograms per liter; U = compound not detected at or above the reporting limit; UJ = the analyte was not detected above the laboratory reporting limit; J = estimated value below the laboratory reporting limit and above the method detection limit.

b/ Evaluation criteria are the New York State Ambient Water Quality Standards or Guidance Values for Class GA groundwater provided in the *New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1)* , dated June 1998, and the April 2000 Addendum.

c/ Sample MW-0420 is a blind duplicate of the sample collected from monitoring well MW-17 collected on April 28, 2020.

Table 4

Historical Groundwater Sampling Results
Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
MW-17	06/02/04	5 U	0.73 J	1 U	1 U	1 U	1 U	0.45 J	0.96 J	**510 D**	3.6	1 U	1 U	1 U	1 U	8.4	1 U	1 U	1 U	0.58 J	**26**	**120 D**	3 U
	11/02/04	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	**420**	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	**26**	**98**	60 U
	06/01/05	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	**1,700 D**	**7.2 J**	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	**19 J**	**380**	60 U
	12/01/05	20 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	**400**	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	**15**	**61**	12 U
	07/20/06	5 U	1 U	1 U	1 U	1 U	1 U	0.58 J	1 U	**140 D**	1.1	1 U	1 U	1 U	1 U	2.2	1 U	1 U	1 U	0.62 J	**18**	**36**	3 U
	12/22/06	13	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**110**	1 U	1 U	1 U	1 U	1.6 J	1 U	1 U	1 U	1 U	1 U	**6**	**6.4**	3 U
	06/29/07	14	**1.1**	1 U	1 U	1 U	1 U	3.6	1 U	**4,500 D**	**11**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**9.8**	**620 D**	3 U
	12/20/07	6.2 J	2 U	2 UJ	2 U	2 U	2 U	2 U	2 U	**140**	2 U	2 U	2 U	2 U	1.7 U	2 U	2 U	2 U	2 U	2 U	**12**	2 U	6 U
	06/12/08	100 U	20 U	20 U	20 U	20 U	20 U	20 U	100 U	**1,700**	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	**12 J**	**160**	60 U
	12/29/08	23	2 U	2 U	2 UJ	2 U	2 U	2 U	2 U	**160**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**17**	**19**	6 U
	06/16/09	5 U	1 U	1 U	1 U	1 U	1.1	1 U	0.87 J	**1,000 D**	3.8	1 U	1 U	5	1 U	1 U	0.62 J	1 U	1 U	1 U	**9.8**	**120 D**	2 U
	01/07/10	13.5	1 U	3 U	1 U	1 U	10 U	1 U	1 U	**216**	1 UJ	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	2.9	**44.4**	3 U
	03/31/10	12.8	1 U	**7.6**	1 U	1 U	10 U	1 U	1 U	**86.2**	1	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	4.9	**21.2**	3 U
	07/01/10	31	1 U	1 U	1 U	1 U	10 U	1 U	1 U	4.8	**7.4**	1 U	1 U	10 U	1 UJ	1 U	2 U	1 U	1 U	1 U	1 U	**9.0**	3 U
	09/21/10	43.4	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2.1	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	**2.1**	3 U
	12/16/10	13.3	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**17.8**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1.9	1 U	1.7	**3.3**	3 U
	03/28/11	16.3	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**6.7**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	2.9	1 U	3 U
	06/20/11	15.6 J	1 U	1 UR	1 U	1 U	10 UJ	1 U	1 U	3.7 J	1 U	1 U	1 U	10 U	1 U	1 UJ	2 U	1 U	2.3 J	1 U	1 U	1 U	3 U
	10/03/11	12.5	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**6.3**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.1	1.1	3 U
	12/15/11	13	1 U	1 UJ	1 U	1 U	10 U	1 U	1 U	**21**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.5	**3.1**	3 U
	07/06/12	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2.9	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U

Table 4

Historical Groundwater Sampling Results
Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
MW-17 (cont.)	11/29/12	5.1 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	1.9	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1	1 U
DUP (d)	11/29/12	5 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	2	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	0.98 J	1 U
	06/03/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	2.3	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.83 J	1	1 U
	12/23/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	05/27/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**9.8**	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1.9	2	1 U
	09/30/14	3 J	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	2.1	0.86 J	1 U	5 U	5 U	2 U	1 U	5 U	1 U	3.5	1 U	1 U	0.63 J	1 U
DUP	09/30/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	2.1	0.84 J	1 U	5 U	5 U	2 U	1 U	5 U	1 U	3.4	1 U	1 U	0.68 J	1 U
	12/22/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**306**	1.7	1 U	5 U	5 U	2 U	1 U	5 UJ	1 U	1 U	1 U	**35.4**	**16.9**	1 U
	03/19/15	10 UJ	0.5 U	2 UJ	2 U	2 UJ	5 U	1 U	1 UJ	**5.4**	0.67 J	1 U	5 U	5 U	2 U	1 U	5 UJ	1 U	1 U	1 U	0.38 J	**3.2**	1 U
	06/25/15	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**56.4**	**5.4 J**	1 U	5 U	5 U	2 U	1 U	NA	1 U	1 U	1 U	2	**17.7**	1 U
DUP	06/25/15	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**61.8**	**6.7 J**	1 U	5 U	5 U	2 U	1 U	NA	1 U	1 U	1 U	2.3	**20.6**	1 U
	12/10/15	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	2	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1.6	1 U
	04/27/16	10 UJ	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**15.8**	1 U	1 U	5 U	5 UJ	2 U	1 U	5 U	1 U	1 U	1 U	1.4 J	1.8	1 U
	08/31/16	10.5 UJ	0.5 U	2 U	2 UJ	2 UJ	5 U	1 U	1 U	2.7	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1	1 U
	12/20/16	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	1.4	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	08/23/17	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	2.8	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.94 J	1 U	1 U
DUP	08/23/17	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	3.1	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.92 J	1 U	1 U
	04/17/18	10.0 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**25.5**	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	2.7	1 U	1 U
	04/17/19	10.0 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**10.1**	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
DUP	04/17/19	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**11**	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	04/28/20	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	1.5	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
DUP	04/28/20	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	1.6	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U

Table 4

Historical Groundwater Sampling Results
Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
MW-22	06/02/04	20 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	**90**	**5.6**	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	**25**	4 U	12 U
	11/02/04	20 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	**110**	**8.6**	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U	**33**	4 U	12 U
	06/01/05	10 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**70**	2.5	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**19**	2 U	6 U
	12/01/05	10 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**36**	1.8 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**13**	2 U	6 U
	07/19/06	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**41**	1.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**12**	1 U	3 U
	12/22/06	13	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**81**	2.8	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**18**	1 U	3 U
	06/29/07	11	1 U	0.54 J	1 U	1 U	1 U	1 U	1 U	**72**	2.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**15**	1 U	3 U
	12/20/07	4.4 J	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	**54**	1.5	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**10**	1 U	3 U
	06/12/08	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**76**	2.2	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**11**	1 U	3 U
	12/29/08	17	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3.9	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	3 U
	06/16/09	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**63**	1.9	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**11**	1 U	2 U
	01/07/10	10 U	1 U	2.9 U	1 U	1 U	10 U	1 U	1 U	**11.3**	1 UJ	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	**8**	3 U
	03/31/10	14.4	1 U	**7.6**	1 U	1 U	10 U	1 U	1 U	4.1	1 U	1 U	1 U	10 U	3.6	1 U	2 U	1 U	1 U	1 U	1 U	1.8	3 U
	07/01/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**18.2**	**8.4**	1 U	1 U	10 U	1 UJ	1 U	2 U	1 U	1 U	1 U	2.2	**9.6**	3 U
DUP	07/01/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**19.6**	**8.4**	1 U	1 U	10 U	1 UJ	1 U	2 U	1 U	1 U	1 U	2.4	**9.6**	3 U
	09/21/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**18.3**	2.5	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.5	**8.9**	3 U
	12/17/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**15.2**	3.2	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.1	**5.8**	3 U
	03/28/11	13.2	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2.4	1.2	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	06/20/11	20 J	1 U	1 UR	1 U	1 U	10 UJ	1 U	1 U	**5.6 J**	1 U	1 U	1 U	10 U	1 U	1 UJ	2 U	1 U	1 U	1 U	1.3 J	1.6 J	3 U
	10/03/11	20.2	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**5.8**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	2.5	1 U	3 U
DUP	10/03/11	23.4	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**5.4**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	2.6	1 U	3 U
	12/15/11	14.4	1 U	1 UJ	1 U	1 U	10 U	1 U	1 U	**6.3**	1.5	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.4	**2.6**	3 U
	07/06/12	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**10**	1.3	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.6	**4.4**	3 U
	11/29/12	5 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**21.2**	2.3	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1	**6.5**	1 U
	06/03/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	4.5	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.70 J	0.69 J	1 U
	12/23/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	05/27/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**13.7**	1.5	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**5.8**	1 U
	12/23/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**17.4**	0.90 J	1 U	5 U	5 U	2 U	1 U	5 UJ	1 U	1 U	1 U	1 U	**2.9**	1 U
	06/26/15	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**22.2**	3.2 J	1 U	5 U	5 U	2 U	1 U	NA	1 U	1 U	1 U	0.31 J	**5.5**	1 U
	12/10/15	10 UJ	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**31.9**	1.1	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**3.1**	1 U
	08/31/16	10 UJ	0.5 U	2 U	2 U	2 U	5 UJ	1 UJ	1 U	**38.2**	1.6	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**5.2**	1 U
	08/23/17	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**26.6**	1.3	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.48 J	**3.6**	1 U
	04/28/20	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**22.6**	1.0	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**3.8**	1 U

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Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
MW-31	12/01/05	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**99**	**8.2**	1 U	1 U	1 U	1 U	2.4	1 U	1 U	1 U	1 U	**48**	1 U	3 U
	07/19/06	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**96**	**7**	1 U	1 U	1 U	1 U	1	1 U	1 U	1 U	1 U	**34**	1 U	3 U
	12/22/06	10	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**120 D**	**7.7**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**40**	1 U	3 U
	06/29/07	9.8 J	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**92**	**7.8**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	**32**	2 U	6 U
	12/20/07	4.6 J	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	**91**	**6**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**33**	1 U	3 U
	06/12/08	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**93 D**	**5.5**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**28**	1 U	3 U
	12/29/08	24	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**40**	1.1	1 U	1 U	1 U	1 U	0.55 J	1 U	1 U	1 U	1 U	**10**	1 U	3 U
	06/16/09	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**89**	**5.1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**24**	1 U	2 U
	01/07/10	10 U	1 U	2.7 U	1 U	1 U	10 U	1 U	1 U	**104**	1 UJ	1 U	1 U	10 U	1 U	1	2 U	1 U	1 U	1 U	**18.7**	1 U	3 U
	03/31/10	10.4	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**30**	1.3	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	3	1 U	3 U
	07/01/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**108**	**11.1**	1 U	1 U	10 U	1 UJ	1 U	2 U	1 U	1 U	1 U	**6.2**	1 U	3 U
	09/21/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**99.4**	4.4	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	4.6	1.2	3 U
	12/16/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**43.4**	2	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.5	1 U	3 U
	03/28/11	14	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**5.2**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	06/20/11	18.6 J	**2.5 J**	1 UR	1 U	1 U	10 UJ	1 U	1 U	**76.8 J**	4 J	1 U	1 U	10 U	1 U	1 UJ	2 U	1 U	1 U	1 U	2.4 J	1.8 J	3 U
	10/03/11	17.2	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**40.3**	2.1	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.9	**2.2**	3 U
	12/15/11	15.6	1 U	1 UJ	1 U	1 U	10 U	1 U	1 U	**96.1**	3.9	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.3	**3.2**	3 U
	07/06/12	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**74.3**	3.7	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	4.5	1 U	3 U
	11/29/12	5 U	0.5 U	2 U	2 U	2 U	5 U	1 U	0.48 J	**88.6**	3.8	1 U	5 U	5 U	2 U	2.4	5 U	0.49 J	1 U	1 U	2.5	**2.2**	1 U
	06/03/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**81.2**	2.7	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	2.1	0.78 J	1 U
	12/23/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**41.8**	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	05/27/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**54.9**	2.3	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1.5	**2.4**	1 U
	12/23/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**56.8**	1.8	1 U	5 U	5 U	2 U	0.32 J	5 UJ	1 U	1 U	1 U	0.81 J	1.2	1 U
	06/26/15	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**43.0**	4.5 J	1 U	5 U	5 U	2 U	1 U	NA	1 U	1 U	1 U	1.4	0.91 J	1 U
	12/10/15	10 UJ	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**66.6**	1.6	1 U	5 U	5 U	2 U	0.36 J	5 U	1 U	1 U	1 U	1	1.5	1 U
	08/31/16	10 UJ	0.5 U	2 U	2 U	2 U	5 UJ	1 UJ	1 U	**60.1**	2.6	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1.2	1 U	1 U
	08/23/17	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**62.0**	2.7	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	2.3	0.86 J	1 U
	04/17/18	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**13.4**	0.41 J	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1.4	1.2	1 U
	04/17/19	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**37.9**	0.92 J	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1.7	1 U	1 U
	04/28/20	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**9.2**	1 U	2 U	2 U	6 U	3 U	2 U	6 U	2 U	2 U	2 U	0.74 J	1 U	1 U

Table 4

Historical Groundwater Sampling Results
Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
MW-32	12/01/05	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**91**	**5.7**	1 U	1 U	1 UJ	1 U	2.5	1 UJ	1 U	1 U	1 U	**75**	1 U	3 U
	07/20/06	5 U	1 U	1 U	1 U	0.93 J	1 U	1 U	1 U	**91**	**6.7**	1 U	1 U	1 U	1 U	0.98 J	1 U	1 U	1 U	1 U	**80**	1 U	3 U
DUP	07/20/06	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**86**	**6**	1 U	1 U	1 U	1 U	0.90 J	1 U	1 U	1 U	1 U	**74**	1 U	3 U
	12/22/06	9.9	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**84**	**5.7**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**71**	1 U	3 U
	06/29/07	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**80**	**6.1**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**68**	1 U	3 U
	12/20/07	6.3	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	**7.9**	1 U	1 U	1 U	1 U	1 U	0.75 J	1 U	1 U	1 U	1 U	**11**	1 U	3 U
	06/12/08	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**89**	**5.8**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**65**	1 U	3 U
	12/29/08	27	1 U	1 U	1 U	1 U	1 U	1 U	1 U	2.5	1 U	1 U	1 UJ	1 U	1 U	0.36 J	1 U	1 U	1 U	1 U	3.5	1 U	3 U
	06/16/09	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**69**	4.6	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**57**	1 U	2 U
	01/07/10	10 U	1 U	2.6 U	1 U	1 U	10 U	1 U	1 U	**99**	1 UJ	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**6.9**	1.8	3 U
	03/31/10	10.1	1 U	**8.5**	1 U	1 U	10 U	1 U	1 U	**30.2**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	2.1	1 U	3 U
	07/01/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**136**	**10.3**	1 U	1 U	10 U	1 UJ	1 U	2 U	1 U	1 U	1 U	1 U	**3.4**	3 U
	09/21/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**13.1**	4	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	**14**	3 U
DUP	09/21/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**12.7**	4.1	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	**13.7**	3 U
	12/17/10	10.3	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2.8	1.9	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	**2.4**	3 U
	03/28/11	16.7	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1.5	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	06/20/11	16.7 J	1 U	1 UR	1 U	1 U	10 UJ	1 U	1 U	**38.8 J**	3.4 J	1 U	1 U	10 U	1 U	1 UJ	2 U	1 U	1 U	1 U	**9.5 J**	**12.1 J**	3 U
	10/03/11	19.8	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2.3	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	12/15/11	10 U	1 U	1 UJ	1 U	1 U	10 U	1 U	1 U	**46**	3.3	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1.6	**13.7**	3 U
	07/06/12	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**79.9**	3.4	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1	**11.7**	3 U
	11/29/12	5 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**67.3**	2.9	1 U	5 U	5 U	2 U	0.47 J	5 U	1 U	1 U	1 U	1 U	**13.4**	1 U
	06/03/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**32.4**	1.1	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**4.7**	1 U
	12/23/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**12**	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1.5	1 U
	12/23/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**38.4**	1.5	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.51 J	**14.4**	1 U
	12/23/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**7.8**	1 U	1 U	5 U	5 U	2 U	1 U	5 UJ	1 U	1 U	1 U	1 U	1 U	1 U
	06/26/15	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**55.6**	**5.2 J**	1 U	5 U	5 U	2 U	1 U	NA	1 U	1 U	1 U	0.75 J	**7.5**	1 U
	12/10/15	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**82.8**	1.6	1 U	5 U	5 U	2 U	1 U	5 UJ	1 U	1 U	1 U	1 U	**8.9**	1 U
	08/31/16	10 UJ	0.5 U	2 U	2 U	2 U	5 UJ	1 UJ	1 U	**79.3**	2.1	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**7.1**	1 U
	08/23/17	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**67.7**	1.6	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**5.6**	1 U
	04/28/20	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	**19.9**	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**3.3**	1 U

Table 4

Historical Groundwater Sampling Results
Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
MW-34	12/01/05	5 U	1 U	1 U	1 U	1 U	1 U	0.82 J	1 U	**110 D**	0.67 J	1 U	1 U	1 U	1 U	1.4	1 U	1 U	1 U	1.1	**16**	**63**	3 U
	07/20/06	6.9	1 U	1 U	1 U	1 U	1 U	1.4	1 U	**51**	1 U	1 U	1 U	1 U	1 U	4.7	1 U	1 U	1 U	1.2	**12**	**16**	3 U
	12/22/06	10	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**84**	0.70 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.70 J	**8.3**	**40**	3 U
DUP	12/22/06	12	1 U	1 U	1 U	1 U	1 U	1	1 U	**81**	0.76 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.88 J	**9.9**	**42**	3 U
	06/29/07	15	1 U	1 U	1 U	1 U	1 U	0.75 J	1 U	**98**	0.79 J	1 U	1 U	1 U	1 U	2.4	1 U	1 U	1 U	0.60 J	**7.9**	**34**	3 U
DUP	06/29/07	17	1 U	1 U	1 U	1 U	1 U	0.78 J	1 U	**98**	0.72 J	1 U	1 U	1 U	1 U	2.3	1 U	1 U	1 U	0.61 J	**7.5**	**32**	3 U
	12/20/07	6.1	1 U	1 UJ	1 U	1 U	1 U	0.55 J	1 U	**100 D**	0.59 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.74 J	**7.8**	**55**	3 U
	06/12/08	5 U	1 U	1 U	1 U	1 U	1 U	0.75 J	1 U	**140 D**	0.97 J	1 U	1 U	1 U	1 U	0.83 J	1 U	1 U	1 U	0.60 J	**7**	**78**	3 U
DUP	06/12/08	2.7 J	1 U	1 U	1 U	1 U	1 U	0.55 J	1 U	**160 D**	0.96 J	1 U	1 U	1 U	1 U	0.83 J	1 U	1 U	1 U	0.58 J	**6.5**	**69**	3 U
	12/29/08	30	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**41**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**11**	**8.8**	3 U
	06/16/09	3.1 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**100 D**	0.70 J	1 U	1 U	1 U	1 U	0.41 J	1 U	1 U	1 U	0.42 J	**7.3**	**52**	2 U
	01/07/10	10 U	1 U	1 U	1 U	1 U	10 U	1.2	1 U	**13.3**	1 UJ	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	**16.1**	3 U
	03/31/10	10.1	1 U	**7.4**	1 U	1 U	10 U	1 U	1 U	1.9	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1.1	3 U
DUP	03/31/10	11.2	1 U	**7.1**	1 U	1 U	10 U	1 U	1 U	1.8	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1.2	3 U
	07/01/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1.1	**7.2**	1 U	1 U	10 U	1 U	1 U	2.4	1 U	1 U	1 U	1 U	1 U	3 U
	09/21/10	18.8	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1.2	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	12/17/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	03/28/11	13.7	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	06/20/11	19.5 J	1 U	1 UR	1 U	1 U	10 UJ	1 U	1 U	1 U	1 U	1 U	1 U	10 UJ	1 U	1 UJ	2 U	1 U	1 U	1 U	1 U	**3.2 J**	3 U
	10/03/11	26.8	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	12/15/11	17.9	1 U	1 UJ	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
DUP	12/15/11	19.2	1 U	1 UJ	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U	3 U
	07/06/12	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	**2.6**	3 U
	11/29/12	7.4 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	06/04/13	3.5 J	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.64 J	1 U	1 U
	12/23/13	10 U	0.5 U	2 U	2 U	2 U	5 U	0.39 J	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	05/27/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**3.1**	1 U
	12/23/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 UJ	1 U	1 U	1 U	1 U	1 U	1 U
	06/26/15	10 U	0.5 UJ	2 U	2 U	2 U	5 U	1 UJ	1 UJ	1 U	1 UJ	1 U	5 U	5 U	2 UJ	1 U	NA	1 U	1 U	1 U	1 U	1 U	1 U
	12/10/15	10 UJ	0.5 U	2 U	2 U	2 U	5 U	0.64 J	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
DUP	12/10/15	10 U	0.5 U	2 U	2 U	2 U	5 U	0.59 J	1 U	1 U	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
	08/31/16	10 UJ	0.5 U	2 U	2 UJ	2 UJ	5 U	1 U	1 U	0.52 J	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1.3	1 U
	08/23/17	10 U	0.5 U	2 U	1 U	1 U	5 U	0.39 J	1 U	1 U	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	0.98 J	1 U
	04/28/20	10 U	0.5 U	2 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U

Table 4

Historical Groundwater Sampling Results
Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
P-8	06/02/04	120 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	**830**	25 U	25 U	25 U	25 U	25 U	25 U	1 U	1 U	1 U	1 U	**320**	**25**	75 U
	11/02/04	120 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	**730**	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	**260**	**27**	75 U
	06/01/05	120 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	**700**	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	**230**	**37**	75 U
	12/01/05	120 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	**1,400**	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	25 U	**680**	**16 J**	75 U
	07/21/06	5 U	0.66 J	1 U	1 U	1	1 U	1 U	1 U	**840 D**	4.8	1 U	1 U	1 U	1 U	1.4	1 U	0.64 J	1 U	1 U	**260 D**	**210 D**	3 U
	12/22/06	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U	**1,700 D**	10 U	10 U	10 U	10 U	**8.1 J**	10 U	10 U	10 U	10 U	10 U	**860**	**5 J**	30 U
	06/29/07	50 U	10 U	**6.4 BJ**	10 U	10 U	10 U	10 U	10 U	**900**	**6.6 J**	10 U	10 U	10 U	**12 B**	10 U	10 U	10 U	10 U	10 U	**210**	**9.3 J**	30 U
	12/20/07	100 U	20 U	20 UJ	20 U	20 U	20 U	20 U	20 U	**1,400**	20 U	20 U	20 U	20 U	**32**	20 U	20 U	20 U	20 U	20 U	**460**	20 U	60 U
	06/12/08	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	**1,200**	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U	**260**	20 U	60 U
	12/29/08	27	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**360**	2.6 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	**220**	5 U	15 U
	06/16/09	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**600 D**	**6.4**	1 U	1 U	0.85 J	1 U	1 U	1 U	0.90 J	1 U	1 U	**200 D**	**4.9**	2 U
	01/07/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**224**	1.5	1 U	1 U	10 U	1 UJ	1 U	2 U	1 U	1 U	1 U	**259**	1.8	3 U
	03/31/10	10 U	1 U	**7.4**	1 U	1 U	10 U	1 U	1 U	**75**	1 U	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**359**	1.8	3 U
	07/01/10	12.2 J	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**381**	**7.3**	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**318**	**8.2**	3 U
	09/21/10	16.1	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**572**	2.5	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**8.3**	**49.3**	3 U
	12/17/10	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**1,010**	3.9	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**284**	**50.9**	3 U
	03/28/11	13.5	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**774**	2.6	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**211**	**40.4**	3 U
	06/20/11	15.3 J	1 U	1 UR	1 U	1 U	10 UJ	1 U	1 U	**901 J**	4 J	1 U	1 U	10 U	1 U	1 UJ	2 U	1 U	1 U	1 U	**38.7 J**	**52.8 J**	3 U
	10/03/11	12.9	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**776**	3.5	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**84.6**	**37**	3 U
	12/15/11	12.7	1 U	1 UJ	1 U	1 U	10 U	1 U	1.3	**1,430**	**6.5**	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	**386**	**31.6**	3 U
	07/06/12	10 U	1 U	1 U	1 U	1 U	10 U	1 U	1 U	**1,310**	**5.2**	1 U	1 U	10 U	1 U	1 U	2 U	1 U	1 U	1 U	3.4	**66**	3 U
	11/29/12	5 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**536**	1.2	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	**15.4**	**87.8**	1 U
DUP	11/29/12	5 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**524**	1.1	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	**15.1**	**87.6**	1 U
	06/03/13	4.1 J	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**205**	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	**279**	**3.0**	1 U
	12/23/13	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**202**	1 U	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	**193**	0.93 J	1 U
	05/27/14	10 U	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**390**	0.82 J	1 U	5 U	5 U	2 U	1 U	5 U	1.2 J	1 U	1 U	**380**	**4.3**	1 U
	09/30/14	9.3 J	0.5 U	2 U	2 U	2 U	5 U	1 U	1 U	**72**	2.7	1 U	5 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**114**	1 U
	12/22/14	11.9	0.5 U	2 U	2 U	2 U	5 U	1 U	0.88 J	**1,340**	3.9	1 U	5 U	0.59 J	2 U	1 U	5 UJ	1 U	1 U	1 U	**55.8**	**116**	1 U
	03/19/15	50 UJ	2.5 U	10 UJ	10 U	10 UJ	25 U	5 U	5 UJ	**1,760**	**11.5**	5 U	25 U	25 U	10 U	5 U	25 UJ	5 U	5 U	5 U	**217**	**94.9**	5 U
DUP	03/19/15	10.3 J	0.5 U	2 UJ	2 U	2 UJ	5 U	1 U	1.4 J	**1,810**	3.1	1 U	5 U	1.8 J	2 U	1 U	5 UJ	1 U	1 U	1 U	**231**	**111**	1 U
	06/25/15	50 U	2.5 U	10 U	10 U	10 U	25 U	5 U	5 U	**791 J**	**106 J**	5 U	25 U	25 U	10 U	5 U	NA	5 U	5 U	5 U	4.2 J	**111**	5 U
DUP	06/25/15	10 U	0.5 U	2 U	2 U	2 U	0.39 J	1 U	0.73 J	**1,040 J**	**54 J**	1 U	5 U	0.62 J	2 U	1 U	NA	1 U	0.39 J	1 U	**5.2**	**151**	1 U
	12/10/15	10 U	0.29 J	2 U	2 U	2 U	5 U	1 U	1.5	**699**	4	1 U	5 U	0.33 J	2 U	1 U	5 U	1 U	1 U	1 U	**5.5**	**369**	1 U
	04/27/16	10 UJ	0.5 U	2 UJ	2 UJ	2 UJ	5 U	1 U	1.4	**1,550**	2.9	1 U	5 U	1 J	2 U	1 U	5 U	1 U	1 U	1 U	**14.2**	**179**	1 U
DUP	04/27/16	10 UJ	0.5 U	2 UJ	2 UJ	2 UJ	5 U	1 U	1.3	**1,510**	2.9	1 U	5 U	0.93 J	2 U	1 U	5 U	1 U	1 U	1 U	**13.5**	**171**	1 U

Table 4

Historical Groundwater Sampling Results
Former General Instrument Corporation Site
Sherburne, New York (a)

Volatile Organic Compounds (µg/l):		Acetone	Benzene	Bromomethane	Chloroethane	Chloromethane	Cyclohexane	1,1-Dichloroethane	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Ethylbenzene	Isopropylbenzene	Methylcyclohexane	Methylene chloride	Methyl tert butyl ether	Naphthalene	Tetrachloroethene	Toluene	1,1,1-Trichloroethane	Trichloroethene	Vinyl chloride	Xylene (total)
Evaluation Criteria (b):		**50**	**1**	**5**	**5**	**5**	**(c)**	**5**	**5**	**5**	**5**	**5**	**5**	**(c)**	**5**	**10**	**10**	**5**	**5**	**5**	**5**	**2**	**5**
Sample ID	**Date**																						
P-8 (cont.)	08/31/16	10 UJ	0.52	2 U	2 UJ	2 UJ	5 U	1 U	1 U	**380**	1.3	1 U	5 U	5 U	2 U	1 U	5 U	1 U	0.60 J	1 U	0.76 J	**119**	1 U
DUP	08/31/16	10 UJ	0.51	2 U	2 UJ	2 UJ	5 U	1 U	1 U	**393**	1.5	1 U	5 U	5 U	2 U	1 U	5 U	1 U	0.57 J	1 U	0.86 J	**120**	1 U
	12/20/16	50 U	2.5 U	10 U	5 U	5 U	25 U	5 U	5 U	**996**	3 J	5 U	5 U	25 U	10 U	5 U	25 U	5 U	5 U	5 U	**17.1**	**143**	5 U
DUP	12/20/16	10 U	0.30 J	2 U	1 U	1 U	5 U	1 U	0.35 J	**984**	2.4	1 U	1 U	5 U	2 U	1 U	5 U	1 U	0.32 J	1 U	**17.2**	**137**	1 U
	04/19/17	50 U	2.5 U	10 U	5 U	5 U	25 U	5 U	5 U	**692 J**	5 U	5 U	5 U	25 U	10 U	5 U	25 U	5 U	5 U	5 U	2.3 J	**161**	5 U
DUP	04/19/17	50 U	2.5 U	10 U	5 U	5 U	25 U	5 U	5 U	**698**	5 U	5 U	5 U	25 U	10 U	5 U	25 U	5 UJ	5 U	5 U	2.4 J	**167**	5 U
	08/23/17	10 U	0.35 J	2 U	1 U	1 U	5 U	1 U	1 U	**379**	1.4	1 U	1 U	5 U	2 U	1 U	5 U	1 U	0.60 J	1 U	0.83 J	**95.4 J**	1 U
	12/08/17	10 U	0.26 J	2 U	1 U	1 U	5 U	1 U	1 U	**286**	0.90 J	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	0.56 J	**64.8**	1 U
DUP	12/08/17	10 UJ	0.32 J	2 U	1 U	1 U	5 U	1 U	1 U	**254**	0.91 J	1 U	1 U	5 U	2 U	1 U	5 UJ	1 U	1 U	1 U	0.44 J	**74.3**	1 U
	04/17/18	16.1	0.26 J	2 U	1 U	1 U	5 U	1 U	1 U	**98.4**	0.70 J	1 U	1 U	5 U	2 U	1 U	5 U	1 U	0.28 J	1 U	3.3	**75.1**	1 U
DUP	04/17/18	15.7	0.25 J	2 U	1 U	1 U	5 U	1 U	1 U	**98.3**	0.67 J	1 U	1 U	5 U	2 U	1 U	5 U	1 U	0.28 J	1 U	3.4	**75.0**	1 U
	04/17/19	10 U	0.50 U	2 U	1 U	1 U	5 U	1 U	1 U	**118**	0.71 J	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**66.3**	1 U
	04/28/20	10 U	0.50 U	2 U	1 U	1 U	5 U	1 U	1 U	**19.8**	1 U	1 U	1 U	5 U	2 U	1 U	5 U	1 U	1 U	1 U	1 U	**12.3**	1 U

a/ All results are reported in micrograms per liter (µg/l). Concentrations highlighted in Bold text and gray shading exceed evaluation criteria; U = compound not detected at or above the reporting limit; J = estimated value below the laboratory reporting limit and above the method detection limit; UJ = the analyte was not detected above the laboratory reporting limit; D = compound identified in analysis at the secondary dilution factor; B =

b/ Evaluation criteria are the New York State Ambient Water Quality Standards or Guidance Values for Class GA groundwater provided in the New York State Department of Environmental Conservation Division of Water Technical and Operational Guidance Series (1.1.1), dated June 1998, and the April 2000 Addendum.

c/ No standard or guidance value for groundwater is available for this substance.

d/ All duplicates were originally designated with unique sample identifications in the field for blind laboratory analysis.

Table 5

Geochemical and Biological Assay Results for Well P-8
P-8 Supplemental Remediation Performance Monitoring
Former General Instruments Site
Sherburne, New York (a)

Sampling Event:	**Baseline**	**Performance Monitoring**											
Date:	5/28/2014	9/30/2014	12/23/2014	3/19/2015	6/25/2015	4/27/2016	8/31/2016	12/20/2016	4/19/2017	8/24/2017	12/7/2017	4/17/2019	4/28/2020
Dissolved Solids (mg/l)													
Alkalinity as $CaCO_3$	250	440	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloride	71	100	40	52	120	NA	NA	NA	NA	NA	NA	NA	NA
Nitrate	1.3	0.5 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ferrous Iron	0.9	38.0	25.0	19.0	18.0	NA	NA	NA	NA	NA	NA	NA	NA
Sulfate	16.0	1.0 U	1.0 U	4.1	2.6	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U	NA	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand	6.0 U	123.0	49.6	41.6	10.0 U	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Organic Carbon	6.0	73.0	39.4	16.0	12.0	4.9	4.1	8.8	4.5	4.4	4.0	4.0	4.3
Dissolved Gases (µg/l)													
Ethane	36	14	8.0	18	54	50	21	26	43	11	16	34	17
Ethene	6.1	2.6	0.6	4.1	2.7	22	3.6	28	18	4.4	11	14	9.5
Methane	2,000	12,000	20,000	16,000	19,000	15,000	9,200	13,000	18,000	4,100	9,100	12,000	10,000
Field Geochemical Parameters													
pH	6.64	6.06	6.75	6.37	6.95	6.97	6.82	6.79	7.58	6.08	4.96	7.66	7.12
Conductivity (mS/cm)	0.74	1.07	0.453	0.678	1.01	0.437	1.04	0.986	0.947	0.881	0.991	0.941	0.798
Turbidity (NTU)	0.0	10.9	9.2	18.0	10.8	12.3	0.0	6.6	22	8.7	12.2	6.5	0.9
D.O. (mg/l)	1.27	0.0	0.46	0.0	0.37	0.0	0.33	3.35	0.4	0.0	1.09	0.0	0.0
T (ºCelsius)	11.5	16.3	11.8	7.6	13.43	11.42	14.35	12.73	11.23	15.5	12.76	9.92	10.09
ORP (mV)	-27	-6	-149	-196	-106	-182	-108	-109	-109	-2	-110	-124	-87
CSIA, $\delta^{13}C$ (‰)													
Vinyl Chloride	-38.60	-18.93	-29.73	-36.61	-31.31	-26.66	-12.00	-18.80	-21.77	-12.50	-15.68	-16.63	-12.97
trans-1,2-Dichloroethene	-42.55 J*	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
cis-1,2-Dichloroethene	-28.30	-21.58	-21.09	-26.83	-27.10	-20.72	ND	-15.09	-11.14	-13.90	-12.85	-7.84	-3.68
Trichloroethene	-27.68	ND	-16.60	-24.14	-25.92	ND	ND	ND	-25.92	-25.56	ND	ND	ND
Tetrachloroethene	-27.83 J*	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	ND	ND
qPCR (cells/ml)													
Dechlorinating Bacteria													
Dehalococcoides spp.	5.80E+03	3.43E+04	1.08E+05	3.78E+04	3.38E+05	8.54E+04	2.15E+04	9.80E+04	2.35E+04	2.38E+04	4.75E+03	8.98E+03	4.24E+03
Dehalobacter spp.	4.69E+01	2.98E+02	2.55E+02	2.13E+02	2.46E+02	2.36E+03	2.91E+03	5.65E+03	6.75E+02	5.72E+02	4.63E+01	<5.00E+00	<5.00E+00
Functional Genes													
tceA Reductase	1.00E-01 J	2.78E+01	9.02E+01	3.79E+01	1.36E+02	3.07E+01	1.50E+00	4.89E+01	1.91E+01	5.26E+01	9.41E+01	2.90E+01	5.60E+00
BAV1 Vinyl Chloride Reductase	1.00E+00	3.48E+01	4.43E+01	4.02E+01	8.69E+02	3.80E+01	4.30E+00	1.53E+02	3.70E+00	1.05E+01	3.10E+00	7.00E-01	1.10E+00
Vinyl Chloride Reductase	8.02E+00	2.70E+03	1.95E+04	1.82E+03	1.71E+05	3.64E+04	6.39E+03	5.52E+04	3.99E+03	3.51E+04	9.67E+03	4.64E+03	<5.00E-01
Phylogenetic Group													
Total Eubacteria	2.30E+05	1.08E+06	1.24E+06	1.05E+06	2.05E+06	1.10E+06	5.65E+05	1.72E+06	1.97E+05	1.14E+06	1.55E+06	5.58E+06	6.12E+06
Iron and Sulfate Reducing Bacteria	1.61E+03	1.06E+03	1.59E+03	2.91E+03	1.93E+04	NA	NA	NA	NA	NA	NA	NA	NA
Methanogens	1.40E+03	2.43E+04	7.55E+04	4.24E+04	1.43E+05	2.97E+04	7.09E+03	1.02E+06	3.75E+03	6.31E+03	6.33E+03	4.13E+02	2.09E+04

a/ mg/l = milligrams per liter; µg/l = micrograms per liter; cells/ml = cells per milliliter; mS = milliSiemens per centimeter; mg/l = milligrams per liter; NTU = nephelometric turbidity units; ‰ = per mil; mV = millivolts; CSIA = compound-specific isotope analysis; qPCR = quantitative Polymerase Chain Reaction; U = not detected at or above laboratory reporting limit; ND = not detected; NA = not analyzed; J = estimated value below the laboratory reporting limit and above the method detection limit; J* = target analyte produced a low peak signal and the result is considered usable to ±2‰, but not the standard ±0.5‰.

APPENDIX

A STANDARD OPERATING PROCEDURES

FIELD STANDARD OPERATING PROCEDURE #3

SAMPLE PACKAGING AND SHIPMENT PROCEDURE

Shipping samples is a basic but important component of field work. The majority of field activities include the collection of environmental samples. Proper packing and preservation of those samples is critical to ensuring the integrity of our work product. The user is advised to read the entire standard operating procedure (SOP) and review the site health and safety plan (HASP) and/or project safety plan (PSP) before beginning any onsite activities. In accordance with the HASP or PSP, proper personal protective equipment (PPE) must be selected and used appropriately.

3.1 ACRONYMS AND ABBREVIATIONS

CFR	Code of Federal Regulations
DOT	U.S. Department of Transportation
IATA	International Air Transport Association
HASP	Health and safety plan
PPE	Personal protective equipment
PSP	Project safety plan
SOP	Standard operating procedure

3.2 MATERIALS

- Suitable shipping container (e.g., plastic cooler)
- Chain-of-custody forms
- Custody seals
- Sample container custody seals (as necessary)
- Mailing address labels (as necessary)
- Shipping form (with account number, as necessary)
- Tape (e.g., strapping, clear packing)
- Permanent marker
- PPE
- Bubble wrap or other packing material

Temperature-preserved samples:

- Large plastic garbage bag
- Wet ice
- Heavy-duty zipper-style plastic bags
- Universal sorbent materials

Note: Some materials will be supplied by the laboratory, while others are must be supplied by the sampler. Confirm supplier of materials prior to mobilizing to the field.

3.3 PRECONDITIONS AND BACKGROUND

This SOP has been prepared as part of the company's Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel

and will ensure that the tasks are performed in a safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of company employees and will be revised periodically to reflect updates to company policies, work practices, and the applicable state and/or federal guidance. Employees must verify that this document is the most recent version of the company SOPs. Employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

WSP requires that all personnel performing specific project assignments be appropriately qualified, including having required certifications or licenses, and properly trained in accordance with the requirements of their assignment, the Environmental Service Line's field standard operating procedures, and the Quality Management System.

This SOP is designed to provide the user with a general outline for shipping samples and assumes the user is familiar with basic field procedures, such as recording field notes (SOP 1), sample collection and quality assurance procedures (SOP 4), and investigation derived waste management procedures (SOP 5).

Most environmental samples are classified non-hazardous materials due to unknown characteristics and hazardous classes, however environmental samples can meet the definition of U.S. Department of Transportation (DOT) hazardous materials when shipped by air, ground, or rail from a project site to the laboratory (e.g., free product, samples preserved with a hazardous material [TerraCore® samplers]). As such, field staff must work with their assigned company compliance professional to determine whether the sample shipment is subject to any specific requirements (e.g., packaging, marking, labeling, and documentation) under the DOT hazardous materials regulations.

3.4 SAMPLE SHIPMENT PROCEDURES

The two major concerns in shipping samples are incidental breakage during shipment and complying with applicable DOT and courier requirements for hazardous materials shipments.

> **NOTE: Many couriers, including Federal Express and United Parcel Service, have requirements that the company register with them before shipping hazard materials. In most cases, it is the sampling location, not the company office address, which needs to be registered. Therefore, each project will likely have unique requirements. Please contact your company compliance professional to determine whether or not you will be required to register for your shipment.**

Protecting the samples from incidental breakage can be achieved using "common sense." Pack all samples in a manner that will prevent them from moving freely about in the cooler or shipping container. Do not allow glass surfaces to contact each other. When possible, repack the sample containers in the same materials that they were originally received in from the laboratory. Cushion each sample container with plastic bubble wrap, styrofoam, or other nonreactive cushioning material. A more detailed procedure for packing environmental samples is presented below.

3.4.1 NON-HAZARDOUS MATERIAL ENVIRONMENTAL SAMPLES

The first step in preparing your samples for shipment is securing an appropriate shipping container. In most cases, the analytical laboratory will supply the appropriate container for bottle shipment, which can be used to return samples once they have been collected. Be sure that the container is large enough to contain the samples plus a sufficient amount of packing materials, and if applicable, enough wet ice to maintain the samples at the preservation temperature (usually 4 degrees Celsius). Use additional shipping containers as needed so that sample containers are protected from breakage due to overcrowding. Do not use lunch-box sized coolers or soft sided coolers, which do not offer sufficient insulation or protection from damage.

3.4.1.1 TEMPERATURE-PRESERVED SAMPLE CONTAINER PREPARATION

Temperature-preserved samples should be shipped to the laboratory in an insulated container (e.g., cooler). If using a plastic cooler with a drain, securely tape the inside of the drain plug with duct tape or other material to ensure that no water leaks from the cooler during shipment. Place universal sorbent materials (e.g., sorbent pads) in the bottom of the insulated container. The amount of sorbent material must be sufficient to absorb any condensation from the wet ice and a reasonable volume of water from melted wet ice (if a bag were to rupture) or a damaged (aqueous) sample container.

The next step is to line the insulated container with a large, heavy-duty plastic garbage bag. If shipping breakable sample containers (e.g., glass), place bubble wrap or other packing materials on the bottom of the container. Place the samples, including a temperature blank, on the packing materials with sufficient space to allow for the addition of more bubble wrap or other packing material between the sample containers. Place large or heavy sample containers on the bottom of the cooler with lighter samples placed on top to minimize the potential for breakage. Place all sample containers in the shipping container right-side up. Do not overfill the cooler with samples; room must be left for a sufficient volume of wet ice. Wet ice must be double-bagged in heavy-duty zipper-style plastic bags (1 gallon-sized, or less); properly seal both bags before placing in the insulated container. Place the bags of ice on top of or between the samples. Place as much ice as possible into the cooler to ensure the samples arrive at the lab at the required preservation temperature, even if the shipment is delayed. Fill any remaining space in the container with bubble wrap or other packing material to limit the airspace and minimize the shifting of the sample containers and in-transit melting of ice. Securely close the top of the heavy-duty plastic bag and knot or seal with tape.

3.4.1.2 NON-TEMPERATURE-PRESERVED SAMPLE CONTAINER PREPARATION

Non-temperature-preserved samples should be shipped to the laboratory in a durable package (e.g., hard plastic container or cardboard box). If shipping breakable sample containers (e.g., glass), place bubble wrap or other packing materials on the bottom of the container. Place the samples on the packing materials with sufficient space to allow for the addition of more bubble wrap or other packing material between and on top of the sample containers. Place large or heavy sample containers on the bottom of the container with lighter samples placed on top to minimize the potential for breakage. Place all sample containers within the shipping container right-side up. Fill any remaining space in the container with bubble wrap or other packing material to limit the airspace and minimize the shifting of the sample containers and in-transit melting of ice.

3.4.1.3 CONTAINER SHIPMENT

Samples in the container should be cross-checked against the chain-of-custory before signing off on the form and sealing the cooler. Place the original chain-of-custody form (i.e., laboratory copy) into a heavy-duty zipper-style plastic bag, affix/tape the bag to the shipping container's inside lid, and then close the shipping container; as required, include return shipping labels for the laboratory to return company-owned coolers. Only one chain-of-custody form is required to accompany one of the shipping containers per sample shipment; the other coolers in the shipment do not need to include chain-of-custody forms, unless required by the project. At this point, sample shipment preparations are complete if using a laboratory courier.

Once the shipping container is sealed, shake test the shipping container to make sure that there are no loose sample containers. If loose sample containers are detected, open the shipping container, repack the contents, and reseal the shipping container. If sending the sample shipment through a commercial shipping vendor, place two signed and dated chain-of-custody seals on alternate sides of the shipping container lid so that it cannot be opened without breaking the seals. Securely fasten the top of the shipping container shut with clear packing tape; carefully tape over the custody seals to prevent damage during shipping.

Affix a mailing label with the ship to and return to addresses to the top of the shipping container using clear shipping tape. Use the pre-printed return mailing label from the laboratory, if provided, or complete a new mailing label from the shipping carrier. Ship environmental samples to the contracted analytical laboratory using an appropriate delivery schedule. **Note: Samples can be shipped for Saturday delivery once the lab has been verified to be open and receiving samples on the weekend.**

Verify whether the shipment cost should be billed to the sender or recipient, and ensure the internal billing reference section on the mailing label includes either the laboratory's billing reference number, if the shipment is billed to the laboratory, or the project billable number, if the shipment is billed to WSP.

Declare the value of samples on the shipping form for insurance purposes, if applicable. When shipping samples to a lab, identify a declared value equal to the carrier's default value ($100); additional fees will be charged based on a higher value declared. Our preferred carrier, Federal Express, will only reimburse for the actual value of the cooler and its contents if a sample shipment is lost; they will not reimburse for the cost of having to re-collect the samples. [Please note: if you are shipping something other than samples, such as field equipment, declare the replacement value of the contents.]

Record the tracking numbers from the shipping company forms (i.e., the airbill number) in the field book and retain a copy of the shipping airbill. On the expected delivery date, confirm sample receipt by contacting the laboratory or tracking the package using the tracking number; provide this confirmation information to the project manager.

> **NOTE: Most shipping carriers adhere to transit schedules with final pickup times each day; these schedules are subject to change and vary by service location. If shipping containers are dropped off at a service location after the final pickup time, transit to the laboratory will not be initiated until the following day, and samples may not be properly preserved. Therefore, confirm transit schedules in advance of each sampling event, and ensure samples are delivered to the carrier before the final pickup time of the day.**

3.4.2 HAZARDOUS MATERIALS SAMPLES

Employees rarely ship hazardous materials due to DOT shipping requirements. If you find that your samples could be considered a DOT hazardous material, first coordinate with the assigned company compliance professional and project manager to make a hazardous material classification and, if necessary, establish the necessary protocols and to receive the appropriate training/certification.

> **NOTE: Employees shipping samples regulated as hazardous materials or exempt hazardous materials by air must have International Air Transport Association (IATA) training. IATA training is a separate training required in addition to DOT hazardous materials training for such shipments. Most of our employees do not have IATA training and therefore, anyone who needs to ship by air MUST consult with a company IATA-trained compliance professional.**

FIELD STANDARD OPERATING PROCEDURE #4

SAMPLE COLLECTION AND QUALITY ASSURANCE PROCEDURE

The purpose of this procedure is to assure that sample volumes and preservatives are sufficient for analytical services required under U.S. Environmental Protection Agency (EPA) or other agency approved protocols. This operating procedure describes sample identification procedures, sampling order for select analytes, quality control and quality assurance (QA/QC) sampling procedures, and custody documentation. The user is advised to read the entire standard operating procedure (SOP) and review the site health and safety plan (HASP) and/or project safety plan (PSP) before beginning any onsite activities. In accordance with the HASP, proper personal protective equipment (PPE) must be selected and used appropriately.

4.1 ACRONYMS AND ABBREVIATIONS

ºC	degrees Celsius
COC	chain-of–custody [form]
DI	laboratory-grade, analyte-free deionized water
DOT	US Department of Transportation
EDD	electronic data deliverable
EPA	US Environmental Protection Agency
HASP	health and safety plan
ID	identification [number]
MS/MSD	matrix spike and matrix spike duplicate
MSA	master services agreement
PPE	personal protective equipment
PSP	project safety plan
QA	quality assurance
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
SOP	standard operating procedure
VOCs	volatile organic compounds

4.2 MATERIALS

- Field book
- Indelible (waterproof) markers or pens
- PPE
- Sampling containers and labeling/shipping supplies

- Deionized (DI) water
- Cleaned or dedicated sampling equipment

4.3 PRECONDITIONS AND BACKGROUND

This SOP has been prepared as part of the company's Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in a safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of employees and will be revised periodically to reflect updates to company policies, work practices, and the applicable state and/or federal guidance. Employees must verify that this document is the most recent version of the company's SOPs. Employees are also strongly advised to review relevant state and federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

WSP requires that all personnel performing specific project assignments be appropriately qualified, including having required certifications or licenses, and properly trained in accordance with the requirements of their assignment, the Environmental Service Line's field SOPs, and the Quality Management System.

This SOP is designed to provide the user with a general outline for collecting environmental and quality assurance samples and assumes the user is familiar with basic field procedures, such as recording field notes (SOP 1), sample shipment procedures (SOP 3), investigation derived waste management procedures (SOP 5), and equipment decontamination (SOP 6). This SOP does not cover investigation planning, nor does it cover the analysis of the analytical results. These topics are more appropriately addressed in a site-specific work plan or a dedicated quality assurance project plan (QAPP). This SOP does not include an special handling requirements for specific parameters such as low-level mercury or per- and polyfluoroalkyl substances. These requirements should be included in the QAPP.

4.4 SAMPLE IDENTIFICATION PROCEDURES

All sample containers (e.g., glass bottles, plastic jars, foil bags, plungers, etc.) should be identified by an affixed sample label. Unless otherwise approved by your project manager or specified in your site-specific work plan/QAPP, information on the sample container labels must include the site/project name, project/task number, unique alpha-numeric sample identification (ID) number, sample collection date, time of collection using the military or 24-hour clock system (i.e., 0000 to 2400 hours), analytical parameters, preservative, and the initials of the sampling personnel. Employees are advised to use pre-printed waterproof mailing labels (e.g., Avery® 5xxx-series Waterproof Address Labels) for all sample identification. Electronic label templates are available.

The sample identification (ID) number must, unless otherwise approved by your project manager or specified in your site-specific work plan/QAPP, follow the company's naming protocol. This protocol was developed to aid in determining the type of sample collected (e.g., soil, groundwater, vapor, etc.), the sample location, and, where appropriate, the sample depth. This protocol was also designed to ensure consistency across the company.

Construct sample IDs in the following format:

SB-10A (4-6)

Where, in this example:

- SB = the first two or three characters will define the sample type (see list of approved prefixes below); in this case, a soil boring
- 10A = the next two or three alpha-numeric digits (separated by a dash from the sample type identifier) indicate the location of the boring on the site; in this case, boring number 10A
- (4-6) = the depth the sample was collected, with the first number (including decimals, if necessary) indicating the top of the sample interval (in feet) and the second number indicating the bottom of the sample interval (in feet); not all sample types will include depth information.

Additional label information may be added after the last character of the sample ID number (e.g., sample date, underground storage tank number, area of concern number, "Area" number, client identifier, etc.). Separate any additional information from the required portion of the sample name by dash(es).

Sample Prefix	Permitted Use
AA	Ambient outdoor air sample
CC	Concrete core/chip sample
CS	Confirmation/verification soil sample collected from an excavation
HA	Soil sample collected with a hand auger
IAB	Indoor air sample – basement
IAC	Indoor air sample – crawl space
IAF	Indoor air sample – first floor
MW	Soil sample collected from a monitoring well borehole or a groundwater sample collected from a monitoring well
PZ	Groundwater sample collected from a piezometer
SB	Soil sample collected from boreholes that will not be converted to monitoring wells
SED	Sediment sample
SG	Soil gas sample other than a sub-slab sample (e.g., sample collected from a temporary or permanent polyvinyl chloride sample point or stainless steel screen implant)
SL	Sludge sample
SS	Surface soil sample collected using hand tools (e.g., trowel, spoon, etc.) and typically at depths less than 2 feet below ground surface
SSV	Sub-slab vapor sample
SW	Surface water sample
TC	Tree core sample
TP	Soil sample collected from a test pit
WC	Waste characterization sample
WP	Wipe sample
WW	Wastewater

4.5 SAMPLE CONTAINERS, PRESERVATIVES, AND HOLDING TIMES

The first step in sample collection is to verify that the correct number and type of sample containers were provided, and that each contains the appropriate preservatives for the proposed project (i.e., check against the sampling plan requirements outlined in the site-specific QAPP or, for those projects without a site-specific QAPP, the laboratory Task Order). Inspect all containers and lids for flaws (cracks, chips, etc.) before use. Do not use any container with visible defects or discoloration. Report non-receipt and any discrepancies of specific types of sample containers to the team leader or project manager immediately. Make arrangements to have missing or additional sampling containers provided on an expedited basis.

Precautions must be taken to prevent cross-contamination and contamination of the environment when collecting samples. Wear a clean pair of new, disposable gloves each time a different sample is collected and don the gloves immediately prior to collection. This limits the possibility of cross-contamination from accidental contact with gloves soiled during collection of the previous sample. The gloves must not contact the medium being sampled and must be changed any time during sample collection when their cleanliness is compromised. ***In no case should gloved hands be used as a sampling device: always use the appropriate sampler to move the sample from the sampling device to the laboratory-supplied containers.***

Sample collection must follow all appropriate SOPs, state and federal regulations, or guidance, for the collection of environmental samples; the recommended order of sample collection is:

- Geochemical measurements (e.g., temperature, pH, specific conductance)
- Volatile organic compounds (VOCs)
- Extractable organics, petroleum hydrocarbons, aggregate organics, and oil and grease
- Per- and Polyfluoroalkyl substances
- Total metals
- Dissolved metals
- Inorganic non-metallic and physical and aggregate properties
- Microbiological samples
- Radionuclides

Fill the sample bottles to the appropriate level for the parameter analyzed including eliminating head space, as appropriate. Collected samples that require thermal preservation must be immediately (within 15 minutes) placed in a cooler with wet ice and maintained at a preservation temperature of 4° Celsius (ºC).

4.6 FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

Field quality assurance/quality control (QA/QC) samples may include equipment blanks, trip blanks, temperature blanks, duplicates, matrix spike and matrix spike duplicate samples, field blanks, and split samples. The project manager or QAPP must specify the type and frequency of QA/QC sample collection. The QA/QC sample identification number must, unless otherwise approved by your project manager or specified in your site-specific work plan, follow the company's naming protocol as discussed in the sections below. QA/QC samples must be clearly identified on our copy of the chain-of-custody (COC) form (described below) and in the field book. Failure to properly collect and submit required QA/QC samples can result in invalidation of an entire sampling event.

Several blanks, discussed below, require laboratory-grade analyte-free, deionized water (DI) be used. Only if all options to obtain laboratory-grade DI have been exhausted should store-grade distilled water be used to prepare blanks. If store-grade distilled water is used, be sure to record the source and lot number in the field book.

Collect, preserve, transport and document split samples using the same protocols as the related samples.

4.6.1 EQUIPMENT BLANKS

Equipment blanks, or rinsate blanks, are used to document contamination attributable to using non-dedicated equipment (i.e., equipment that must be decontaminated after each use). Collect equipment blanks in the field at a rate of one per type of sampling equipment per day, unless otherwise specified. If the site-specific work plan or QAPP indicates that an equipment blank is to be collected from dedicated sampling equipment, collect the equipment blank in the field before sampling begins. If field decontamination of sampling equipment is required, prepare the equipment blanks after the equipment has been used and field-decontaminated at least once.

Prepare equipment blanks by filling or rinsing the pre-cleaned equipment with DI and collecting the rinsate in the appropriate sample containers. Record the type of sampling equipment used to prepare the blank and how the equipment blank was generated in the field book. Decontamination of the equipment following equipment blank procurement is not required.

The samples must be labeled, preserved, and filtered (if required) in the same manner as the environmental samples. Have the equipment blanks analyzed for all the analytes for which the environmental samples are being analyzed, unless otherwise specified. Designate equipment blanks using "EB", followed by the date, and in the order of equipment blanks collected that day. For example, the first equipment blank collected on July 4, 2015, would be designated EB070415-1.

4.6.2 TRIP BLANKS

Trip blanks are used to document VOC contamination attributable to shipping and field handling procedures. Trip blanks are only required when analyzing samples for VOCs. The blanks are prepared by the analytical laboratory and shipped along with the empty sample containers. These pre-filled blanks should accompany the environmental sample containers wherever they are stored onsite (i.e., keep the trip blank sample bottles in the same shipping container used to ship and store VOC sample bottles during the sampling event). Never open the laboratory-supplied trip blank sample bottles. Only as a last resort, store-grade distilled water, can be poured into empty VOC sample bottles to generate event-specific trip blanks (or augment the laboratory-supplied ones, if they are provided in insufficient numbers).

The trip blanks, even those provided by the analytical laboratory, should be labeled in the field like other environmental samples collected during the investigation activities. Identify trip blanks using the prefix "TB", followed by the date. For example, the trip blank shipped with a cooler of samples on July 4, 2019, would be designated TB070419-1. If a second trip blank is needed on that same day, the designation would be TB070419-2. A minimum of one trip blank should accompany each shipping container of VOC samples, unless more stringent project requirements are in place. The number of trip blanks needed per shipment can be minimized by shipping all the VOC samples in the same shipping container (if possible).

4.6.3 FIELD BLANKS

The field blank is analogous to the trip blank in that it is designed to assess and document any contamination to the environmental samples that can be attributable to the (ambient) field conditions. Not all projects require the use of field blanks. Their use, if required, and the frequency of collection (often 1 blank per 10 or 20 environmental samples collected) is detailed in the QAPP and the site-specific work plan. The sample is collected by pouring DI water into empty glassware at the site during the sampling event. The intent is to expose the field blank to the same conditions in the atmosphere as those present when the environmental samples were collected.

Identify field blanks using the prefix "FB", followed by the date. For example, the field blank shipped collected on August 22, 2019, would be designated FB082219. If a second field blank is needed on that same day, the designation would be FB082219-2. At least one field blank should be collected for each analytical parameter identified in the sampling event.

4.6.4 TEMPERATURE BLANKS

Temperature blanks are used to determine if the samples are at the appropriate temperature for preservation at the time the sample container (cooler) is received by the analytical laboratory. The temperature is determined by measuring the temperature blank, which provides a proxy for the temperature of the sample container upon arrival at the laboratory. These temperature blanks are typically provided by the laboratory and should be included in each sample cooler used to ship and store the sample bottles during the sampling event. If laboratory-provided temperature blanks are not available, fill a clean, unpreserved sample bottle with potable, DI, or store-grade distilled water and identify the bottle as a temperature blank.

4.6.5 DUPLICATES

Duplicate samples, which are used for measuring the variability and documenting the precision of the sampling process, should be collected at a rate of at least 1 duplicate per 20 environmental samples collected, unless specific project requirements (as detailed in a QAPP) are in place. Be sure that the location selected for duplication has sufficient sample volume and is within the area of contamination, if known. Under no circumstances can equipment or trip blanks be used as duplicates.

Collect each duplicate sample at the same time, from the same sample aliquot, and in the same sampling order (i.e., volatile organic compounds, then semivolatile organic compounds, then inorganics, etc.) as the corresponding environmental sample. Sample bottle aqueous duplicate samples, for example, should be alternately filled with the environmental sample bottles (i.e., the actual sample bottle and the bottle to be used for the duplicate) from the same sampling device. If the sampling device does not hold enough volume to fill the sample containers, fill the first container with equal portions of the sample, and pour the remaining sample into the next

sample containers. Obtain additional sample volume and pour the first portion into the last sample container, and pour the remaining portions into the first containers. Continue with these steps until all containers have been filled.

Duplicate samples will be assigned arbitrary sample ID and a false collection time so that they are not identified as duplicates by the laboratory (i.e., submit the duplicates samples as *blind* to the lab). The blind duplicate sample "location designation" will be left up to the project manager; however, in no case will "Dup" be allowed to appear in the sample name. The duplicate samples should be analyzed for the same analytes as the original environmental sample. Be sure to record the sampling method, duplicate sample ID, the false time, and the actual time of collection in the field notebook. The duplicate should also be indicated in separate documentation, such as on our carbon copy of the chain-of-custody (i.e., the yellow copy), and not on the original chain-of-custody that accompanies the samples to the laboratory.

4.6.5 MATRIX SPIKE AND MATRIX SPIKE DUPLICATES

Matrix spike and matrix spike duplicate samples (i.e., MS/MSD samples) are used to determine the bias (accuracy) and precision of an analytical method for a specific sample matrix. Many of the company's projects require the collection of MS/MSD samples; however, laboratory generated MS/MSD samples are sufficient for some projects (as detailed in the QAPP or site-specific work plan). Collect MS/MSD samples at a rate of 1 MS and 1 MSD (i.e., 2 samples) for every 20 environmental samples, unless more stringent project requirements (as detailed in a QAPP) are in place. Clearly convey the MS/MSD identity to the laboratory by adding "MS" or "MSD" after the sample name (e.g., MW-01MS) and/or in the comments section of the chain-of-custody on the same line as the parent sample. Under no circumstances can equipment or trip blanks be used as MS/MSD samples.

4.6.6 SPLIT SAMPLES

Split samples may be collected as a means of determining compliance or as an added measure of quality control. Split samples measure the variability between laboratories and not the variability of sample collection and laboratory procedures (i.e., they are not equivalent to duplicate samples). The split samples must be subsamples of the same parent material used for the environmental sample: soil should be collected from the same in-place material (for VOCs) or, for non-discrete samples, the same mixing vessel after homogenization. Collect aqueous split samples using the same alternating bottle approach detailed in the duplicate sample description above. These procedures will ensure that the split samples are valid and are representative of the environmental sample collected as part of the investigation.

Collecting split samples of soil, sediment, waste, and sludge is not recommended because the homogenization necessary for a true split sample in these matrices is not possible and the resulting laboratory results would not be comparable.

Spilt samples should have the same sample location designation (e.g., MW-01, SB-03 (4-6), but are differentiated from each other by inserting the laboratory analyzing or the agency/consultant collecting the sample after the sample location (e.g., MW-01-WSP and MW-01-EPA).

4.7 CUSTODY DOCUMENTATION

Sample custody protocols are used to demonstrate that the samples and sample containers were handled and transferred in such a manner as to prevent tampering. Legal COC begins when the pre-cleaned sample containers are dispatched to the field from the laboratory and continues through sample analysis and eventual disposal of the sample and sample containers. Maintaining custody requires that samples must be in the actual possession or view of a person who is authorized to handle the samples (e.g., sample collector, laboratory technician, etc.), secured by the same person to prevent tampering, or stored in a designated secure area.

It is a good idea to limit, to the extent possible, the number of individuals who physically handle the samples. Samples must be placed in locked storage (e.g., locked vehicle, locked storeroom, etc.) when not in the possession or view of authorized personnel. Do not leave samples in unoccupied motel or hotel rooms or other areas where access cannot be controlled by the person(s) responsible for custody without first securing samples and shipping or storage containers with tamper indications in place (i.e., custody seals).

The COC form is used to trace sample possession from the time of collection to receipt at the analytical laboratory. It is recommended that the company's COC be used rather than the laboratory-supplied COC form to ensure that all necessary data are recorded. Submit one COC form per sample shipment, unless more stringent project requirements are in place (as detailed in the QAPP or site-specific work plan). The COC needs to have a unique COC number (pre-printed on the form), accompany all the samples, and include all appropriate project-specific information, such as:

- Project number, name, and location
- Sampler's printed name(s) and signature(s)
- Sample identification number
- Date and time (using the 24-hour clock) of collection
- Sample matrix (e.g., soil, aqueous, solid, etc.)
- Total number of containers per sample
- Parameters requested for analysis including number of containers per analyte.
- Remarks (e.g., irreducible headspace, field filtered sample, expected concentration range, specific turn-around time requested, etc.)
- Signatures of all persons involved in the chain of possession in chronological order
- Requested turn-around-time
- Name and location of analytical laboratory
- Custody seal numbers
- Shipping courier name and tracking information
- Internal temperature of shipping container upon shipment to laboratory, as needed
- Internal temperature of shipping container upon delivery to laboratory
- Employee contact information

Affix custody seals to all storage and shipping container closures when transferring or shipping sample container kits or samples to an off-property party. Place the seal so that the closure cannot be opened without breaking the seal. In the field book, record the time, date and signatures of responsible personnel affixing and breaking all seals for each sample container and shipping container. Affix new custody seals every time a seal is broken until continuation of evidentiary custody is no longer required.

FIELD STANDARD OPERATING PROCEDURE #5

INVESTIGATION DERIVED WASTE MANAGEMENT PROCEDURE

The purpose of this standard operating procedure (SOP) is to provide instructions for handling, storing, and managing investigation derived waste (IDW) pending disposal. All IDW, which includes (but is not limited to) soil cuttings, development water, purge water, drilling fluids, decontamination fluids, personal protective equipment (PPE), and sampling equipment, must be managed in compliance with applicable or relevant and appropriate requirements. The user is advised to read the entire SOP and review the site health and safety plan (HASP) and/or project safety plan (PSP) before beginning any onsite activities. In accordance with the HASP or PSP, proper PPE must be selected and used appropriately.

5.1 ACRONYMS AND ABBREVIATIONS

DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
HASP	health and safety plan
IDW	investigation derived waste
PCB	polychlorinated biphenyl
PPE	personal protective equipment
PSP	project safety plan
RCRA	Resource Conservation and Recovery Act
SOP	standard operating procedure
TSCA	Toxic Substances Control Act

5.2 MATERIALS

- Pre-printed weatherproof waste labels (e.g., non-hazardous waste, hazardous waste, polychlorinated biphenyls [PCBs], etc.)
- IDW log (Figure 1)
- Permanent ink marking pen, paint, stick/pen
- Sampling equipment (refer to sampling SOPs)
- Impermeable covers (tarps), as needed
- Duct tape, rope, or other material to secure tarp
- Copy of the waste manifest or bill of lading

5.3 PRECONDITIONS AND BACKGROUND

This SOP has been prepared as part of the company's Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in a safe and consistent manner, are in accordance with federal and state guidance, and are technically defensible.

This SOP is written for the sole use of company employees and will be revised periodically to reflect updates to company policies, work practices, and the applicable state and/or federal guidance. Employees must verify that this document is the most recent version

of the company SOPs. Employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

WSP requires that all personnel performing specific project assignments be appropriately qualified, including having required certifications or licenses, and properly trained in accordance with the requirements of their assignment, the Environmental Service Line's field standard operating procedures, and the Quality Management System.

This SOP is designed to provide the user with a general outline for handling, storing, and managing IDW pending disposal and assumes the user has received current U.S. Department of Transportation (DOT) training, Hazardous Waste Operations and Emergency Response training, and Resource Conservation and Recovery Act (RCRA) training (if required) and is familiar with basic field procedures, such as recording field notes (SOP 1), sample shipment procedures (SOP 3), sample collection and quality assurance procedures (SOP 4), and equipment decontamination (SOP 6). The SOP does not cover investigation planning; DOT, RCRA, and Toxic Substances Control Act (TSCA) regulations; nor does it cover the evaluation of the analytical results. **Consult and involve the company's compliance professionals during all phases of IDW management and disposal.**

It is important to note that information contained in this SOP is based on federal regulations and interpretive guidance provided by the U.S. Environmental Protection Agency (EPA) and other federal regulatory sources; therefore, information provided in this SOP may be superseded by state or local-specific statutes or regulations. Field personnel must plan for and discuss the handling procedures with the project manager and assigned company compliance professional before mobilizing to the field.

5.4 IDW GENERAL PROCEDURES

Nearly all intrusive field activities will generate solid or liquid wastes. Examples include:

Solid Waste

- Soil cuttings
- Drilling mud
- Plastic sheeting
- Spent carbon or filters
- PPE (e.g., Tyvek coveralls, gloves, respirator cartridges)
- Disposable or dedicated sampling equipment (e.g., bailers, hoses, clamps, buckets, cartridge filters)
- Field analytical waste (e.g., HACH kits, Chlor-n-Soil kits, Gastech tubes)
- Compressed gas cylinders (e.g., isopropylene, helium)
-
- Disposable cleaning materials (e.g., wipes or rags)

Liquid Waste

- Decontamination water
- Development water
- Drilling fluids
- Purge water
- Soap or wash solutions
- Reagents (e.g., hexane, nitric acid, methanol)

The specific procedures for dealing with these materials after the field activities have been completed will vary depending on whether the materials are considered to be non-hazardous, RCRA hazardous (characteristic or listed wastes), TSCA-regulated PCB waste, and/or DOT hazardous materials. The characterization of the wastes to be generated should be determined in conjunction with a company compliance professional before the field event occurs, based on previously generated data; however, in some cases, particularly for new sites, the status of the wastes may not be known. In these cases, handle IDW as hazardous waste until the status can be verified. Field personnel must consult their assigned company compliance professionals for assistance in proper waste characterization and to determine waste management requirements applicable to the site.

5.4.1 WASTE MINIMIZATION

As possible, select investigation methods and techniques that will minimize the amount of wastes generated during field activities, particularly if the IDW is hazardous. Examples include using direct-push methods instead of hollow stem augers (to minimize soil cuttings) during a soil investigation, if appropriate, eliminating the use of solvents or solvent-based cleaners for decontamination, if

possible, and limiting contact with the materials to reduce the amount of PPE required. Minimizing the amount of waste generated will reduce handling requirements and overall project costs, and is consistent with the company's corporate goals for sustainability.

5.5 ONSITE IDW MANAGEMENT PROCEDURES

Onsite handling procedures typically involve containerization of the IDW for offsite disposal at a regulated facility or, in the case of certain non-hazardous wastes, onsite disposal. Should more than one waste stream be present onsite, segregate the IDW containers by waste stream to facilitate the future waste disposal. The procedures for each type of waste are presented below.

5.5.1 NON-HAZARDOUS WASTE MANAGEMENT

If the IDW is classified as non-hazardous waste, the following procedures must be implemented only if approved by the applicable regulatory agency and after being discussed and approved by the project manager, project compliance professional, client, and facility personnel:

- Soil can be either:
  - spread around the borehole or other onsite location
  - placed back in the boring or excavated test pit
  - containerized and disposed of offsite
- Groundwater and decontamination fluids can be either:
  - poured onto the ground next to the well to allow infiltration
  - discharged to either the publically-owned treatment works or storm sewer
  - discharged to the onsite wastewater treatment plant
  - containerized and disposed of offsite
- After rendering the IDW unusable (e.g., cutting or tearing material), PPE, plastic sheeting, disposable cleaning materials, and spent bag filters can be double bagged and disposed of as general trash or containerized and disposed of offsite.
- Compressed gas cylinders should be depressurized and disposed of as general trash, recycled as scrap metal, or containerized and disposed of offsite.
- Field analytical waste (e.g., HACH® kits, Chlor-n-Soil® kits) can be disposed of in accordance with the manufacturer's instructions provided the disposal method is approved by the company's project manager and compliance professional.
- Minimize the volume of reagents as much as possible. Consult a company compliance professional to determine the proper disposal of any quantity of unused reagents. Empty reagent containers may be disposed of as general trash after removing all chemical name and warning labels, or may be containerized and disposed of offsite.
- Spent water treatment media (e.g., carbon, resin) should be containerized and disposed of offsite.
- Exploration and production exempt waste derived from material that was downhole at an oil and gas production site.

If the IDW is containerized and is classified as non-hazardous, the following procedures will apply:

- Place the non-hazardous IDW in DOT-compliant containers (e.g., 55-gallon drum, roll-off container, or temporary storage tank). Before placing IDW in the containers, ensure that the containers are in good condition and will not leak.
- Drums used as containers must remain closed except when adding, sampling, or inspecting the waste. The drums cannot be used as a work surface once waste is put in the container.
- Mark the container with the appropriate waterproof, self-adhesive non-hazardous waste label. The label must include a description of the contents of the container (e.g., soil cuttings, purge water) and the generator name (the client or the facility, never the company). **Field personnel must consult the project compliance professional for help in properly completing the labels.**
- Complete the IDW Log (Figure 1) before leaving the site. Present one copy of the log to the site contact and the original to the project manager.
- The IDW containers must be properly closed, wiped clean, and stored in a secure onsite location.

5.5.2 HAZARDOUS WASTE MANAGEMENT

If site data or generator knowledge indicates that the IDW is RCRA hazardous, the following procedures will apply:

- Place IDW in DOT-compliant containers (e.g., 55-gallon drum, roll-off container, or temporary storage tank). Before placing IDW in the containers, ensure that the containers are appropriate for the type of IDW generated (e.g., solid in containers authorized for transport of solids), in good condition and will not leak.

- Containers must remain closed except when adding, sampling, or inspecting the material. The containers cannot be used as a work surface once waste is put in the container.
- Mark the container with an appropriate waterproof, self-adhesive hazardous or radiological waste label. The label must include the accumulation start date, a description of the contents of the container (e.g., soil cuttings, purge water), the EPA identification number, the generator name (the client or the facility, never the company), and the hazardous waste codes, if known. **Field personnel must consult the project compliance professional for help in properly completing the labels.**
- The IDW containers must be properly closed, wiped clean, and stored in a secure onsite location (i.e., a designated facility hazardous waste storage area) to limit access. At a minimum, place the drums on an impermeable surface (if available) in an area of limited access. If stored outside, cover the containers with a secured tarp at the end of each field day until the containers are picked up for disposal.
- Complete the IDW Log (Figure 1) before leaving the site. Present one copy of the log to the site contact and the original to the project manager.
- If applicable, ensure that weekly inspections are conducted, and the proper inspection forms for documentation are completed during the entire time the waste is stored onsite. **Field personnel must consult the project compliance professional for help to determine if weekly inspections are required.**

If the IDW is presumed to be hazardous and sampling is required to confirm its classification, it must be labeled "Hazardous Waste-Pending Analysis" and sampled for the parameters specified by the project compliance professional or project manager before leaving the site. Any waste confirmation samples must be collected in accordance with the company's SOPs. Treatment, storage, and disposal facilities will usually specify the required analysis for waste profiles.

5.5.3 PCB WASTE MANAGEMENT

If information exists to classify PCB-containing IDW as TSCA-regulated IDW (i.e., PCBs greater than 50 milligrams per kilogram), the following procedures must be implemented:

- Place the PCB-containing IDW in DOT-compliant containers (e.g., 55-gallon drum, roll-off container, or temporary storage tank). Before placing IDW in the containers, ensure that the containers are in good condition and will not leak.
- Containers must remain closed except when adding, sampling, or inspecting the material. The containers cannot be used as a work surface once waste is put in the container.
- Mark the container with an appropriate waterproof, self-adhesive yellow label with the words "Caution Contains PCBs", the "removed from service" date (the accumulation start date), and a description of the contents of the container (e.g., soil cuttings). Complete the label with the name and phone number of the company personnel to contact in the event of an accident or spill. **Field personnel must consult the project compliance professional for help in properly completing the labels.**
- The IDW containers must be properly closed, wiped clean, and stored in a secure PCB storage area onsite. If a PCB storage area is not available, construct a temporary PCB storage area. Cover the containers with a secured tarp at the end of each field day until the drums are picked up for disposal. Place one yellow 6" x 6" "Caution Contains PCBs" label on the outside of the tarp, and note the "Removed from service date" on the label.
- Complete the IDW Log (Figure 1) before leaving the site. Present one copy of the log to the site contact and the original to the project manager.
- If applicable, inspect the area and the containers for leaks once every 30 days in accordance with TSCA requirements during the entire period the waste is stored onsite. **Field personnel must consult the project compliance professional for help to determine if weekly inspections are also required.**

5.6 POST-FIELD IDW MANAGEMENT ACTIVITIES

Field personnel must follow up on the management of the IDW after returning from the field. RCRA hazardous and TSCA-regulated PCB-containing wastes have storage time limits and periodic inspection requirements to remain in compliance with federal, state, or local regulations. Arrangements for proper disposal of wastes must be made within the required time limits and must be consistent with all applicable regulatory requirements, as well as the company's contracting procedures and policies for waste disposal. Copies of waste disposal documentation (e.g., bill of lading, waste manifest, land disposal restriction form, etc.) should be provided to the project manager and saved with the project files.

INVESTIGATION DERIVED WASTE LOG

Date/Time:_____

Site Information:
Site Name: _____ Site EPA ID #: _____
Site Contact: _____ Site Address: _____
Site Contact Telephone No: _____

Origin of Material: _____
Type of Waste Generated:
- ☐ Soil Cuttings ☐ PPE ☐ Decontamination Water
- ☐ Groundwater ☐ Storm Water ☐ Drilling Fluids
- ☐ Other (Describe): _____

Field Activities that Generated the Waste:
- ☐ Soil Borings ☐ Well Sampling ☐ Well Installation
- ☐ Decontamination ☐ Excavation ☐ Pumping Tests
- ☐ Other (Describe): _____

Generation Date: _____ ***90/180/270-Day Deadline(for hazardous waste)***: _____
Quantity of Waste Generated and Container Type: _____
_____
Storage Location: _____
Waste Identification:
- ☐ Non-hazardous Waste (pending analysis)
- ☐ Non-hazardous Waste (based on site information or generator knowledge)
- ☐ Hazardous Waste (pending analysis)
- ☐ Hazardous Waste (based on site information or generator knowledge)
- ☐ PCB-containing Waste
- ☐ Radiological Waste

If generator knowledge or site information was used for identification, explain: _____
_____
_____
Type of Label Applied to Container: ☐ Non-hazardous ☐ Hazardous ☐ PCB ☐ Radiological
WSP Information (Note: One copy to site contact - the original copy to project manager)
Personnel/Contact: _____ Project No.:_____
Telephone: _____

Date Removed: _____ Signature: _____

FIELD STANDARD OPERATING PROCEDURE #11

GROUNDWATER SAMPLING PROCEDURE

Groundwater sampling procedures outlined in this Standard Operating Procedure (SOP) are designed to ensure that collected samples are representative of current site conditions. These procedures can be applied to permanently or temporarily installed monitoring wells, direct-push sample points, water supply wells with installed plumbing, extraction wells for remedial groundwater treatment systems, and excavations where groundwater is present. The user is advised to read the entire SOP and review the site health and safety plan (HASP) and/or project safety plan (PSP) before beginning any onsite activities. In accordance with the HASP, proper personal protective equipment (PPE) must be selected and used appropriately.

11.1 ACRONYMS AND ABBREVIATIONS

ID	inside diameter
DI	deionized
DNAPL	dense non-aqueous phase liquid
DO	dissolved oxygen
DTW	depth-to-water
HASP	health and safety plan
IDW	investigation-derived waste
l/min	liters per minute
LNAPL	light non-aqueous phase liquid
mg/l	milligrams per liter
mV	millivolts
NAPL	non-aqueous phase liquid
NTU	nephelometric turbidity unit
ORP	oxygen reduction potential
PID	photoionization detector
PPE	personal protective equipment
PSP	project safety plan
QAPP	quality assurance project plan
SOP	standard operating procedure
SU	standard units
TD	total depth
TOC	top-of-casing
VOCs	volatile organic compounds

11.2 MATERIALS

- Field book
- PPE
- Air quality monitoring equipment (e.g., photoionization detector [PID]) with calibration reagents and standards, as needed
- Electronic water level indicator or interface probe
- Water quality meter(s) with a flow-through cell, and calibration reagents and standards, as needed
- Field test kits, as needed
- Adjustable wrench or manhole wrench, as needed
- Well key(s), as needed
- Power supply, as needed
- Sampling containers and labeling/shipping supplies
- Deionized (DI) water
- Container(s) for water storage (e.g., bucket, drum)
- Pump or bailers, tubing, and associated lanyard materials
- Filters, as needed
- Decontamination supplies

11.3 PRECONDITIONS AND BACKGROUND

This SOP has been prepared as part of the company's Environmental Quality Management Plan and is designed to provide detailed procedures for common field practices. Compliance with the methods presented in this document is mandatory for all field personnel and will ensure that the tasks are performed in a safe, consistent manner; are in accordance with federal and state guidance; and are technically defensible.

This SOP is written for the sole use of company employees and will be revised periodically to reflect updates to company policies, work practices, and the applicable state and/or federal guidance. Employees must verify that this document is the most recent version of the company SOPs. Employees are also strongly advised to review relevant state and/or federal guidance, which may stipulate program-specific procedures, in advance of task implementation.

WSP requires that all personnel performing specific project assignments be appropriately qualified, including having required certifications or licenses, and properly trained in accordance with the requirements of their assignment, the Environmental Service Line's field SOPs, and the Quality Management System.

This SOP is designed to provide the user with a general outline for conducting groundwater sampling and assumes the user is familiar with basic field procedures, such as recording field notes (SOP 1), utility location (SOP 2), sample shipment procedures (SOP 3), sample collection and quality assurance procedures (SOP 4), investigation derived waste (IDW) management procedures (SOP 5), equipment decontamination (SOP 6), and use and calibration of all sampling and monitoring equipment (SOPs 7 and 8). This SOP does not cover investigation planning, nor does it cover the analysis of the analytical results. These topics are more appropriately addressed in a project-specific work plan. Before groundwater sampling, be sure to review the project-specific work plan or quality assurance project plan (QAPP) and any applicable state and federal guidelines or sampling procedures. All sampling and monitoring references must be available for consultation in the field, including:

- Company SOPs
- Applicable state and federal guidelines or sampling procedures
- Manufacturer's manuals
- Project-specific work plan, PSP and/or HASP, and QAPP

11.4 GENERAL PROCEDURES

Although the techniques used to sample groundwater are varied, most sampling events can be broken down into a three-step sequence:

1. Gauging: The measurement of the water column height (i.e., total well depth less depth-to-water) within the well.

2 Purging: The removal of stagnant water from the well bore to ensure that samples collected are representative of groundwater conditions in the water-bearing zone surrounding the well.
3 Sample Collection: After purging, the collection of aliquots of groundwater in method-specific, preserved (as needed) containers.

The procedures and equipment that are used to accomplish these steps are project-specific and should be discussed by the project team before arriving onsite. All types of groundwater sampling, however, regardless of the equipment used, share common handling and management procedures that are designed to ensure the integrity of the samples collected. These procedures include:

- The use of new, disposable, decontaminated, or dedicated sampling equipment
- The use and rotation of the appropriate PPE
- Selection of a suitable sampling location and staging area

Wear a clean pair of new, disposable gloves each time a different sample is collected and don the gloves immediately prior to collection. This limits the possibility of cross-contamination from accidental contact with gloves soiled during collection of the previous sample. The gloves must not contact the medium being sampled and must be changed any time during sample collection when their cleanliness is compromised. ***Gloved hands should not be used as a sampling device; always use the appropriate equipment to move the sample from the sampling device to the laboratory-supplied containers.***

11.5 EQUIPMENT SELECTION

Collect all samples using either new, disposable equipment or properly decontaminated sampling equipment. Groundwater purging and sampling equipment should be selected based on the analytical requirements of the project and the project-specific conditions (e.g., well diameter, depth to water, dissolved constituents, etc.) likely to be encountered. The equipment should be constructed of non-reactive, non-leachable materials (e.g., stainless steel, Teflon®, Teflon®-coated steel, polyethylene, polypropylene, etc.) that are compatible with the chemical constituents at the site. Note that project or regulatory guidance may limit the type of equipment for groundwater sampling.

Consider the following when choosing groundwater purging and sampling equipment:

- the diameter and depth of the well
- the depth to groundwater
- the volume of water to be withdrawn
- the sampling and purging technique
- the volume of sample required
- the analytes of interest

Select the decontamination procedures based on the types of sampling to be performed and media encountered; decontamination may require multiple steps or differing cleaning methods (see SOP 6 for decontamination procedures). In no case, should disposable, single-use materials be used to collect more than one sample.

11.6 PRE-SAMPLING CONSIDERATIONS

You should perform the following activities in preparing for sampling with all observations and measurements noted in the field book and on the project-specific groundwater monitoring log, if appropriate:

- Perform a quick reconnaissance of the site to identify sampling locations and evaluate the accessibility to the sampling location.
- Record the approximate ambient air temperature, precipitation, wind (direction and speed), tide, and other field conditions. In addition, any site-specific conditions or situations that could potentially affect the samples at the sample locations should be recorded.
- Record temporary sampling locations with respect to approximate distance to and direction from at least one permanent feature.
- Survey the breathing zone around the sampling location with the appropriate air quality meter(s), as necessary (see HASP), to ensure that the level of PPE is appropriate.
- Install the pump, tubing, passive sampler or other appropriate sampling equipment to the depth prescribed in the project-specific work plan or QAPP.

- Containerize and manage purge water in accordance with the project-specific work plan.

It is important to minimize any sources of cross-contamination that could compromise the integrity of the groundwater samples. Consider the following:

- Position fuel-powered equipment away from the sample collection area, such as drill rigs or excavators, and upwind of other site activities (e.g., purging, sampling, decontamination) that could influence the sample. This is particularly important when screening samples in the field for volatile organic compounds with a PID but should not be limited to the active sample collection.
- Establish a secure sample staging area in an uncontaminated area of the site.

11.7 GAUGING PROCEDURES

All wells should be opened to the atmosphere in advance of sampling to allow any pressure differentials, which could artificially raise or depress the water column in the well, to dissipate. The wells should be inspected to ensure that the protective casing is intact and has not been damaged. Remove the well covers and all standing water around the top of the well casing (for flush mounted-protective covers), as necessary, before opening the inner well cap or plug. Unlock and carefully remove well cap and allow the well to stand undisturbed for a minimum of 15 minutes, or as required by the project-specific work plan, before conducting any down-hole testing or measurements. If required by the HASP, survey the open well casing and the breathing zone around the wellhead with a PID to ensure that the level of PPE is appropriate.

11.7.1 GROUNDWATER LEVEL AND TOTAL DEPTH MEASUREMENT PROCEDURES

Depth to water (DTW) and total depth (TD) measurements are collected prior to sampling and are used to determine the volume water to be purged from the well (if using techniques other than no-purge or low flow sampling). The DTW measurements are also used after the field event to establish the groundwater elevation, flow direction, and gradient. Unless otherwise directed, do not place any objects inside the casing of private water wells; accordingly, DTW and TD measurements should not be collected at private water wells. Measurements of TD are not required for low flow and no-purge sampling applications and should not be measured before sampling the well.

Water level measurements must be collected within the shortest interval possible from all the wells to be gauged during the event before beginning any purge and sampling procedures at the site. This will ensure a nearly instantaneous snapshot of the water levels before the formations are disturbed by pumping or acted upon by other outside influences, such as tides, precipitation, barometric pressure, river stage, or intermittent pumping of production, irrigation, or supply wells.

Record the following observations and measurements (and the time when they were collected) in the field book:

- Measure the casing inside diameter (ID) and record in inches
- Measure the DTW with an electronic water level indicator (or an interface meter, if non-aqueous phase liquid [NAPL] is potentially present – see procedures below) from the top-of-casing (TOC) at the surveyor's mark, if present, and record the depth (to the nearest 0.01 foot) in feet below TOC
- If no mark is present, measure from the north side of the casing and mark the measuring point with a knife, metal file (if the inner casing is metal) or indelible marker for future reference
- Measure the TD from TOC at the surveyor's mark or north side of the casing, as appropriate.

Measuring the depth of deep wells with long water columns can be problematic due to tape buoyancy and weight effects or sediment in the bottom of the well casing. Care must be taken, and proper equipment selection must be used in these situations to ensure accurate measurements. Multiple TD measurements in silt-laden wells can provide a more precise assessment of the bottom depth.

11.7.2 GAUGING WELLS WITH NON-AQUEOUS PHASE LIQUID

If NAPL is potentially present at the site, the DTW and NAPL thickness measurements are collected using an interface meter capable of distinguishing between the NAPL and the groundwater, or a weighted tape coated with the appropriate reactive indicator paste for the suspected NAPL. Measuring NAPL thicknesses must be done with care to avoid agitating the liquids and generating an emulsion. This is particularly the case for light NAPL (LNAPL; those having a density less than water), which are typically viscous oils that

cling to the probe. Oil coating the probe can result in thickness measurements that are biased high (i.e., overestimate the thickness of the NAPL).

Conduct the following procedures to ensure an accurate measurement of the NAPL thickness:

- For LNAPL, slowly lower the electronic interface probe in the well casing until the electronic tone indicates the probe is at the top of the LNAPL layer; measure the depth below the TOC to the nearest 0.01 foot.
- To gauge the NAPL thickness, advance the probe slowly through the layer until the electronic tone indicates top of the water column and then slowly bring the probe back up to the bottom of the LNAPL. Repeat this process several times to ensure an accurate measurement of the bottom of the LNAPL layer (which can include bubbles and an emulsion layer).
- For dense NAPL (DNAPL), advance the probe through the water column until the tone indicates the top of the DNAPL layer; record the depth below TOC.
- To gauge the DNAPL thickness, advance the probe through the layer to the bottom of the well.

11.8 GROUNDWATER PURGING PROCEDURES

Purging is a process whereby potentially stagnant water is removed allowing the collection of samples that are representative of groundwater conditions in the water-bearing zone. The water in a well bore that has not been purged may be different than the surrounding formation due to exposure to ambient air. There are several purging (and no-purge) methods that may be used, depending on specific conditions encountered (e.g., DTW, hydraulic conductivity of the formation, etc.) and the sampling requirements. The purge/no purge options are described below.

- *Multiple Volume Purge:* Traditional well purging technique that relies on the withdrawal of the volume of the well bore and the surrounding filter pack (if present); three to five well volumes are typically removed using pumps or bailers. This methodology relies on equipment that is easy to obtain and use and is generally accepted in most states as an appropriate purging method.
- *Temporary Well Purge:* A variation of the multiple volume purge technique that often uses inertia lift pumps, peristaltic pumps, or bailers to remove water from a temporary well or discrete groundwater sampler (e.g., a groundwater profiler or direct-push screen point sampler). This is a less stringent technique that is typically done to minimize the turbidity of the samples, which can be high due to the lack of a well filter pack.
- *Private Water Well or In-Place Plumbing Purge:* A variation on the multiple volume purge technique whereby a tap or faucet is opened on a fixed water supply pipe and is allowed to remain open until the potentially stagnant water within the well casing and other components of the system (e.g., fixed piping, pressure tanks, etc.) has been removed and groundwater representative of the water-bearing zone is discharged at the tap.
- *Low Flow (Minimal Drawdown/Low Stress) Purge (and Sampling):* A modified purging technique that establishes an isolated, discrete, horizontal flow zone directly adjacent to the pump intake; this method requires the pump to be placed within a screened-interval or open borehole. Pumping rates are typically 0.1 to 0.5 liters per minute (l/min) or less to minimize the stress on the surrounding formation and reduce the geochemical alteration of the groundwater caused by pumping.
- *No-Purge/Passive Sampling Techniques:* These techniques use specialized equipment, such as trap-style samplers or permeable diffusion bags, to sample the undisturbed water column within a screened interval or open borehole. This methodology assumes that the water in the well is representative of the surrounding formation. This approach is well suited for some volatile organic compounds (VOCs), metals, and hydrophobic compounds, depending on the sampling device used.

11.8.1 CALCULATING ONE PURGE VOLUME

Multiple volume purging techniques require that a ***minimum*** of three well volumes of water must be removed before sample collection. The actual amount of water removed may be greater than the three volumes, depending on geochemical parameter stabilization (the field measurement of these parameters is discussed below).

Calculate the volume of water in a well or boring using the following equation:

$$\textbf{Volume (gallons)} = (\textbf{TD} - \textbf{DTW}) \times \textbf{ID}^2 \times \textbf{0.041}$$

where:

TD = total depth (feet)

DTW = depth to water (feet)

ID = inner diameter (inches)

Alternately, the volume of water in a well or boring may also be calculated by multiplying the water column height by the gallons per foot of water for the appropriate well or boring diameter:

ID	Gallons per foot of water	Gallons per three water columns
1-inch	0.04	0.12
2-inch	0.16	0.48
3-inch	0.37	1.11
4-inch	0.65	1.98

Calculate the total volume of the pump, associated tubing and container for in situ measurements (flow-through cell), using the following equation:

Volume (in gallons) = P + ((0.0041)*D2*L) + fc

where:

P = volume of pump (gallons)
D = tubing diameter (inches)
L = length of tubing (feet)
fc = volume of flow-through cell (gallons)

11.8.2 MULTIPLE VOLUME PURGE PROCEDURES

Begin purging at a rate that will not cause excessive turbulence and drawdown in the well; commonly less than 1 gallon per minute for a typical 2-inch diameter monitoring well. You may need to observe the water elevation after the pump is started and adjust the flow rate to minimize the amount of drawdown in the well casing. The objective is to remove the stagnant water in the casing and surrounding filter pack or open borehole allowing water from the surrounding water-bearing zone to enter the well for sampling with as little disturbance as possible. Excessive pump rates or well dewatering can result in higher turbidity, potential volatilization, and geochemical alteration of dissolved parameters.

Typically collect geochemical parameters (i.e., pH, specific conductance, dissolved oxygen [DO], oxygen-reduction potential [ORP], and temperature) at a minimum frequency of once for every well volume of water removed during the purge process. Record the measurements in the field book along with any other pertinent details, such as the visual quality of the water (e.g., color, odor, and presence of suspended particulates) and the approximate withdrawal rate (this can be estimated using a calibrated container and stopwatch). Review the geochemical measurements to ensure that readings have stabilized (after the minimum purge volume has been achieved). This is a proxy for determining that you are purging formation water rather than potentially stagnant water in the casing. Stabilization occurs when at least three consecutive measurements are within the following tolerances:

Multiple Volume Purge Stabilization Parameters	
pH	± 0.1 standard units (SU)
Specific Conductance	± 3%
Temperature	± 3%
Dissolved Oxygen (DO)	± 0.2 milligrams per liter (mg/l) or 10% (flow-through cell only)
Turbidity	± 10% for values greater than 10 nephelometric turbidity units (NTU)
Oxygen Reduction Potential (ORP)	± 10 millivolts (mV; flow-through cell only)

Parameter stabilization that does not occur within five well volumes may require you consult your project manager to decide whether to collect a sample or to continue purging. Wells with extremely slow recharge may also be problematic. Purging these wells, in some cases, may result in dewatering the well before the minimum purge can be completed. Allow wells or borings purged dry to recharge to a level of approximately 90% of the static (pre-purge) water elevation and proceed immediately to sample collection. If recovery exceeds 2 hours, sample as soon as sufficient sample volume is available, in accordance with applicable regulations.

11.8.3 LOW FLOW PURGE PROCEDURES

Low flow purging and sampling is used to obtain representative groundwater samples without removing all the water within the well. The protocol uses relatively low pumping rates (i.e., less than 0.5 l/min) to establish an isolated zone around the inlet of the pump where flow is horizontal (i.e., from the water bearing zone) rather than from the stagnant water in the well casing above and below the pump. Selection of an appropriate pump is critical to establishing the flow zone: it must be well suited for both low pumping rates and the analytes being sampled. Bailers are not appropriate for low flow sampling.

The set-up for low flow sampling includes positioning the pump at the appropriate depth within the casing such that the pump inlet is within the screened section of the well. Slowly lower the pump, where appropriate, and tubing into the water column to avoid agitating the water column; use of a lanyard is recommended (i.e., do not use the extraction tubing to lift or lower the pump). Secure the pump and/or tubing at the wellhead once the specified sampling depth has been achieved and record the depth in the field book. Avoid contacting the bottom of the well by using pre-cut tubing at the appropriate length or by lowering the pump/tubing simultaneously with an electronic water level indicator. Once the pump/tubing has been inserted and secured, allow the water levels to return to static conditions before initiating the purge.

The discharge tubing must be connected to an in-line flow-through cell equipped with a multi-parameter real-time water quality meter. The flow-through cell minimizes the exposure of the groundwater to ambient air, which can influence DO and ORP measurements.

Start the pump and maintain a steady flow rate that results in a stabilized water level (less than 0.3 feet of drawdown or as specified in the project-specific work plan). The pumping rate may need to be adjusted depending on the response of the water levels in the well. Record each adjustment made to the pumping rate and the water level measured immediately after each adjustment. Purging should not exceed 0.5 l/min.

During purging, monitor and record the flow rate and geochemical parameters at 30 seconds to 5-minute intervals (depending on the hydraulic conductivity of the aquifer, diameter of the well, and pumping rate). Stabilization occurs once the following criteria have been met over three successive measurements made at least three minutes apart:

Low Flow Purge Stabilization Parameters	
Water Level Drawdown	<0.3 feet
pH	± 0.1 SU
Specific Conductance	± 3%
Temperature	± 3%
DO	± 0.2 mg/l or 10% (flow-through cell only)
Turbidity	± 10% for values greater than 10 NTU
ORP	± 10 mV (flow-through cell only)

Record any other notable observations in the field book (e.g., groundwater color).

11.8.4 NO-PURGE SAMPLING TECHNIQUES

Several alternate sampling devices are available, such as equilibrated grab samplers, passive diffusion samplers, and other in situ sampling devices, that will allow sample collection without purging the well. These devices may be particularly useful for sampling low permeability geologic materials, assuming the device is made of materials compatible with the analytical parameters, meets data quality objectives, and has been properly evaluated.

No-purge grab or trap samplers are placed in the well before sampling and typically remain closed (i.e., no water is allowed into the sampler during insertion) until the sampler is activated. This allows the sampler device to equilibrate with the surrounding groundwater (to prevent adsorption to the sampler materials) and for the groundwater to recover and re-establish the natural flow after the disturbance caused by the sampler insertion into the well. Typical equilibration times depend on the well recovery rates and the type of sampler used. Samples recovered using the no-purge devices are either transferred to containers at the well head or the sampler itself is shipped to the laboratory for analysis. Examples of equilibrated grab samplers include HydraSleeve™, Snap Sampler™, and Kemmerer samplers.

Equilibration time for diffusion samplers are generally dictated by the diffusion rate through the permeable membrane and, thus, are less sensitive to changes induced within the well during deployment. Most diffusion bag samplers have a minimum equilibration time of 14 days prior to sample collection. The samplers may be deployed for an extended period (e.g., three months or longer), although the continuous exchange between the sampler and the well water means that the sampler will likely reflect only the conditions in the few days preceding the sample collection.

11.8.5 TEMPORARY WELL PURGE PROCEDURES

Procedures used to purge temporary groundwater monitoring wells differ from permanent wells because temporary wells are installed for immediate sample acquisition. Wells of this type may include open bedrock boreholes, standard polyvinyl chloride well screen and riser placed in open boreholes, or drilling rod-based sampling devices (e.g., Wellpoint®, Geoprobe® screen point or Hydropunch® samplers). Purging temporary wells of this type may not be necessary because stagnant water is typically not present. However, if water is used in the drilling process, purging would be necessary. Purging can minimize the turbidity in the sample, which can be significant due to the disturbance caused by the sampler installation and to rinse the sampling system with groundwater. The exception is for groundwater profiling applications (e.g., using a Waterloo Profiler®) where a more rigorous purge is used (using the multiple volume purge techniques described above) to limit the potential for cross-contamination between sample intervals.

11.8.6 PRIVATE WATER WELL OR IN-PLACE PLUMBING PURGE PROCEDURES

The configuration and construction of private water wells varies widely and access points for obtaining groundwater samples may be limited. WSP personnel should coordinate with the property owner or site representative to access functioning ports and valves to avoid causing any inadvertent damage.

Collect the groundwater sample as close to the well as possible (e.g., from a sample port at the well head) to ensure the sample is representative. Ideally, the sample should be collected upstream of the piping and treatment equipment (e.g., particulate filter, water softener, carbon filters, ultra-violet lights), heating unit, or storage tanks. The following potential sampling locations are presented in order of preference:

- Sampling port or spigot near the well head or piping system prior to entry into the storage tank
- Sampling port or spigot at storage tank
- Sampling port or spigot downstream of the pressure tank or holding tank but upstream of any water treatment equipment
- Tap or faucet

If purging from a tap or faucet, try to remove any aerators, filters, or other devices from the tap before purging and work with the property owner or site representative to bypass any water treatment systems. Document where the sample was collected and any steps that were taken to minimize the potential alteration of the water sample in the field book.

Purge the system by opening the tap or spigot and allowing the water to run for several minutes. Observe and record the purge rate for the system. The minimum purge volume must be more than the combined volume of the pump, tanks, piping, etc. Review the geochemical measurements (after the minimum purge volume has been removed) to ensure that readings have stabilized using the same procedures as those used for the multiple volume purge detailed above. Purge the system for a minimum of 15 minutes if the minimum volume is unknown. Sample only after the geochemistry parameters have stabilized and no there are no suspended particles (e.g., iron or rust) visible. Record the final purge volume in the field book and any water quality observations.

11.9 GROUNDWATER SAMPLE COLLECTION PROCEDURES

Collect groundwater samples as soon as possible after the geochemical parameters indicate representative groundwater is present. As practically possible, reduce the pump flow rate, but maintain a flow rate high enough to deliver a smooth stream of water without splashing or undue agitation. Collect samples directly from the tubing as it exits the well bore; do not sample on the downstream side of flow-through cells or any other instrumentation. If using a bailer for sample collection, lower and raise the bailer slowly and smoothly to minimize the disturbance to the water within the well.

Collect groundwater samples in order of volatilization sensitivity with organic compounds sampled first followed by inorganic compounds:

- VOCs
- Extractable organics, petroleum hydrocarbons, aggregate organics, and oil and grease
- Per- and Polyfluoroalkyl substances
- Total metals
- Dissolved metals (see filtering procedures below)
- Inorganic non-metallic and physical and aggregate properties
- Microbiological samples
- Radionuclides

Collect quality assurance/quality control samples in accordance with SOP 4 and the project-specific work plan or QAPP.

As necessary, conduct field tests or screening in accordance with the project-specific work plan and manufacturer's specifications for field testing equipment. Field samples must be directly transferred from the sampling equipment to the container that has been specifically prepared for that given parameter; intermediate containers should be avoided. If field chemical preservation is required, check the pH preservation by pouring a small portion of sample onto a pH test strip Adjust pH with additional preservative, if necessary.

Record the sample depth interval, if applicable, in the field book. Note the volume, phases, odor, and color of the groundwater.

11.9.1 GROUNDWATER FILTRATION PROCEDURES

Filtered groundwater samples are sometimes used for field kit analyses and should only be collected for laboratory analysis after approval from the appropriate regulatory agency or project manager. The filtered samples can be collected by attaching the in-line filter directly to the outlet tubing for a pressurized bailer, a submersible pump or a peristaltic pump. Intermediate containers can be used with a peristaltic pump if the well is too deep to use the pump to recover the sample directly. The intermediate container should be unpreserved laboratory-supplied glassware to avoid any cross-contamination during the filtering process.

Filtered samples using pumps should use the following procedures:

- Use a variable speed peristaltic pump with the in-line filter fitted on the outlet end of the tubing and the pump inlet tubing into the intermediate container holding the unpreserved groundwater sample; or,
- If a submersible pump is used to collect the groundwater sample, attached the in-line filter to the outlet end of the tubing (do not allow the groundwater to pass through flow-through cells or any other instrumentation while sampling)

Once the filter is connected:

- Turn on the pump and maintain a flow rate high enough to deliver a smooth stream of water without splashing or undue agitation. Hold the filter upright with the inlet and outlet in the vertical position and pump groundwater through the filter until all atmospheric oxygen has been removed and the minimum volume of water has been flushed through the filter, in accordance with the manufacturer's specifications
- Collect the filtered samples by placing the filtered output directly into the sample container
- If sediment is visible in the sample container after filtration, filter break-through has occurred and the sampling and filtering process should be repeated
- Discard the tubing and filter appropriately

Record sample filtration in the field book.

11.9.2 NON-AQUEOUS PHASE LIQUID SAMPLING PROCEDURES

Non-aqueous phase liquid is typically sampled to identify the compound, usually through an analytical "fingerprint" analysis. If samples are to be collected, the sampling options and techniques should be discussed with the assigned WSP compliance professional and project manager to ensure that the NAPL is either not considered to be a hazardous material for shipping to the laboratory or is properly shipped by qualified personnel using appropriate shipping containers (SOP 3). Samples of NAPL should be collected using the same procedures as above and placed in the appropriate laboratory-supplied containers, packed on ice, and shipped to the analytical laboratory using procedures outlined in SOP 3.

11.9.3 SAMPLE LABELING AND PREPARATION FOR SHIPMENT

Groundwater samples for offsite laboratory analysis should be prepared as follows:

1. Clean the outside of the sample container, if necessary
2. Affix a sample tag or label to each sample container and complete all required information (sample number, date, time, sampler's initials, analysis, preservatives, place of collection)
3. Place clear tape over the tag or label (if non-waterproof labels are used), as needed
4. If needed, preserve samples immediately after collection by placing them into an insulated cooler filled with bagged wet ice to maintain a temperature of approximately 4°Celcius
5. Record the sample designation, date, time, and the sampler's initials in the field book and on a sample tracking form, if appropriate
6. Complete the chain-of-custody forms with appropriate sampling information, including:
   - location
   - sample name
   - sample collection date and time
   - number of sample containers

- analytical method
- field filtration status

7 Secure the sample packing and shipping in accordance with proper procedures

Do not ship hazardous waste samples without first consulting a WSP compliance professional.

11.10 CLOSING NOTES

Secure and restore the site once sampling is completed. This may include locking permanent monitoring wells, staging the IDW, and disposing of (in conformance with applicable regulations) sampling expendables, such as plastic sheeting, tubing, and PPE. All locations where temporary wells or other sampling devices (e.g., profilers or direct-push equipment) should be marked with spray paint, stakes, or other appropriate method for future reference or survey, including collecting Global Positioning System coordinates and photographs, in accordance with the project-specific work plan. Decontaminate all equipment prior to departure and properly manage all PPE and investigation-derived wastes in conformance with SOP 6, the project-specific work plan, and applicable regulations.

APPENDIX

B LOW FLOW PURGE FORM

WSP
7000 Genesee Street, Building D, 2nd Floor
Fayetteville, NY 13066 (315) 655-3900 • Fax (315) 655-3907

Low-Flow Groundwater Sampling Monitoring Form

Well ID	**P-8**	**Site ID:**	**Former GIC - Sherburne, NY**	**Sample Date:**	4/28/2020
Well Diameter	2 inches	**Sampling Event:**	**Annual Supplemental Remedial Action Performance Monitoring**		
Depth to Water	5.95 feet				
Total Well Depth	15.96 feet	**Samplers**	NTW		
Screen Length	10 feet	**Weather Conditions and Notes:**	40°F, foggy		
Pump Intake	13 feet	**Flow Rate**	200 millimeters per minute (ml/min)		

Stabilized: ±10-percent for temperature, turbidity, DO, and ORP; ±0.1 unit for pH; and ± 3-percent for specific conductance

Instrument Calibration Information

Horiba U52 with flow-through cell - Calibrated to manufacturer's specifications using standard solutions.

Well Purging Information

Air temp: 40 ºF | Start purge: 955 | End purge: 1045 | Pump Type: QED Sample pro w/ MP-15 and CO_2

Time	DTW	Purge Volume (L)	pH	Conductivity (mS/cm)	Turbidity (NTU)	D.O. (mg/l) *	T (ºC)	ORP (mV)	Appearance of Purge Water	Flow Rate (mL/min)
0955	6.08	INT	10.02	0.525	44.2	1.49	9.22	-109	Clear	200
1000	6.08	1.0	8.70	0.544	66.4	0.38	9.46	-123	Clear	200
1005	6.08	2.0	8.35	0.575	59.3	0.12	9.51	-104	Clear	200
1010	6.07	3.0	7.59	0.667	38.5	0.00	9.67	-91	Clear	200
1015	6.08	4.0	7.30	0.719	21.5	0.00	9.79	-90	Clear	200
1020	6.08	5.0	7.22	0.745	13.8	0.00	9.84	-91	Clear	200
1025	6.08	6.0	7.17	0.765	7.4	0.00	9.91	-92	Clear	200
1030	6.07	7.0	7.13	0.780	6.2	0.00	9.97	-91	Clear	200
1035	6.08	8.0	7.12	0.797	2.3	0.00	10.02	-89	Clear	200
1040	6.08	9.0	7.13	0.795	1.6	0.00	10.05	-88	Clear	200
1045	6.08	10.0	7.12	0.798	0.9	0.00	10.09	-87	Clear	200

APPENDIX

C LABORATORY ANALYTICAL REPORTS (VOCS)

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP Environment & Energy

Former General Instrument Site (GIC), Sherburne, NY

31401203.42

SGS Job Number: JD6583

Sampling Date: 04/28/20

Report to:

WSP Environment & Energy
5 Sullivan Street
Cazenovia, NY 13035
david.bouchard@WSP.com

ATTN: David Bouchard

Total number of pages in report: 169

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Laura Degenhardt
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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SGS North America Inc.

Sample Summary

WSP Environment & Energy

Job No: JD6583

Former General Instrument Site (GIC), Sherburne, NY
Project No: 31401203.42

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
This report contains results reported as ND = Not detected. The following applies: Organics ND = Not detected above the MDL							
JD6583-1	04/28/20	08:55	NW	04/29/20	AQ	Ground Water	MW-32
JD6583-2	04/28/20	09:05	NW	04/29/20	AQ	Ground Water	MW-31
JD6583-3	04/28/20	09:15	NW	04/29/20	AQ	Ground Water	MW-22
JD6583-4	04/28/20	09:20	NW	04/29/20	AQ	Ground Water	MW-34
JD6583-5	04/28/20	09:30	NW	04/29/20	AQ	Ground Water	MW-17
JD6583-6	04/28/20	08:00	NW	04/29/20	AQ	Ground Water	MW-0420
JD6583-7	04/28/20	09:45	NW	04/29/20	AQ	Ground Water	P-8
JD6583-7D	04/28/20	09:45	NW	04/29/20	AQ	Water Dup/MSD	P-8-MSD
JD6583-7S	04/28/20	09:45	NW	04/29/20	AQ	Water Matrix Spike	P-8-MS
JD6583-8	04/28/20	09:45	NW	04/29/20	AQ	Trip Blank Water	TRIP BLANK

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	WSP Environment & Energy	**Job No**	JD6583
Site:	Former General Instrument Site (GIC), Sherburne, NY	**Report Date**	5/4/2020 11:04:51 AM

On 04/29/2020, 7 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JD6583 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

MS Volatiles By Method SW846 8260C

Matrix: AQ **Batch ID:** V1A8656

- All samples were analyzed within the recommended method holding time.
- Sample(s) JD6583-7MS, JD6583-7MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for Bromomethane are outside control limits. Outside in house control limits.
- RPD(s) for MSD for Bromomethane are outside control limits for sample JD6583-7MSD. Outside in house control limits.
- V1A8656-MB for Vinyl chloride: MDL from current instrument.
- JD6583-7 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JD6583-7 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-1 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JD6583-8 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-6 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-1 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-2 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JD6583-2 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-3 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JD6583-3 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-4 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JD6583-4 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-5 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JD6583-5 for Bromomethane: Associated CCV outside of control limits low.
- JD6583-6 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JD6583-8 for Chloroethane: Associated CCV outside of control limits high, sample was ND.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

Summary of Hits

Job Number: JD6583
Account: WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY
Collected: 04/28/20

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JD6583-1	**MW-32**					
cis-1,2-Dichloroethene		19.9	1.0	0.51	ug/l	SW846 8260C
Vinyl chloride		3.3	1.0	0.79	ug/l	SW846 8260C
JD6583-2	**MW-31**					
cis-1,2-Dichloroethene		9.2	1.0	0.51	ug/l	SW846 8260C
Trichloroethene		0.74 J	1.0	0.53	ug/l	SW846 8260C
JD6583-3	**MW-22**					
cis-1,2-Dichloroethene		22.3	1.0	0.51	ug/l	SW846 8260C
trans-1,2-Dichloroethene		1.0	1.0	0.54	ug/l	SW846 8260C
Vinyl chloride		3.8	1.0	0.79	ug/l	SW846 8260C
JD6583-4	**MW-34**					
No hits reported in this sample.						
JD6583-5	**MW-17**					
cis-1,2-Dichloroethene		1.5	1.0	0.51	ug/l	SW846 8260C
JD6583-6	**MW-0420**					
cis-1,2-Dichloroethene		1.6	1.0	0.51	ug/l	SW846 8260C
JD6583-7	**P-8**					
cis-1,2-Dichloroethene		19.8	1.0	0.51	ug/l	SW846 8260C
Vinyl chloride		12.3	1.0	0.79	ug/l	SW846 8260C
JD6583-8	**TRIP BLANK**					
No hits reported in this sample.						

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-32		
Lab Sample ID:	JD6583-1	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200843.D	1	04/30/20 12:40	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	19.9	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-32		
Lab Sample ID:	JD6583-1	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	3.3	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-31		
Lab Sample ID:	JD6583-2	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200851.D	1	04/30/20 15:59	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	9.2	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-31		
Lab Sample ID:	JD6583-2	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	0.74	1.0	0.53	ug/l	J
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		81-124%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	91%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-22		
Lab Sample ID:	JD6583-3	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200852.D	1	04/30/20 16:24	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	22.3	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	1.0	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-22		
Lab Sample ID:	JD6583-3	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	3.8	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	98%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-34		
Lab Sample ID:	JD6583-4	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200853.D	1	04/30/20 16:48	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-34		
Lab Sample ID:	JD6583-4	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-120%
17060-07-0	1,2-Dichloroethane-D4	98%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-17		
Lab Sample ID:	JD6583-5	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200854.D	1	04/30/20 17:13	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	1.5	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-17		
Lab Sample ID:	JD6583-5	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	99%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	MW-0420		
Lab Sample ID:	JD6583-6	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200855.D	1	04/30/20 17:38	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	1.6	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	MW-0420		
Lab Sample ID:	JD6583-6	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	P-8		
Lab Sample ID:	JD6583-7	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200842.D	1	04/30/20 12:15	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	19.8	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	P-8		
Lab Sample ID:	JD6583-7	**Date Sampled:**	04/28/20
Matrix:	AQ - Ground Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	12.3	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	107%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		81-124%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	94%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

SGS North America Inc.

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JD6583-8	**Date Sampled:**	04/28/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1A200850.D	1	04/30/20 15:34	ED	n/a	n/a	V1A8656
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JD6583-8	**Date Sampled:**	04/28/20
Matrix:	AQ - Trip Blank Water	**Date Received:**	04/29/20
Method:	SW846 8260C	**Percent Solids:**	n/a
Project:	Former General Instrument Site (GIC), Sherburne, NY		

VOA TCL List (OLM4.2)

CAS No.	Compound	Result	RL	MDL	Units	Q
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.79	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	106%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		81-124%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	93%		80-120%

(a) Associated CCV outside of control limits low.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

Fedex #: 1219 0030 3377 GW TB

wsp

Chain of Custody Form

Page 1 of 1

WSP Office Address: 7000 East Genesee Street, Building D, 2nd Floor Fayetteville, NY 13066	No. JD 6583
Project Name: Former General Instrument Corporation	WSP Contact Name: DAVID BOUCHARD
Project Location: Sherburne, NY	WSP Contact E-mail: DAVID.BOUCHARD@wsp.com
Project Number & Task: 31401203.42	WSP Contact Phone: 315-420-9973
Sampler(s) Name(s): Nate Winston	Sampler(s) Signature(s):
Laboratory Name & Location: SGS North America, Inc.	
Laboratory Project Manager: Tammy McCloskey	
Requested Turn-Around-Time: ☒ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR	

	Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Volatile organic compounds (VOCs) by U.S. EPA 8260 (TCL42 List+ naphthalene)	Sample Comments
1	MW-32	AQ			4/28/20	0855	3	X	
2	MW-31					0905	3	X	
3	MW-22					0915	3	X	
4	MW-34					0920	3	X	• QC VOA
5	MW-17					0930	3	X	
6	MW-0920					0800	2	X	
7	P-8-MS/MSD					0945	9	X	RUN MS/MSD
8	TRIP BLANK	AQ					2	X	

Initial Assessment 2A

Label Verification

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	4/28/20	1500	FedEx			FedEx	
Relinquished By (Signature): FedEx	Date: 4-29-2020	Time: 1040	Received By (Signature): Jeemit Patel	Date	Time	Number of Packages: 1	Custody Seal Number(s)

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

ON ICE 3.6

JD6583: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JD6583 **Client:** WSP ENVIRONMENT & ENERGY **Project:** FORMER GENERAL INSTRUMENT SITE (GIC),

Date / Time Received: 4/29/2020 10:40:00 AM **Delivery Method:** **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (3.6);

Cooler Temps (Corrected) °C: Cooler 1: (3.3);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 229517 pH 12+: 208717 Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JD6583: Chain of Custody
Page 2 of 2

Internal Sample Tracking Chronicle

WSP Environment & Energy

Job No: JD6583

Former General Instrument Site (GIC), Sherburne, NY
Project No: 31401203.42

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JD6583-1	Collected: 28-APR-20 08:55	By: NW	Received: 29-APR-20	By: JP		
MW-32						
JD6583-1	SW846 8260C	30-APR-20 12:40	ED			V8260TCL42
JD6583-2	Collected: 28-APR-20 09:05	By: NW	Received: 29-APR-20	By: JP		
MW-31						
JD6583-2	SW846 8260C	30-APR-20 15:59	ED			V8260TCL42
JD6583-3	Collected: 28-APR-20 09:15	By: NW	Received: 29-APR-20	By: JP		
MW-22						
JD6583-3	SW846 8260C	30-APR-20 16:24	ED			V8260TCL42
JD6583-4	Collected: 28-APR-20 09:20	By: NW	Received: 29-APR-20	By: JP		
MW-34						
JD6583-4	SW846 8260C	30-APR-20 16:48	ED			V8260TCL42
JD6583-5	Collected: 28-APR-20 09:30	By: NW	Received: 29-APR-20	By: JP		
MW-17						
JD6583-5	SW846 8260C	30-APR-20 17:13	ED			V8260TCL42
JD6583-6	Collected: 28-APR-20 08:00	By: NW	Received: 29-APR-20	By: JP		
MW-0420						
JD6583-6	SW846 8260C	30-APR-20 17:38	ED			V8260TCL42
JD6583-7	Collected: 28-APR-20 09:45	By: NW	Received: 29-APR-20	By: JP		
P-8						
JD6583-7	SW846 8260C	30-APR-20 12:15	ED			V8260TCL42
JD6583-8	Collected: 28-APR-20 09:45	By: NW	Received: 29-APR-20	By: JP		
TRIP BLANK						
JD6583-8	SW846 8260C	30-APR-20 15:34	ED			V8260TCL42

SGS Internal Chain of Custody

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY
Received: 04/29/20

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JD6583-1.1	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-1.1	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-1.1	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-1.1	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-2.1	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-2.1	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-2.1	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-2.1	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-3.1	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-3.1	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-3.1	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-3.1	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-4.3	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-4.3	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-4.3	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-4.3	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-5.1	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-5.1	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-5.1	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-5.1	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-6.1	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-6.1	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-6.1	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-6.1	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-7.1	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-7.1	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-7.1	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-7.1	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-7.2	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-7.2	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-7.2	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-7.2	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage
JD6583-7.3	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-7.3	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-7.3	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-7.3	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage

SGS Internal Chain of Custody

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY
Received: 04/29/20

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JD6583-8.1	Secured Storage	Edward Durner	04/30/20 15:50	Retrieve from Storage
JD6583-8.1	Edward Durner	GCMS1A	04/30/20 15:50	Load on Instrument
JD6583-8.1	GCMS1A	Chelsea San Filippo	05/01/20 12:10	Unload from Instrument
JD6583-8.1	Chelsea San Filippo	Secured Storage	05/01/20 12:10	Return to Storage

MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries
- Run Sequence Reports

Method Blank Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A8656-MB	1A200841.D	1	04/30/20	ED	n/a	n/a	V1A8656

The QC reported here applies to the following samples: **Method:** SW846 8260C

JD6583-1, JD6583-2, JD6583-3, JD6583-4, JD6583-5, JD6583-6, JD6583-7, JD6583-8

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	6.0	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	0.58	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	6.9	ug/l	
75-15-0	Carbon disulfide	ND	2.0	0.95	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
110-82-7	Cyclohexane	ND	5.0	0.78	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	1.2	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	1.4	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.51	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
76-13-1	Freon 113	ND	5.0	1.9	ug/l	
591-78-6	2-Hexanone	ND	5.0	2.0	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
79-20-9	Methyl Acetate	ND	5.0	0.80	ug/l	
108-87-2	Methylcyclohexane	ND	5.0	0.60	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	1.9	ug/l	

Method Blank Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A8656-MB	1A200841.D	1	04/30/20	ED	n/a	n/a	V1A8656

The QC reported here applies to the following samples: **Method:** SW846 8260C

JD6583-1, JD6583-2, JD6583-3, JD6583-4, JD6583-5, JD6583-6, JD6583-7, JD6583-8

CAS No.	Compound	Result	RL	MDL	Units	Q
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	2.5	ug/l	
100-42-5	Styrene	ND	1.0	0.70	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.90	ug/l	
108-88-3	Toluene	ND	1.0	0.53	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.84	ug/l	
75-01-4	Vinyl chloride [a]	ND	1.0	0.17	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	80-120%
17060-07-0	1,2-Dichloroethane-D4	96%	81-124%
2037-26-5	Toluene-D8	95%	80-120%
460-00-4	4-Bromofluorobenzene	95%	80-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

(a) MDL from current instrument.

Blank Spike Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A8656-BS	1A200839.D	1	04/30/20	ED	n/a	n/a	V1A8656

The QC reported here applies to the following samples: **Method:** SW846 8260C

JD6583-1, JD6583-2, JD6583-3, JD6583-4, JD6583-5, JD6583-6, JD6583-7, JD6583-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
67-64-1	Acetone	200	211	106	42-150
71-43-2	Benzene	50	54.8	110	80-120
75-27-4	Bromodichloromethane	50	56.6	113	83-120
75-25-2	Bromoform	50	55.2	110	76-129
74-83-9	Bromomethane	50	33.5	67	57-138
78-93-3	2-Butanone (MEK)	200	216	108	64-137
75-15-0	Carbon disulfide	50	51.6	103	64-137
56-23-5	Carbon tetrachloride	50	56.5	113	75-135
108-90-7	Chlorobenzene	50	50.2	100	84-117
75-00-3	Chloroethane	50	59.3	119	63-132
67-66-3	Chloroform	50	56.7	113	80-119
74-87-3	Chloromethane	50	46.6	93	46-136
110-82-7	Cyclohexane	50	47.9	96	64-137
96-12-8	1,2-Dibromo-3-chloropropane	50	47.3	95	72-127
124-48-1	Dibromochloromethane	50	53.6	107	80-123
106-93-4	1,2-Dibromoethane	50	53.2	106	84-117
95-50-1	1,2-Dichlorobenzene	50	49.1	98	84-119
541-73-1	1,3-Dichlorobenzene	50	49.3	99	81-117
106-46-7	1,4-Dichlorobenzene	50	48.8	98	82-117
75-71-8	Dichlorodifluoromethane	50	54.7	109	36-149
75-34-3	1,1-Dichloroethane	50	54.3	109	79-120
107-06-2	1,2-Dichloroethane	50	50.3	101	78-126
75-35-4	1,1-Dichloroethene	50	50.8	102	69-126
156-59-2	cis-1,2-Dichloroethene	50	55.6	111	80-120
156-60-5	trans-1,2-Dichloroethene	50	58.7	117	76-120
78-87-5	1,2-Dichloropropane	50	55.4	111	82-121
10061-01-5	cis-1,3-Dichloropropene	50	53.7	107	83-120
10061-02-6	trans-1,3-Dichloropropene	50	49.7	99	82-121
100-41-4	Ethylbenzene	50	51.4	103	80-120
76-13-1	Freon 113	50	45.6	91	62-182
591-78-6	2-Hexanone	200	195	98	65-132
98-82-8	Isopropylbenzene	50	52.1	104	83-120
79-20-9	Methyl Acetate	50	55.6	111	67-129
108-87-2	Methylcyclohexane	50	56.8	114	71-134
1634-04-4	Methyl Tert Butyl Ether	50	55.1	110	80-119
108-10-1	4-Methyl-2-pentanone(MIBK)	200	219	110	71-131

* = Outside of Control Limits.

Blank Spike Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1A8656-BS	1A200839.D	1	04/30/20	ED	n/a	n/a	V1A8656

The QC reported here applies to the following samples: **Method:** SW846 8260C

JD6583-1, JD6583-2, JD6583-3, JD6583-4, JD6583-5, JD6583-6, JD6583-7, JD6583-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
75-09-2	Methylene chloride	50	54.6	109	77-120
91-20-3	Naphthalene	50	52.7	105	73-131
100-42-5	Styrene	50	52.3	105	82-122
79-34-5	1,1,2,2-Tetrachloroethane	50	46.5	93	76-119
127-18-4	Tetrachloroethene	50	49.3	99	70-131
108-88-3	Toluene	50	50.3	101	80-120
120-82-1	1,2,4-Trichlorobenzene	50	56.6	113	79-132
71-55-6	1,1,1-Trichloroethane	50	55.1	110	81-128
79-00-5	1,1,2-Trichloroethane	50	50.5	101	83-118
79-01-6	Trichloroethene	50	53.8	108	80-120
75-69-4	Trichlorofluoromethane	50	57.9	116	64-136
75-01-4	Vinyl chloride	50	51.3	103	51-135
1330-20-7	Xylene (total)	150	156	104	80-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	106%	80-120%
17060-07-0	1,2-Dichloroethane-D4	96%	81-124%
2037-26-5	Toluene-D8	95%	80-120%
460-00-4	4-Bromofluorobenzene	91%	80-120%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD6583-7MS	1A200847.D	1	04/30/20	ED	n/a	n/a	V1A8656
JD6583-7MSD	1A200848.D	1	04/30/20	ED	n/a	n/a	V1A8656
JD6583-7	1A200842.D	1	04/30/20	ED	n/a	n/a	V1A8656

The QC reported here applies to the following samples: **Method:** SW846 8260C

JD6583-1, JD6583-2, JD6583-3, JD6583-4, JD6583-5, JD6583-6, JD6583-7, JD6583-8

CAS No.	Compound	JD6583-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	ND		200	183	92	200	188	94	3	34-149/17
71-43-2	Benzene	ND		50	52.9	106	50	52.2	104	1	54-136/10
75-27-4	Bromodichloromethane	ND		50	53.9	108	50	54.0	108	0	79-124/11
75-25-2	Bromoform	ND		50	52.8	106	50	52.1	104	1	71-130/11
74-83-9	Bromomethane	ND		50	25.8	52* [a]	50	33.2	66	25* [a]	53-142/14
78-93-3	2-Butanone (MEK)	ND		200	197	99	200	199	100	1	54-142/15
75-15-0	Carbon disulfide	ND		50	52.3	105	50	52.4	105	0	59-145/17
56-23-5	Carbon tetrachloride	ND		50	56.1	112	50	56.9	114	1	70-143/12
108-90-7	Chlorobenzene	ND		50	49.2	98	50	49.3	99	0	78-123/10
75-00-3	Chloroethane	ND		50	58.8	118	50	58.7	117	0	57-141/14
67-66-3	Chloroform	ND		50	53.5	107	50	54.1	108	1	76-123/11
74-87-3	Chloromethane	ND		50	49.6	99	50	48.8	98	2	43-141/16
110-82-7	Cyclohexane	ND		50	53.2	106	50	52.8	106	1	51-155/16
96-12-8	1,2-Dibromo-3-chloropropane	ND		50	47.0	94	50	46.9	94	0	66-130/13
124-48-1	Dibromochloromethane	ND		50	50.8	102	50	51.1	102	1	76-125/11
106-93-4	1,2-Dibromoethane	ND		50	49.7	99	50	50.3	101	1	78-119/11
95-50-1	1,2-Dichlorobenzene	ND		50	49.1	98	50	49.9	100	2	77-123/11
541-73-1	1,3-Dichlorobenzene	ND		50	49.7	99	50	49.7	99	0	76-122/11
106-46-7	1,4-Dichlorobenzene	ND		50	48.2	96	50	49.2	98	2	76-122/11
75-71-8	Dichlorodifluoromethane	ND		50	70.9	142	50	68.0	136	4	31-159/16
75-34-3	1,1-Dichloroethane	ND		50	52.6	105	50	53.4	107	2	73-126/11
107-06-2	1,2-Dichloroethane	ND		50	45.7	91	50	47.0	94	3	72-131/11
75-35-4	1,1-Dichloroethene	ND		50	50.6	101	50	51.2	102	1	63-136/14
156-59-2	cis-1,2-Dichloroethene	19.8		50	73.2	107	50	72.5	105	1	60-136/11
156-60-5	trans-1,2-Dichloroethene	ND		50	56.8	114	50	57.5	115	1	70-126/11
78-87-5	1,2-Dichloropropane	ND		50	52.5	105	50	52.2	104	1	78-124/10
10061-01-5	cis-1,3-Dichloropropene	ND		50	52.2	104	50	51.9	104	1	79-123/11
10061-02-6	trans-1,3-Dichloropropene	ND		50	46.4	93	50	47.6	95	3	77-123/11
100-41-4	Ethylbenzene	ND		50	50.4	101	50	51.1	102	1	51-140/20
76-13-1	Freon 113	ND		50	50.9	102	50	51.7	103	2	60-192/14
591-78-6	2-Hexanone	ND		200	191	96	200	193	97	1	56-139/14
98-82-8	Isopropylbenzene	ND		50	53.3	107	50	52.8	106	1	75-129/11
79-20-9	Methyl Acetate	ND		50	48.0	96	50	50.0	100	4	55-131/15
108-87-2	Methylcyclohexane	ND		50	63.3	127	50	63.6	127	0	57-155/13
1634-04-4	Methyl Tert Butyl Ether	ND		50	48.7	97	50	48.5	97	0	72-123/11
108-10-1	4-Methyl-2-pentanone(MIBK)	ND		200	213	107	200	213	107	0	66-136/13

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JD6583-7MS	1A200847.D	1	04/30/20	ED	n/a	n/a	V1A8656
JD6583-7MSD	1A200848.D	1	04/30/20	ED	n/a	n/a	V1A8656
JD6583-7	1A200842.D	1	04/30/20	ED	n/a	n/a	V1A8656

The QC reported here applies to the following samples: **Method:** SW846 8260C

JD6583-1, JD6583-2, JD6583-3, JD6583-4, JD6583-5, JD6583-6, JD6583-7, JD6583-8

CAS No.	Compound	JD6583-7 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
75-09-2	Methylene chloride	ND		50	51.1	102	50	50.6	101	1	73-125/13
91-20-3	Naphthalene	ND		50	54.0	108	50	55.1	110	2	62-141/13
100-42-5	Styrene	ND		50	50.8	102	50	51.6	103	2	75-129/11
79-34-5	1,1,2,2-Tetrachloroethane	ND		50	45.3	91	50	45.4	91	0	71-122/11
127-18-4	Tetrachloroethene	ND		50	49.5	99	50	50.6	101	2	61-139/11
108-88-3	Toluene	ND		50	50.6	101	50	50.1	100	1	60-135/10
120-82-1	1,2,4-Trichlorobenzene	ND		50	58.3	117	50	60.5	121	4	72-137/13
71-55-6	1,1,1-Trichloroethane	ND		50	54.4	109	50	54.3	109	0	74-138/12
79-00-5	1,1,2-Trichloroethane	ND		50	48.2	96	50	48.6	97	1	78-121/11
79-01-6	Trichloroethene	ND		50	53.9	108	50	53.7	107	0	62-141/10
75-69-4	Trichlorofluoromethane	ND		50	62.2	124	50	63.6	127	2	57-149/14
75-01-4	Vinyl chloride	12.3		50	66.7	109	50	66.5	108	0	43-146/15
1330-20-7	Xylene (total)	ND		150	153	102	150	153	102	0	56-139/20

CAS No.	Surrogate Recoveries	MS	MSD	JD6583-7	Limits
1868-53-7	Dibromofluoromethane	105%	106%	107%	80-120%
17060-07-0	1,2-Dichloroethane-D4	96%	95%	97%	81-124%
2037-26-5	Toluene-D8	94%	95%	97%	80-120%
460-00-4	4-Bromofluorobenzene	93%	92%	94%	80-120%

(a) Outside control limits due to matrix interference.

* = Outside of Control Limits.

Instrument Performance Check (BFB)

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample: V1A8558-BFB
Lab File ID: 1A198433.D
Instrument ID: GCMS1A
Injection Date: 02/11/20
Injection Time: 17:42

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	9376	17.2		Pass
75	30.0 - 60.0% of mass 95	25213	46.3		Pass
95	Base peak, 100% relative abundance	54483	100.0		Pass
96	5.0 - 9.0% of mass 95	3489	6.40		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	51600	94.7		Pass
175	5.0 - 9.0% of mass 174	4020	7.38	(7.79) [a]	Pass
176	95.0 - 101.0% of mass 174	49397	90.7	(95.7) [a]	Pass
177	5.0 - 9.0% of mass 176	3306	6.07	(6.69) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1A8558-IC8558	1A198434.D	02/11/20	18:13	00:31	Initial cal 0.2
V1A8558-IC8558	1A198435.D	02/11/20	18:38	00:56	Initial cal 0.5
V1A8558-IC8558	1A198436.D	02/11/20	19:03	01:21	Initial cal 1
V1A8558-IC8558	1A198437.D	02/11/20	19:28	01:46	Initial cal 2
V1A8558-IC8558	1A198438.D	02/11/20	19:53	02:11	Initial cal 4
V1A8558-IC8558	1A198439.D	02/11/20	20:17	02:35	Initial cal 8
V1A8558-IC8558	1A198440.D	02/11/20	20:42	03:00	Initial cal 20
V1A8558-ICC8558	1A198441.D	02/11/20	21:07	03:25	Initial cal 50
V1A8558-IC8558	1A198442.D	02/11/20	21:32	03:50	Initial cal 100
V1A8558-IC8558	1A198443.D	02/11/20	21:57	04:15	Initial cal 200
V1A8558-ICV8558	1A198446.D	02/11/20	23:12	05:30	Initial cal verification 50
V1A8558-ICV8558	1A198447.D	02/11/20	23:37	05:55	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample: V1A8558-BFB2
Lab File ID: 1A198449.D
Instrument ID: GCMS1A
Injection Date: 02/12/20
Injection Time: 08:24

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	10204	17.1		Pass
75	30.0 - 60.0% of mass 95	27360	45.9		Pass
95	Base peak, 100% relative abundance	59648	100.0		Pass
96	5.0 - 9.0% of mass 95	3985	6.68		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	56557	94.8		Pass
175	5.0 - 9.0% of mass 174	4495	7.54	(7.95) [a]	Pass
176	95.0 - 101.0% of mass 174	55885	93.7	(98.8) [a]	Pass
177	5.0 - 9.0% of mass 176	3594	6.03	(6.43) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1A8558-ICV8558	1A198450.D	02/12/20	08:56	00:32	Initial cal verification 50

Instrument Performance Check (BFB)

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Sample: V1A8656-BFB
Lab File ID: 1A200837.D
Instrument ID: GCMS1A
Injection Date: 04/30/20
Injection Time: 10:01

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance		Pass/Fail
50	15.0 - 40.0% of mass 95	8832	18.9		Pass
75	30.0 - 60.0% of mass 95	22032	47.3		Pass
95	Base peak, 100% relative abundance	46621	100.0		Pass
96	5.0 - 9.0% of mass 95	3343	7.17		Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) [a]	Pass
174	50.0 - 120.0% of mass 95	43211	92.7		Pass
175	5.0 - 9.0% of mass 174	3765	8.08	(8.71) [a]	Pass
176	95.0 - 101.0% of mass 174	42320	90.8	(97.9) [a]	Pass
177	5.0 - 9.0% of mass 176	2890	6.20	(6.83) [b]	Pass

(a) Value is % of mass 174
(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
V1A8656-CC8558	1A200837.D	04/30/20	10:01	00:00	Continuing cal 20
V1A8656-BS	1A200839.D	04/30/20	10:56	00:55	Blank Spike
V1A8656-MB	1A200841.D	04/30/20	11:46	01:45	Method Blank
JD6583-7	1A200842.D	04/30/20	12:15	02:14	P-8
JD6583-1	1A200843.D	04/30/20	12:40	02:39	MW-32
ZZZZZZ	1A200844.D	04/30/20	13:05	03:04	(unrelated sample)
ZZZZZZ	1A200845.D	04/30/20	13:30	03:29	(unrelated sample)
ZZZZZZ	1A200846.D	04/30/20	13:55	03:54	(unrelated sample)
JD6583-7MS	1A200847.D	04/30/20	14:19	04:18	Matrix Spike
JD6583-7MSD	1A200848.D	04/30/20	14:44	04:43	Matrix Spike Duplicate
JD6583-8	1A200850.D	04/30/20	15:34	05:33	TRIP BLANK
JD6583-2	1A200851.D	04/30/20	15:59	05:58	MW-31
JD6583-3	1A200852.D	04/30/20	16:24	06:23	MW-22
JD6583-4	1A200853.D	04/30/20	16:48	06:47	MW-34
JD6583-5	1A200854.D	04/30/20	17:13	07:12	MW-17
JD6583-6	1A200855.D	04/30/20	17:38	07:37	MW-0420
ZZZZZZ	1A200856.D	04/30/20	18:03	08:02	(unrelated sample)
ZZZZZZ	1A200857.D	04/30/20	18:28	08:27	(unrelated sample)
ZZZZZZ	1A200858.D	04/30/20	18:53	08:52	(unrelated sample)
ZZZZZZ	1A200859.D	04/30/20	19:18	09:17	(unrelated sample)
ZZZZZZ	1A200860.D	04/30/20	19:42	09:41	(unrelated sample)

Internal Standard Area Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Check Std:	V1A8656-CC8558	**Injection Date:**	04/30/20
Lab File ID:	1A200837.D	**Injection Time:**	10:01
Instrument ID:	GCMS1A	**Method:**	SW846 8260C

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	109519	3.29	125992	4.53	198020	5.11	189398	7.54	90932	9.75
Upper Limit [a]	219038	3.79	251984	5.03	396040	5.61	378796	8.04	181864	10.25
Lower Limit [b]	54760	2.79	62996	4.03	99010	4.61	94699	7.04	45466	9.25

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V1A8656-BS	105618	3.29	119086	4.53	190687	5.11	188581	7.54	91516	9.75
V1A8656-MB	103715	3.29	123974	4.53	200010	5.11	190499	7.54	87551	9.75
JD6583-7	113802	3.29	124860	4.53	199156	5.11	190187	7.54	89714	9.75
JD6583-1	116250	3.29	122793	4.53	194561	5.11	186929	7.54	88543	9.74
ZZZZZZ	111089	3.29	123209	4.53	195734	5.11	185245	7.54	87904	9.75
ZZZZZZ	108732	3.29	119979	4.53	191269	5.11	184149	7.54	89938	9.75
ZZZZZZ	125103	3.29	120033	4.53	190873	5.11	190433	7.54	94336	9.75
JD6583-7MS	107393	3.29	117092	4.53	187525	5.11	188080	7.54	90697	9.74
JD6583-7MSD	109693	3.29	119481	4.53	191802	5.11	189354	7.54	91995	9.74
JD6583-8	112850	3.29	124397	4.53	198737	5.11	188041	7.54	90504	9.75
JD6583-2	111352	3.29	121494	4.53	195456	5.11	187024	7.54	90679	9.75
JD6583-3	109355	3.29	122524	4.53	195162	5.11	186320	7.54	87840	9.75
JD6583-4	107446	3.29	119430	4.53	192025	5.11	184816	7.54	88862	9.75
JD6583-5	109934	3.29	119507	4.53	192850	5.11	184818	7.54	87923	9.75
JD6583-6	110315	3.29	119124	4.53	190581	5.11	184878	7.54	88407	9.75
ZZZZZZ	109184	3.29	119325	4.53	191448	5.11	185581	7.54	88174	9.75
ZZZZZZ	103168	3.29	117937	4.53	189580	5.11	182213	7.54	86913	9.75
ZZZZZZ	104668	3.29	115026	4.53	185171	5.11	181623	7.54	86278	9.75
ZZZZZZ	103837	3.29	115708	4.53	184116	5.11	180054	7.54	88947	9.75
ZZZZZZ	105415	3.29	120279	4.53	192655	5.11	184785	7.54	88174	9.75

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Method: SW846 8260C **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JD6583-1	1A200843.D	107	99	97	94
JD6583-2	1A200851.D	105	99	96	91
JD6583-3	1A200852.D	106	98	97	94
JD6583-4	1A200853.D	108	98	97	93
JD6583-5	1A200854.D	106	99	97	94
JD6583-6	1A200855.D	108	102	97	93
JD6583-7	1A200842.D	107	97	97	94
JD6583-8	1A200850.D	106	97	98	93
JD6583-7MS	1A200847.D	105	96	94	93
JD6583-7MSD	1A200848.D	106	95	95	92
V1A8656-BS	1A200839.D	106	96	95	91
V1A8656-MB	1A200841.D	107	96	95	95

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	81-124%
S3 = Toluene-D8	80-120%
S4 = 4-Bromofluorobenzene	80-120%

Initial Calibration Summary

Job Number: JD6583 **Sample:** V1A8558-ICC8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198441.D
Project: Former General Instrument Site (GIC), Sherburne, NY

Response Factor Report MSDTEST1A

Method : C:\MSDCHEM\1\METHODS\M1A8558.M (RTE Integrator)
Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
Last Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Calibration Files
8 =1A198439.D 0.5 =1A198435.D 4 =1A198438.D 50 =1A198441.D
100 =1A198442.D 1 =1A198436.D 200 =1A198443.D 20 =1A198440.D
2 =1A198437.D 0.2 =1A198434.D = =

Compound	8	0.5	4	50	100	1	200	20	2	0.2	Avg	%RSD
1) I tert Butyl Alcohol-d9 ----------ISTD----------												
2) 1,4-dioxane	0.110	0.099	0.115	0.114	0.104	0.115	0.112	0.102			0.109	5.62
3) ethanol	0.120	0.128	0.117	0.115	0.158	0.107	0.121	0.142			0.126	13.09
4) tertiary butyl alcohol	1.181	1.106	1.247	1.221	1.239	1.417	1.196	1.213	1.252		1.230	6.75
5) I pentafluorobenzene ----------ISTD----------												
6) chlorodifluoromethane												
This compound does not meet initial calibration criteria												
	0.501	0.606	0.502	0.510	0.539	0.585	0.511	0.498	0.499		0.528	7.70
7) dichlorodifluoromethane	0.445	0.496	0.458	0.504	0.508	0.459	0.489	0.461	0.438		0.473	5.54
8) chloromethane	0.495	0.508	0.511	0.503	0.550	0.492	0.479	0.517			0.507	4.14
9) vinyl chloride	0.493	0.534	0.475	0.568	0.555	0.508	0.539	0.501	0.466	0.559	0.520	6.94
10) bromomethane	0.212	0.217	0.261	0.254	0.185	0.233	0.233	0.261			0.232	11.50
11) chloroethane	0.259	0.237	0.245	0.285	0.271	0.264	0.249	0.256	0.260		0.259	5.46
12) vinyl bromide	0.278	0.306	0.266	0.313	0.306	0.289	0.295	0.286	0.297		0.293	5.06
13) trichlorofluoromethane	0.567	0.599	0.549	0.632	0.629	0.511	0.603	0.575	0.560		0.581	6.73
14) ethyl ether	0.238	0.242	0.234	0.241		0.230	0.233	0.247			0.238	2.36
15) 2-chloropropane	0.715	0.696	0.650	0.663		0.631	0.682	0.726			0.680	5.08
16) acrolein	0.139	0.140	0.130	0.134		0.122	0.137				0.134	5.07
17) freon 113	0.344	0.276	0.329	0.336	0.353	0.354	0.325	0.340	0.319		0.331	7.20
18) 1,1-dichloroethene	0.366	0.350	0.374	0.373	0.390	0.450	0.369	0.376	0.378		0.381	7.36
19) acetone	0.063	0.062	0.062	0.063	0.074	0.059	0.064	0.065			0.064	6.98
20) acetonitrile	0.054	0.054	0.053	0.053		0.048	0.052	0.063			0.054	8.19
21) iodomethane	0.392	0.348	0.444	0.450	0.315	0.426	0.421	0.321			0.390	13.98
22) iso-butyl alcohol	0.044	0.046	0.040	0.042		0.037	0.041				0.042	7.65

Initial Calibration Summary

Job Number: JD6583 **Sample:** V1A8558-ICC8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198441.D
Project: Former General Instrument Site (GIC), Sherburne, NY

23) carbon disulfide
0.973 0.963 0.957 0.997 1.151 0.950 0.961 0.957 0.989 6.79
24) methylene chloride
0.417 0.479 0.406 0.404 0.418 0.521 0.396 0.412 0.417 0.430 9.73
25) methyl acetate
0.116 0.107 0.113 0.115 0.111 0.114 0.125 0.114 4.66
26) methyl tert butyl ether
1.287 1.281 1.252 1.272 1.289 1.409 1.230 1.268 1.281 1.285 3.89
27) trans-1,2-dichloroethene
0.395 0.362 0.390 0.389 0.404 0.423 0.381 0.406 0.410 0.395 4.50
28) hexane
0.569 0.584 0.562 0.584 0.690 0.550 0.569 0.598 0.588 7.42
29) di-isopropyl ether
1.459 1.573 1.508 1.459 1.478 1.725 1.387 1.478 1.483 1.506 6.36
30) ethyl tert-butyl ether
1.396 1.334 1.384 1.368 1.402 1.508 1.331 1.394 1.363 1.421 1.390 3.64
31) 2-butanone
0.089 0.065 0.090 0.086 0.089 0.109 0.081 0.087 0.090 0.087 12.79
32) 1,1-dichloroethane
0.736 0.685 0.736 0.730 0.731 0.830 0.699 0.729 0.721 0.754 0.735 5.23
33) chloroprene
0.631 0.651 0.635 0.637 0.643 0.709 0.612 0.637 0.613 0.560 0.633 5.85
34) acrylonitrile
0.243 0.251 0.242 0.244 0.257 0.251 0.239 0.251 0.245 0.247 2.34
35) vinyl acetate
0.121 0.117 0.110 0.115 0.109 0.118 0.124 0.116 4.67
36) ethyl acetate
0.125 0.119 0.106 0.122 0.106 0.126 0.127 0.119 7.66
37) 2,2-dichloropropane
0.593 0.641 0.586 0.580 0.586 0.699 0.552 0.573 0.606 0.564 0.598 7.20
38) cis-1,2-dichloroethene
0.465 0.547 0.457 0.447 0.452 0.573 0.430 0.464 0.473 0.478 10.06
39) propionitrile
0.094 0.098 0.094 0.091 0.093 0.099 0.083 0.094 0.099 0.094 5.25
40) methyl acrylate
0.103 0.095 0.094 0.098 0.091 0.098 0.096 0.096 3.95
41) bromochloromethane
0.224 0.236 0.215 0.223 0.227 0.210 0.221 0.201 0.220 4.91
42) tetrahydrofuran
0.087 0.101 0.098 0.096 0.093 0.102 0.084 0.094 7.28
43) chloroform
0.714 0.723 0.729 0.696 0.707 0.838 0.680 0.718 0.708 0.724 6.25
44) dibromofluoromethane (s)
0.430 0.433 0.422 0.436 0.432 0.431 0.430 0.439 0.432 0.425 0.431 1.10
45) methacrylonitrile
0.260 0.253 0.239 0.251 0.295 0.239 0.249 0.251 0.255 6.89
46) 1,1,1-trichloroethane
0.630 0.617 0.620 0.628 0.649 0.709 0.628 0.644 0.634 0.640 4.33
47) cyclohexane
0.621 0.740 0.603 0.648 0.634 0.612 0.600 0.604 0.622 0.632 6.88
48) 1,1-dichloropropene
0.567 0.596 0.570 0.543 0.560 0.589 0.541 0.565 0.582 0.568 3.35
49) carbon tetrachloride
0.535 0.528 0.533 0.547 0.564 0.609 0.542 0.552 0.544 0.550 4.46
50) isopropyl acetate
0.128 0.125 0.134 0.137 0.148 0.130 0.136 0.137 0.134 5.33
51) tert amyl alcohol
0.039 0.042 0.035 0.036 0.031 0.037 0.042 0.037 10.74

52) I 1,4-difluorobenzene ----------ISTD----------

53) 1,2-dichloroethane-d4 (s)
0.319 0.312 0.312 0.302 0.304 0.313 0.305 0.326 0.317 0.311 0.312 2.31
54) tert-amyl methyl ether
0.845 0.919 0.878 0.830 0.835 0.972 0.809 0.848 0.871 0.868 5.84
55) 2,2,4-trimethylpentane
0.627 0.642 0.631 0.597 0.614 0.740 0.583 0.632 0.607 0.630 7.16
56) n-butyl alcohol
0.018 0.018 0.018 0.018 0.018 0.019 0.017 0.018 0.018 0.018 3.55
57) benzene
1.055 1.129 1.062 1.034 1.035 1.210 0.993 1.048 1.036 1.075 1.068 5.70
58) heptane
0.162 0.165 0.145 0.149 0.202 0.142 0.156 0.165 0.161 11.69
59) 1,2-dichloroethane
0.368 0.459 0.385 0.347 0.349 0.446 0.340 0.362 0.377 0.381 11.30
60) trichloroethene
0.265 0.266 0.267 0.263 0.270 0.307 0.264 0.266 0.263 0.270 5.12
61) ethyl acrylate
0.527 0.524 0.506 0.514 0.560 0.493 0.520 0.526 0.521 3.75
62) 2-nitropropane
0.102 0.102 0.098 0.107 0.103 0.098 0.102 3.35
63) 2-chloroethyl vinyl ether
This compound does not meet initial calibration
0.013 0.007 0.026 0.034 0.040 0.020 0.023 54.29
64) methyl methacrylate
0.099 0.108 0.101 0.103 0.109 0.099 0.101 0.099 0.102 3.90
65) 1,2-dichloropropane
0.272 0.283 0.267 0.272 0.300 0.270 0.273 0.267 0.276 4.03
66) methylcyclohexane
0.396 0.363 0.400 0.385 0.403 0.448 0.382 0.399 0.387 0.396 5.83
67) dibromomethane
0.164 0.145 0.173 0.166 0.167 0.168 0.162 0.169 0.159 0.164 4.99
68) bromodichloromethane
0.352 0.393 0.360 0.353 0.365 0.389 0.359 0.359 0.354 0.353 0.364 4.11
69) cis-1,3-dichloropropene
0.440 0.425 0.430 0.448 0.460 0.493 0.452 0.444 0.404 0.430 0.443 5.35
70) epichlorohydrin
0.048 0.047 0.046 0.048 0.054 0.045 0.047 0.045 0.047 6.17
71) 4-methyl-2-pentanone
0.167 0.157 0.171 0.165 0.167 0.194 0.156 0.170 0.169 0.175 0.169 6.21
72) 3-methyl-1-butanol
0.017 0.017 0.017 0.017 0.016 0.015 0.017 0.015 0.016 4.87

73) I chlorobenzene-d5 ----------ISTD----------
74) toluene-d8 (s)
1.240 1.236 1.224 1.200 1.157 1.236 1.159 1.232 1.218 1.256 1.216 2.78
75) toluene
0.739 0.687 0.756 0.714 0.701 0.830 0.692 0.736 0.738 0.715 0.731 5.68
76) trans-1,3-dichloropropene
0.442 0.425 0.446 0.456 0.444 0.475 0.444 0.449 0.435 0.482 0.450 3.87
77) ethyl methacrylate
0.490 0.515 0.495 0.456 0.451 0.520 0.439 0.469 0.480 0.480 5.89
78) 1,1,2-trichloroethane
0.236 0.240 0.231 0.225 0.275 0.221 0.234 0.228 0.236 7.05
79) 2-hexanone
0.201 0.201 0.197 0.191 0.184 0.230 0.169 0.195 0.192 0.214 0.197 8.36
80) tetrachloroethene
0.352 0.370 0.350 0.335 0.333 0.398 0.323 0.349 0.318 0.348 7.11
81) 1,3-dichloropropane
0.470 0.476 0.486 0.464 0.450 0.541 0.438 0.473 0.461 0.535 0.479 7.01
82) butyl acetate

```
           0.298       0.308 0.284 0.275       0.262 0.288 0.302        0.288    5.62
 83)  dibromochloromethane
           0.299       0.304 0.307 0.311 0.346 0.306 0.304 0.291        0.309    5.21
 84)  1,2-dibromoethane
           0.345 0.329 0.336 0.337 0.330 0.377 0.325 0.340 0.331        0.339    4.56
 85)  n-butyl ether
           1.313 1.335 1.335 1.287 1.276 1.466 1.223 1.295 1.300        1.314    5.05
 86)  chlorobenzene
           0.820 0.800 0.822 0.811 0.799 0.863 0.791 0.813 0.785 1.033  0.834    8.79
 87)  1,1,1,2-tetrachloroethane
           0.288       0.307 0.288 0.288 0.328 0.280 0.290 0.315        0.298    5.59
 88)  ethylbenzene
           1.372 1.426 1.389 1.340 1.312 1.545 1.268 1.363 1.379 1.535  1.393    6.38
 89)  m,p-xylene
           0.528 0.511 0.538 0.512 0.508 0.602 0.489 0.525 0.522 0.577  0.531    6.42
 90)  o-xylene
           0.515 0.565 0.543 0.507 0.501 0.592 0.483 0.512 0.500 0.587  0.531    7.29
 91)  butyl acrylate
           0.718 0.680 0.712 0.709 0.704 0.783 0.660 0.709 0.692 0.723  0.709    4.55
 92)  n-amyl acetate
           0.270       0.282 0.269 0.262 0.282 0.241 0.264 0.259        0.266    5.02
 93)  styrene
           0.901 0.842 0.911 0.888 0.873 1.028 0.828 0.890 0.861 0.918  0.894    6.19
 94)  bromoform
           0.214 0.223 0.218 0.230 0.232 0.225 0.227 0.219 0.221        0.223    2.72
 95)  isopropylbenzene
           1.272 1.259 1.312 1.262 1.265 1.451 1.219 1.265 1.290 1.536  1.313    7.63
 96)  cis-1,4-dichloro-2-butene
           0.141       0.124 0.159 0.164       0.155 0.148              0.148    9.67

 97) I   1,4-dichlorobenzene-d ----------------ISTD---------------------
 98)  4-bromofluorobenzene (s)
           0.963 0.986 0.982 0.971 0.995 0.986 0.993 0.965 0.963 0.978  0.978    1.23
 99)  bromobenzene
           0.803 0.828 0.823 0.785 0.823 0.852 0.786 0.786 0.825        0.812    2.88
100)  1,1,2,2-tetrachloroethane
           0.933 0.959 0.943 0.935 0.947 1.083 0.892 0.937 0.903        0.948    5.80
101)  trans-1,4-dichloro-2-butene
           0.233       0.241 0.267 0.284       0.268 0.259              0.258    7.23
102)  1,2,3-trichloropropane
           0.303       0.303 0.288 0.296 0.313 0.278 0.288 0.279        0.293    4.27
103)  n-propylbenzene
           3.171 3.009 3.257 3.150 3.248 3.451 3.112 3.175 3.155 3.665  3.239    5.82
104)  2-chlorotoluene
           0.700 0.678 0.755 0.703 0.723 0.779 0.692 0.699 0.680        0.712    4.82
105)  4-chlorotoluene
           0.709 0.653 0.701 0.696 0.712 0.791 0.679 0.696 0.662        0.700    5.66
106)  1,3,5-trimethylbenzene
           2.178 2.226 2.313 2.183 2.257 2.642 2.148 2.201 2.225 2.529  2.290    7.17
107)  tert-butylbenzene
           1.879 2.014 1.962 1.856 1.934 2.089 1.829 1.881 1.925 1.628  1.900    6.47
108)  1,2,4-trimethylbenzene
           2.189 2.251 2.275 2.200 2.240 2.652 2.122 2.222 2.177 2.697  2.302    8.73
109)  sec-butylbenzene
           2.478 2.365 2.600 2.501 2.601 2.848 2.440 2.531 2.377 2.713  2.545    5.92
110)  1,3-dichlorobenzene
           1.327 1.222 1.391 1.331 1.351 1.484 1.296 1.340 1.326 1.551  1.362    6.90
111)  p-isopropyltoluene
           2.125 2.066 2.189 2.136 2.189 2.335 2.053 2.143 2.068 2.366  2.167    4.98
112)  1,4-dichlorobenzene
```

```
            1.334 1.395 1.370 1.327 1.352 1.512 1.298 1.336 1.333 1.583  1.384    6.61
113)  1,2-dichlorobenzene
            1.237 1.258 1.298 1.266 1.265 1.379 1.235 1.247 1.262 1.294  1.274    3.31
114)  n-butylbenzene
            0.924 0.877 0.974 0.948 0.981 1.027 0.967 0.939 0.860        0.944    5.52
115)  1,2-dibromo-3-chloropropane
            0.253       0.239 0.266 0.284 0.241 0.298 0.258 0.234        0.259    8.74
116)  1,3,5-trichlorobenzene
            0.773 0.664 0.781 0.780 0.798 0.811 0.864 0.771 0.725        0.774    7.17
117)  1,2,4-trichlorobenzene
            0.620       0.631 0.668 0.702 0.672 0.757 0.659 0.603        0.664    7.41
118)  hexachlorobutadiene
            0.255       0.270 0.255 0.270 0.285 0.281 0.265 0.244        0.266    5.20
119)  naphthalene
            2.120       2.152 2.282 2.408 2.136 2.473 2.181 1.997        2.219    7.15
120)  1,2,3-trichlorobenzene
            0.563 0.603 0.584 0.606 0.642 0.675 0.664 0.584 0.513        0.604    8.47
121)  hexachloroethane
            0.332       0.322 0.359 0.377 0.325 0.377 0.331 0.308        0.341    7.70
122)  benzyl chloride
            1.461 1.266 1.409 1.616 1.696 1.544 1.663 1.519 1.343        1.502    9.70
123)  2-ethylhexyl acrylate
            0.270             0.382 0.414       0.444 0.341              0.370   18.28
124)  2-methylnaphthalene
            0.645             0.860 0.997       1.049 0.765              0.863   19.18
125)  bis(chloromethyl)ether
                                                                         0.000   -1.00
126)  ethylenimine
                                                                         0.000   -1.00
 ---------------------------------------------------------------------------
 (#) = Out of Range  ###  Number of calibration levels exceeded format  ###

           M1A8558.M         Fri Feb 14 16:18:17 2020   1A
```

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198446.D
Project: Former General Instrument Site (GIC), Sherburne, NY

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\V1A8558\1A198446.D Vial: 19
Acq On : 11 Feb 2020 11:12 pm Operator: mariceld
Sample : ICV8558-50 Inst : MSDTEST1A
Misc : MS41024,V1A8558,w,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M1A8558.M (RTE Integrator)
Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
Last Update : Fri Feb 14 16:11:39 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert Butyl Alcohol-d9	1.000	1.000	0.0	101	0.00	3.29
2		1,4-dioxane	0.109	0.120	-10.1	106	0.00	5.55
3		ethanol	0.126	0.123	2.4	106	0.00	2.70
4	M	tertiary butyl alcohol	1.230	1.244	-1.1	103	0.00	3.35
5	I	pentafluorobenzene	1.000	1.000	0.0	102	0.00	4.53
6		chlorodifluoromethane	----------NA----------					
7		dichlorodifluoromethane	0.473	0.508	-7.4	103	0.00	1.80
8		chloromethane	0.507	0.531	-4.7	107	0.00	1.96
9		vinyl chloride	0.520	0.526	-1.2	95	0.00	2.06
10		bromomethane	0.232	0.308	-32.8#	121	0.00	2.32
11		chloroethane	0.259	0.257	0.8	93	0.00	2.41
12		vinyl bromide	0.293	0.341	-16.4	112	0.00	2.55
13		trichlorofluoromethane	0.581	0.650	-11.9	105	0.00	2.60
14		ethyl ether	0.238	0.236	0.8	103	0.00	2.79
15		2-chloropropane	0.680	0.652	4.1	103	0.00	2.89
16		acrolein	0.134	0.123	8.2	97	0.00	2.90
17		freon 113	0.331	0.333	-0.6	101	0.00	2.97
18		1,1-dichloroethene	0.381	0.357	6.3	98	0.00	2.98
19		acetone	0.064	0.065	-1.6	107	0.00	2.99
20		acetonitrile	----------NA----------					
21		iodomethane	0.390	0.503	-29.0	116	0.00	3.10
22		iso-butyl alcohol	0.042	0.044	-4.8	112	0.00	4.68
23		carbon disulfide	0.989	1.112	-12.4	119	0.00	3.16
24		methylene chloride	0.430	0.410	4.7	104	0.00	3.32
25		methyl acetate	0.114	0.111	2.6	100	0.00	3.21
26		methyl tert butyl ether	1.285	1.241	3.4	100	0.00	3.50
27		trans-1,2-dichloroethene	0.395	0.392	0.8	103	0.00	3.51
28		hexane	0.588	0.643	-9.4	117	0.00	3.69
29		di-isopropyl ether	1.506	1.392	7.6	98	0.00	3.80
30		ethyl tert-butyl ether	1.390	1.307	6.0	98	0.00	4.06
31		2-butanone	0.087	0.089	-2.3	105	0.00	4.18
32	M	1,1-dichloroethane	0.735	0.739	-0.5	104	0.00	3.81
33		chloroprene	0.633	0.639	-0.9	103	0.00	3.87
34		acrylonitrile	----------NA----------					
35		vinyl acetate	0.116	0.107	7.8	100	0.00	3.78
36		ethyl acetate	0.119	0.116	2.5	112	0.00	4.19
37		2,2-dichloropropane	0.598	0.555	7.2	98	0.00	4.22
38		cis-1,2-dichloroethene	0.478	0.442	7.5	101	0.00	4.21
39		propionitrile	0.094	0.108	-14.9	121	0.00	4.23
40		methyl acrylate	0.096	0.099	-3.1	108	0.00	4.23

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198446.D
Project: Former General Instrument Site (GIC), Sherburne, NY

41		bromochloromethane	0.220	0.223	-1.4	106	0.00	4.38
42		tetrahydrofuran	0.094	0.102	-8.5	106	0.00	4.39
43		chloroform	0.724	0.709	2.1	104	0.00	4.43
44	S	dibromofluoromethane (s)	0.431	0.432	-0.2	102	0.00	4.54
45		methacrylonitrile	0.255	0.252	1.2	108	0.00	4.34
46		1,1,1-trichloroethane	0.640	0.635	0.8	103	0.00	4.58
47		cyclohexane	0.632	0.602	4.7	95	0.00	4.64
48		1,1-dichloropropene	0.568	0.556	2.1	105	0.00	4.69
49		carbon tetrachloride	0.550	0.556	-1.1	104	0.00	4.70
50		isopropyl acetate	0.134	0.131	2.2	101	0.00	4.80
51		tert amyl alcohol	0.037	0.037	0.0	109	0.00	4.78
52	I	1,4-difluorobenzene	1.000	1.000	0.0	102	0.00	5.11
53	S	1,2-dichloroethane-d4 (s)	0.312	0.302	3.2	102	0.00	4.80
54		tert-amyl methyl ether	0.868	0.770	11.3	95	0.00	4.90
55		2,2,4-trimethylpentane	0.630	0.601	4.6	103	0.00	4.90
56		n-butyl alcohol	0.018	0.018	0.0	104	0.00	5.17
57	M	benzene	1.068	1.045	2.2	103	0.00	4.84
58		heptane	0.161	0.142	11.8	99	0.00	5.01
59		1,2-dichloroethane	0.381	0.347	8.9	102	0.00	4.86
60		trichloroethene	0.270	0.274	-1.5	106	0.00	5.31
61		ethyl acrylate	0.521	0.501	3.8	101	0.00	5.32
62		2-nitropropane	0.102	0.114	-11.8	118	0.00	5.87
63		2-chloroethyl vinyl ether	0.023	0.030	-30.4#	116	0.00	5.90
64		methyl methacrylate	0.102	0.106	-3.9	107	0.00	5.51
65		1,2-dichloropropane	0.276	0.271	1.8	103	0.00	5.51
66		methylcyclohexane	0.396	0.393	0.8	104	0.00	5.50
67		dibromomethane	0.164	0.167	-1.8	102	0.00	5.58
68		bromodichloromethane	0.364	0.358	1.6	104	0.00	5.70
69		cis-1,3-dichloropropene	0.443	0.462	-4.3	105	0.00	6.04
70		epichlorohydrin	0.047	0.048	-2.1	106	0.00	5.95
71		4-methyl-2-pentanone	0.169	0.170	-0.6	105	0.00	6.15
72		3-methyl-1-butanol	0.016	0.017	-6.3	104	0.00	6.16
73	I	chlorobenzene-d5	1.000	1.000	0.0	104	0.00	7.54
74	S	toluene-d8 (s)	1.216	1.185	2.5	103	0.00	6.28
75		toluene	0.731	0.724	1.0	105	0.00	6.34
76		trans-1,3-dichloropropene	0.450	0.467	-3.8	106	0.00	6.50
77		ethyl methacrylate	0.480	0.477	0.6	109	0.00	6.52
78		1,1,2-trichloroethane	0.236	0.233	1.3	105	0.00	6.68
79		2-hexanone	0.197	0.189	4.1	103	0.00	6.84
80		tetrachloroethene		----------NA----------				
81		1,3-dichloropropane	0.479	0.474	1.0	106	0.00	6.82
82		butyl acetate	0.288	0.285	1.0	104	0.00	6.92
83		dibromochloromethane	0.309	0.319	-3.2	108	0.00	7.02
84		1,2-dibromoethane	0.339	0.348	-2.7	107	0.00	7.13
85		n-butyl ether	1.314	1.260	4.1	102	0.00	7.60
86		chlorobenzene	0.834	0.833	0.1	107	0.00	7.57
87		1,1,1,2-tetrachloroethane	0.298	0.295	1.0	106	0.00	7.63
88		ethylbenzene	1.393	1.350	3.1	105	0.00	7.64
89		m,p-xylene	0.531	0.522	1.7	106	0.00	7.76
90		o-xylene	0.531	0.512	3.6	105	0.00	8.12
91		butyl acrylate	0.709	0.699	1.4	102	0.00	8.03
92		n-amyl acetate	0.266	0.256	3.8	99	0.00	8.23
93		styrene	0.894	0.892	0.2	104	0.00	8.13
94		bromoform	0.223	0.251	-12.6	113	0.00	8.31
95		isopropylbenzene	1.313	1.299	1.1	107	0.00	8.45
96		cis-1,4-dichloro-2-butene	0.148	0.166	-12.2	109	0.00	8.50
97	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	103	0.00	9.75

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198446.D
Project: Former General Instrument Site (GIC), Sherburne, NY

98	S	4-bromofluorobenzene (s)	0.978	0.980	-0.2	104	0.00	8.62
99		bromobenzene	0.812	0.815	-0.4	107	0.00	8.77
100		1,1,2,2-tetrachloroethane	0.948	0.952	-0.4	105	0.00	8.74
101		trans-1,4-dichloro-2-bute	0.258	0.265	-2.7	102	0.00	8.77
102		1,2,3-trichloropropane	0.293	0.296	-1.0	106	0.00	8.80
103		n-propylbenzene	3.239	3.301	-1.9	108	0.00	8.85
104		2-chlorotoluene	0.712	0.711	0.1	104	0.00	8.95
105		4-chlorotoluene	0.700	0.729	-4.1	108	0.00	9.07
106		1,3,5-trimethylbenzene	2.290	2.253	1.6	106	0.00	9.02
107		tert-butylbenzene	1.900	1.975	-3.9	109	0.00	9.33
108		1,2,4-trimethylbenzene	2.302	2.310	-0.3	108	0.00	9.39
109		sec-butylbenzene	2.545	2.608	-2.5	107	0.00	9.55
110		1,3-dichlorobenzene	1.362	1.407	-3.3	109	0.00	9.68
111		p-isopropyltoluene	2.167	2.230	-2.9	107	0.00	9.70
112		1,4-dichlorobenzene	1.384	1.372	0.9	106	0.00	9.78
113		1,2-dichlorobenzene	1.274	1.299	-2.0	105	0.00	10.13
114		n-butylbenzene	0.944	0.986	-4.4	107	0.00	10.10
115		1,2-dibromo-3-chloropropa	0.259	0.272	-5.0	105	0.00	10.90
116		1,3,5-trichlorobenzene	0.774	0.820	-5.9	108	0.00	11.10
117		1,2,4-trichlorobenzene	0.664	0.690	-3.9	106	0.00	11.73
118		hexachlorobutadiene	0.266	0.260	2.3	105	0.00	11.87
119		naphthalene	2.219	2.355	-6.1	106	0.00	12.00
120		1,2,3-trichlorobenzene	0.604	0.619	-2.5	105	0.00	12.22
121		hexachloroethane	0.341	0.376	-10.3	108	0.00	10.40
122		benzyl chloride	1.502	1.255	16.4	80	0.00	9.88
123		2-ethylhexyl acrylate	0.370	0.425	-14.9	114	0.00	11.90
124		2-methylnaphthalene	0.863	0.926	-7.3	111	0.00	13.16
125		bis(chloromethyl)ether		----------NA----------				
126		ethylenimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
1A198441.D M1A8558.M Fri Feb 14 16:18:29 2020 1A

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198447.D
Project: Former General Instrument Site (GIC), Sherburne, NY

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\V1A8558\1A198447.D Vial: 20
Acq On : 11 Feb 2020 11:37 pm Operator: mariceld
Sample : ICV8558-50 Inst : MSDTEST1A
Misc : MS41024,V1A8558,w,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M1A8558.M (RTE Integrator)
Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
Last Update : Fri Feb 14 16:11:39 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert Butyl Alcohol-d9	1.000	1.000	0.0	111	0.00	3.29
2		1,4-dioxane		----------NA----------				
3		ethanol		----------NA----------				
4	M	tertiary butyl alcohol		----------NA----------				
5	I	pentafluorobenzene	1.000	1.000	0.0	109	0.00	4.54
6		chlorodifluoromethane		----------NA----------				
7		dichlorodifluoromethane		----------NA----------				
8		chloromethane		----------NA----------				
9		vinyl chloride		----------NA----------				
10		bromomethane		----------NA----------				
11		chloroethane		----------NA----------				
12		vinyl bromide		----------NA----------				
13		trichlorofluoromethane		----------NA----------				
14		ethyl ether		----------NA----------				
15		2-chloropropane		----------NA----------				
16		acrolein		----------NA----------				
17		freon 113		----------NA----------				
18		1,1-dichloroethene		----------NA----------				
19		acetone		----------NA----------				
20		acetonitrile	0.054	0.053	1.9	111	0.00	3.19
21		iodomethane		----------NA----------				
22		iso-butyl alcohol		----------NA----------				
23		carbon disulfide		----------NA----------				
24		methylene chloride		----------NA----------				
25		methyl acetate		----------NA----------				
26		methyl tert butyl ether		----------NA----------				
27		trans-1,2-dichloroethene		----------NA----------				
28		hexane		----------NA----------				
29		di-isopropyl ether		----------NA----------				
30		ethyl tert-butyl ether		----------NA----------				
31		2-butanone		----------NA----------				
32	M	1,1-dichloroethane		----------NA----------				
33		chloroprene		----------NA----------				
34		acrylonitrile	0.247	0.254	-2.8	114	0.00	3.47
35		vinyl acetate		----------NA----------				
36		ethyl acetate		----------NA----------				
37		2,2-dichloropropane		----------NA----------				
38		cis-1,2-dichloroethene		----------NA----------				
39		propionitrile		----------NA----------				
40		methyl acrylate		----------NA----------				
41		bromochloromethane		----------NA----------				

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198447.D
Project: Former General Instrument Site (GIC), Sherburne, NY

42		tetrahydrofuran		----------NA----------				
43		chloroform		----------NA----------				
44	S	dibromofluoromethane (s)	0.431	0.429	0.5	108	0.00	4.54
45		methacrylonitrile		----------NA----------				
46		1,1,1-trichloroethane		----------NA----------				
47		cyclohexane		----------NA----------				
48		1,1-dichloropropene		----------NA----------				
49		carbon tetrachloride		----------NA----------				
50		isopropyl acetate		----------NA----------				
51		tert amyl alcohol		----------NA----------				
52	I	1,4-difluorobenzene	1.000	1.000	0.0	108	0.00	5.11
53	S	1,2-dichloroethane-d4 (s)	0.312	0.315	-1.0	112	0.00	4.80
54		tert-amyl methyl ether		----------NA----------				
55		2,2,4-trimethylpentane		----------NA----------				
56		n-butyl alcohol		----------NA----------				
57	M	benzene		----------NA----------				
58		heptane		----------NA----------				
59		1,2-dichloroethane		----------NA----------				
60		trichloroethene		----------NA----------				
61		ethyl acrylate		----------NA----------				
62		2-nitropropane		----------NA----------				
63		2-chloroethyl vinyl ether		----------NA----------				
64		methyl methacrylate		----------NA----------				
65		1,2-dichloropropane		----------NA----------				
66		methylcyclohexane		----------NA----------				
67		dibromomethane		----------NA----------				
68		bromodichloromethane		----------NA----------				
69		cis-1,3-dichloropropene		----------NA----------				
70		epichlorohydrin		----------NA----------				
71		4-methyl-2-pentanone		----------NA----------				
72		3-methyl-1-butanol		----------NA----------				
73	I	chlorobenzene-d5	1.000	1.000	0.0	107	0.00	7.54
74	S	toluene-d8 (s)	1.216	1.236	-1.6	110	0.00	6.28
75		toluene		----------NA----------				
76		trans-1,3-dichloropropene		----------NA----------				
77		ethyl methacrylate		----------NA----------				
78		1,1,2-trichloroethane		----------NA----------				
79		2-hexanone		----------NA----------				
80		tetrachloroethene	0.348	0.341	2.0	108	0.00	6.78
81		1,3-dichloropropane		----------NA----------				
82		butyl acetate		----------NA----------				
83		dibromochloromethane		----------NA----------				
84		1,2-dibromoethane		----------NA----------				
85		n-butyl ether		----------NA----------				
86		chlorobenzene		----------NA----------				
87		1,1,1,2-tetrachloroethane		----------NA----------				
88		ethylbenzene		----------NA----------				
89		m,p-xylene		----------NA----------				
90		o-xylene		----------NA----------				
91		butyl acrylate		----------NA----------				
92		n-amyl acetate		----------NA----------				
93		styrene		----------NA----------				
94		bromoform		----------NA----------				
95		isopropylbenzene		----------NA----------				
96		cis-1,4-dichloro-2-butene		----------NA----------				
97	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	107	0.00	9.75
98	S	4-bromofluorobenzene (s)	0.978	0.980	-0.2	108	0.00	8.62

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198447.D
Project: Former General Instrument Site (GIC), Sherburne, NY

99	bromobenzene	----------NA----------	
100	1,1,2,2-tetrachloroethane	----------NA----------	
101	trans-1,4-dichloro-2-bute	----------NA----------	
102	1,2,3-trichloropropane	----------NA----------	
103	n-propylbenzene	----------NA----------	
104	2-chlorotoluene	----------NA----------	
105	4-chlorotoluene	----------NA----------	
106	1,3,5-trimethylbenzene	----------NA----------	
107	tert-butylbenzene	----------NA----------	
108	1,2,4-trimethylbenzene	----------NA----------	
109	sec-butylbenzene	----------NA----------	
110	1,3-dichlorobenzene	----------NA----------	
111	p-isopropyltoluene	----------NA----------	
112	1,4-dichlorobenzene	----------NA----------	
113	1,2-dichlorobenzene	----------NA----------	
114	n-butylbenzene	----------NA----------	
115	1,2-dibromo-3-chloropropa	----------NA----------	
116	1,3,5-trichlorobenzene	----------NA----------	
117	1,2,4-trichlorobenzene	----------NA----------	
118	hexachlorobutadiene	----------NA----------	
119	naphthalene	----------NA----------	
120	1,2,3-trichlorobenzene	----------NA----------	
121	hexachloroethane	----------NA----------	
122	benzyl chloride	----------NA----------	
123	2-ethylhexyl acrylate	----------NA----------	
124	2-methylnaphthalene	----------NA----------	
125	bis(chloromethyl)ether	----------NA----------	
126	ethylenimine	----------NA----------	

(#) = Out of Range SPCC's out = 0 CCC's out = 0
1A198441.D M1A8558.M Fri Feb 14 16:18:32 2020 1A

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198450.D
Project: Former General Instrument Site (GIC), Sherburne, NY

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\V1A8558\1A198450.D Vial: 23
Acq On : 12 Feb 2020 8:56 am Operator: mariceld
Sample : icv8558-50 Inst : MSDTEST1A
Misc : MS41024,V1A8558,w,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\MSDCHEM\1\METHODS\M1A8558.M (RTE Integrator)
Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
Last Update : Fri Feb 14 16:11:39 2020
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert Butyl Alcohol-d9	1.000	1.000	0.0	113	0.00	3.29
2		1,4-dioxane		----------NA----------				
3		ethanol		----------NA----------				
4	M	tertiary butyl alcohol		----------NA----------				
5	I	pentafluorobenzene	1.000	1.000	0.0	115	0.00	4.53
6		chlorodifluoromethane		----------NA----------				
7		dichlorodifluoromethane	0.473	0.346	26.8	79	0.00	1.80
8		chloromethane	0.507	0.403	20.5	91	0.00	1.96
9		vinyl chloride	0.520	0.422	18.8	85	0.00	2.06
10		bromomethane	0.232	0.255	-9.9	112	0.00	2.33
11		chloroethane	0.259	0.211	18.5	85	0.00	2.41
12		vinyl bromide	0.293	0.286	2.4	105	0.00	2.56
13		trichlorofluoromethane	0.581	0.512	11.9	93	0.00	2.60
14		ethyl ether		----------NA----------				
15		2-chloropropane		----------NA----------				
16		acrolein		----------NA----------				
17		freon 113		----------NA----------				
18		1,1-dichloroethene		----------NA----------				
19		acetone		----------NA----------				
20		acetonitrile		----------NA----------				
21		iodomethane		----------NA----------				
22		iso-butyl alcohol		----------NA----------				
23		carbon disulfide		----------NA----------				
24		methylene chloride		----------NA----------				
25		methyl acetate		----------NA----------				
26		methyl tert butyl ether		----------NA----------				
27		trans-1,2-dichloroethene		----------NA----------				
28		hexane		----------NA----------				
29		di-isopropyl ether		----------NA----------				
30		ethyl tert-butyl ether		----------NA----------				
31		2-butanone		----------NA----------				
32	M	1,1-dichloroethane		----------NA----------				
33		chloroprene		----------NA----------				
34		acrylonitrile		----------NA----------				
35		vinyl acetate		----------NA----------				
36		ethyl acetate		----------NA----------				
37		2,2-dichloropropane		----------NA----------				
38		cis-1,2-dichloroethene		----------NA----------				
39		propionitrile		----------NA----------				
40		methyl acrylate		----------NA----------				
41		bromochloromethane		----------NA----------				

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198450.D
Project: Former General Instrument Site (GIC), Sherburne, NY

42		tetrahydrofuran		----------NA----------				
43		chloroform		----------NA----------				
44	S	dibromofluoromethane (s)	0.431	0.433	-0.5	114	0.00	4.54
45		methacrylonitrile		----------NA----------				
46		1,1,1-trichloroethane		----------NA----------				
47		cyclohexane	0.632	0.501	20.7	89	0.00	4.64
48		1,1-dichloropropene		----------NA----------				
49		carbon tetrachloride		----------NA----------				
50		isopropyl acetate		----------NA----------				
51		tert amyl alcohol		----------NA----------				
52	I	1,4-difluorobenzene	1.000	1.000	0.0	113	0.00	5.11
53	S	1,2-dichloroethane-d4 (s)	0.312	0.306	1.9	115	0.00	4.80
54		tert-amyl methyl ether		----------NA----------				
55		2,2,4-trimethylpentane		----------NA----------				
56		n-butyl alcohol		----------NA----------				
57	M	benzene		----------NA----------				
58		heptane		----------NA----------				
59		1,2-dichloroethane		----------NA----------				
60		trichloroethene		----------NA----------				
61		ethyl acrylate		----------NA----------				
62		2-nitropropane		----------NA----------				
63		2-chloroethyl vinyl ether		----------NA----------				
64		methyl methacrylate		----------NA----------				
65		1,2-dichloropropane		----------NA----------				
66		methylcyclohexane		----------NA----------				
67		dibromomethane		----------NA----------				
68		bromodichloromethane		----------NA----------				
69		cis-1,3-dichloropropene		----------NA----------				
70		epichlorohydrin		----------NA----------				
71		4-methyl-2-pentanone		----------NA----------				
72		3-methyl-1-butanol		----------NA----------				
73	I	chlorobenzene-d5	1.000	1.000	0.0	109	0.00	7.54
74	S	toluene-d8 (s)	1.216	1.241	-2.1	113	0.00	6.28
75		toluene		----------NA----------				
76		trans-1,3-dichloropropene		----------NA----------				
77		ethyl methacrylate		----------NA----------				
78		1,1,2-trichloroethane		----------NA----------				
79		2-hexanone		----------NA----------				
80		tetrachloroethene		----------NA----------				
81		1,3-dichloropropane		----------NA----------				
82		butyl acetate		----------NA----------				
83		dibromochloromethane		----------NA----------				
84		1,2-dibromoethane		----------NA----------				
85		n-butyl ether		----------NA----------				
86		chlorobenzene		----------NA----------				
87		1,1,1,2-tetrachloroethane		----------NA----------				
88		ethylbenzene		----------NA----------				
89		m,p-xylene		----------NA----------				
90		o-xylene		----------NA----------				
91		butyl acrylate		----------NA----------				
92		n-amyl acetate		----------NA----------				
93		styrene		----------NA----------				
94		bromoform		----------NA----------				
95		isopropylbenzene		----------NA----------				
96		cis-1,4-dichloro-2-butene		----------NA----------				
97	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	109	0.00	9.75
98	S	4-bromofluorobenzene (s)	0.978	0.975	0.3	110	0.00	8.63

Initial Calibration Verification

Job Number: JD6583 **Sample:** V1A8558-ICV8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A198450.D
Project: Former General Instrument Site (GIC), Sherburne, NY

99	bromobenzene	----------NA----------	
100	1,1,2,2-tetrachloroethane	----------NA----------	
101	trans-1,4-dichloro-2-bute	----------NA----------	
102	1,2,3-trichloropropane	----------NA----------	
103	n-propylbenzene	----------NA----------	
104	2-chlorotoluene	----------NA----------	
105	4-chlorotoluene	----------NA----------	
106	1,3,5-trimethylbenzene	----------NA----------	
107	tert-butylbenzene	----------NA----------	
108	1,2,4-trimethylbenzene	----------NA----------	
109	sec-butylbenzene	----------NA----------	
110	1,3-dichlorobenzene	----------NA----------	
111	p-isopropyltoluene	----------NA----------	
112	1,4-dichlorobenzene	----------NA----------	
113	1,2-dichlorobenzene	----------NA----------	
114	n-butylbenzene	----------NA----------	
115	1,2-dibromo-3-chloropropa	----------NA----------	
116	1,3,5-trichlorobenzene	----------NA----------	
117	1,2,4-trichlorobenzene	----------NA----------	
118	hexachlorobutadiene	----------NA----------	
119	naphthalene	----------NA----------	
120	1,2,3-trichlorobenzene	----------NA----------	
121	hexachloroethane	----------NA----------	
122	benzyl chloride	----------NA----------	
123	2-ethylhexyl acrylate	----------NA----------	
124	2-methylnaphthalene	----------NA----------	
125	bis(chloromethyl)ether	----------NA----------	
126	ethylenimine	----------NA----------	

(#) = Out of Range SPCC's out = 0 CCC's out = 0
1A198441.D M1A8558.M Mon Feb 17 11:51:56 2020 1A

Continuing Calibration Summary

Job Number: JD6583 **Sample:** V1A8656-CC8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A200837.D
Project: Former General Instrument Site (GIC), Sherburne, NY

Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\data\da...20\v1a8656\1a200837.d Vial: 2
Acq On : 30 Apr 2020 10:01 am Operator: edwardd
Sample : cc8558-20 Inst : MSDTEST1A
Misc : MS42840,V1A8656,w,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\M1A8558.M (RTE Integrator)
Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
Last Update : Fri Feb 14 16:11:39 2020
Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I	tert Butyl Alcohol-d9	1.000	1.000	0.0	90	0.00	3.29
2		1,4-dioxane	0.109	0.108	0.9	87	0.00	5.55
3		ethanol	0.126	0.123	2.4	92	0.00	2.69
4	M	tertiary butyl alcohol	1.230	1.280	-4.1	95	0.00	3.35
5	I	pentafluorobenzene	1.000	1.000	0.0	87	0.00	4.53
6		chlorodifluoromethane		----------NA----------				
7		dichlorodifluoromethane	0.473	0.563	-19.0	107	0.00	1.80
8		chloromethane	0.507	0.509	-0.4	93	0.00	1.96
9		vinyl chloride	0.520	0.555	-6.7	97	0.00	2.06
10		bromomethane	0.232	0.144	37.9#	54	0.00	2.33
11		chloroethane	0.259	0.316	-22.0#	108	0.00	2.41
12		vinyl bromide	0.293	0.302	-3.1	92	0.00	2.56
13		trichlorofluoromethane	0.581	0.676	-16.4	103	0.00	2.60
14		ethyl ether	0.238	0.259	-8.8	97	0.00	2.79
15		2-chloropropane		----------NA----------				
16		acrolein	0.134	0.116	13.4	74	0.00	2.90
17		freon 113	0.331	0.336	-1.5	86	0.00	2.97
18		1,1-dichloroethene	0.381	0.427	-12.1	99	0.00	2.98
19		acetone	0.064	0.068	-6.3	93	0.00	2.99
20		acetonitrile	0.054	0.059	-9.3	98	0.00	3.19
21		iodomethane	0.390	0.106	72.8#	22#	0.00	3.10
22		iso-butyl alcohol	0.042	0.043	-2.4	92	0.00	4.68
23		carbon disulfide	0.989	1.099	-11.1	100	0.00	3.17
24		methylene chloride	0.430	0.474	-10.2	101	0.00	3.32
25		methyl acetate	0.114	0.124	-8.8	95	0.00	3.20
26		methyl tert butyl ether	1.285	1.379	-7.3	95	0.00	3.49
27		trans-1,2-dichloroethene	0.395	0.468	-18.5	101	0.00	3.51
28		hexane	0.588	0.665	-13.1	102	0.00	3.69
29		di-isopropyl ether	1.506	1.671	-11.0	99	0.00	3.80
30		ethyl tert-butyl ether	1.390	1.508	-8.5	94	0.00	4.05
31		2-butanone	0.087	0.090	-3.4	90	0.00	4.18
32	M	1,1-dichloroethane	0.735	0.808	-9.9	97	0.00	3.81
33		chloroprene	0.633	0.681	-7.6	93	0.00	3.86
34		acrylonitrile	0.247	0.271	-9.7	94	0.00	3.47
35		vinyl acetate	0.116	0.113	2.6	83	0.00	3.78
36		ethyl acetate	0.119	0.124	-4.2	86	0.00	4.19
37		2,2-dichloropropane	0.598	0.681	-13.9	104	0.00	4.22
38		cis-1,2-dichloroethene	0.478	0.524	-9.6	99	0.00	4.21
39		propionitrile	0.094	0.114	-21.3#	106	0.00	4.23
40		methyl acrylate	0.096	0.107	-11.5	95	0.00	4.23
41		bromochloromethane	0.220	0.256	-16.4	101	0.00	4.37

Continuing Calibration Summary

Job Number: JD6583 **Sample:** V1A8656-CC8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A200837.D
Project: Former General Instrument Site (GIC), Sherburne, NY

42		tetrahydrofuran	0.094	0.110	-17.0	94	0.00	4.39
43		chloroform	0.724	0.804	-11.0	98	0.00	4.43
44	S	dibromofluoromethane (s)	0.431	0.445	-3.2	89	0.00	4.54
45		methacrylonitrile	0.255	0.262	-2.7	92	0.00	4.34
46		1,1,1-trichloroethane	0.640	0.702	-9.7	95	0.00	4.58
47		cyclohexane	0.632	0.629	0.5	91	0.00	4.64
48		1,1-dichloropropene	0.568	0.612	-7.7	94	0.00	4.68
49		carbon tetrachloride	0.550	0.638	-16.0	101	0.00	4.70
50		isopropyl acetate	0.134	0.142	-6.0	91	0.00	4.80
51		tert amyl alcohol	0.037	0.040	-8.1	94	0.00	4.77
52	I	1,4-difluorobenzene	1.000	1.000	0.0	88	0.00	5.11
53	S	1,2-dichloroethane-d4 (s)	0.312	0.300	3.8	81	0.00	4.80
54		tert-amyl methyl ether	0.868	0.910	-4.8	95	0.00	4.89
55		2,2,4-trimethylpentane	0.630	0.848	-34.6#	119	0.00	4.90
56		n-butyl alcohol	0.018	0.018	0.0	88	0.00	5.16
57	M	benzene	1.068	1.161	-8.7	98	0.00	4.84
58		heptane	0.161	0.197	-22.4#	111	0.00	5.00
59		1,2-dichloroethane	0.381	0.390	-2.4	95	0.00	4.86
60		trichloroethene	0.270	0.292	-8.1	97	0.00	5.31
61		ethyl acrylate	0.521	0.530	-1.7	90	0.00	5.32
62		2-nitropropane	0.102	0.143	-40.2#	129	0.00	5.87
63		2-chloroethyl vinyl ether	0.023	0.223	-869.6#	1006#	0.00	5.89
64		methyl methacrylate	0.102	0.100	2.0	88	0.00	5.50
65		1,2-dichloropropane	0.276	0.296	-7.2	96	0.00	5.51
66		methylcyclohexane	0.396	0.456	-15.2	101	0.00	5.50
67		dibromomethane	0.164	0.183	-11.6	96	0.00	5.58
68		bromodichloromethane	0.364	0.400	-9.9	99	0.00	5.70
69		cis-1,3-dichloropropene	0.443	0.455	-2.7	91	0.00	6.04
70		epichlorohydrin	0.047	0.035	25.5#	66	0.00	5.95
71		4-methyl-2-pentanone	0.169	0.174	-3.0	90	0.00	6.14
72		3-methyl-1-butanol	0.016	0.016	0.0	81	0.00	6.15
73	I	chlorobenzene-d5	1.000	1.000	0.0	93	0.00	7.54
74	S	toluene-d8 (s)	1.216	1.185	2.5	90	0.00	6.27
75		toluene	0.731	0.772	-5.6	98	0.00	6.33
76		trans-1,3-dichloropropene	0.450	0.450	0.0	93	0.00	6.50
77		ethyl methacrylate	0.480	0.454	5.4	90	0.00	6.51
78		1,1,2-trichloroethane	0.236	0.245	-3.8	97	0.00	6.67
79		2-hexanone	0.197	0.192	2.5	92	0.00	6.83
80		tetrachloroethene	0.348	0.356	-2.3	95	0.00	6.77
81		1,3-dichloropropane	0.479	0.473	1.3	93	0.00	6.82
82		butyl acetate	0.288	0.277	3.8	89	0.00	6.92
83		dibromochloromethane	0.309	0.326	-5.5	100	0.00	7.01
84		1,2-dibromoethane	0.339	0.362	-6.8	99	0.00	7.13
85		n-butyl ether	1.314	1.330	-1.2	96	0.00	7.60
86		chlorobenzene	0.834	0.848	-1.7	97	0.00	7.56
87		1,1,1,2-tetrachloroethane	0.298	0.307	-3.0	98	0.00	7.63
88		ethylbenzene	1.393	1.446	-3.8	99	0.00	7.64
89		m,p-xylene	0.531	0.558	-5.1	99	0.00	7.75
90		o-xylene	0.531	0.537	-1.1	98	0.00	8.11
91		butyl acrylate	0.709	0.684	3.5	90	0.00	8.02
92		n-amyl acetate	0.266	0.256	3.8	91	0.00	8.22
93		styrene	0.894	0.935	-4.6	98	0.00	8.13
94		bromoform	0.223	0.238	-6.7	101	0.00	8.30
95		isopropylbenzene	1.313	1.383	-5.3	102	0.00	8.45
96		cis-1,4-dichloro-2-butene	0.148	0.126	14.9	79	0.00	8.50
97	I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	100	0.00	9.75
98	S	4-bromofluorobenzene (s)	0.978	0.903	7.7	94	0.00	8.62

Continuing Calibration Summary

Job Number: JD6583 **Sample:** V1A8656-CC8558
Account: WSPENYC WSP Environment & Energy **Lab FileID:** 1A200837.D
Project: Former General Instrument Site (GIC), Sherburne, NY

99	bromobenzene	0.812	0.750	7.6	95	0.00	8.77
100	1,1,2,2-tetrachloroethane	0.948	0.870	8.2	93	0.00	8.73
101	trans-1,4-dichloro-2-bute	0.258	0.241	6.6	93	0.00	8.77
102	1,2,3-trichloropropane	0.293	0.271	7.5	94	0.00	8.80
103	n-propylbenzene	3.239	3.246	-0.2	102	0.00	8.84
104	2-chlorotoluene	0.712	0.670	5.9	96	0.00	8.95
105	4-chlorotoluene	0.700	0.705	-0.7	101	0.00	9.06
106	1,3,5-trimethylbenzene	2.290	2.225	2.8	101	0.00	9.01
107	tert-butylbenzene	1.900	1.932	-1.7	103	0.00	9.33
108	1,2,4-trimethylbenzene	2.302	2.250	2.3	101	0.00	9.38
109	sec-butylbenzene	2.545	2.764	-8.6	109	0.00	9.54
110	1,3-dichlorobenzene	1.362	1.321	3.0	99	0.00	9.68
111	p-isopropyltoluene	2.167	2.341	-8.0	109	0.00	9.69
112	1,4-dichlorobenzene	1.384	1.352	2.3	101	0.00	9.77
113	1,2-dichlorobenzene	1.274	1.238	2.8	99	0.00	10.13
114	n-butylbenzene	0.944	1.100	-16.5	117	0.00	10.09
115	1,2-dibromo-3-chloropropa	0.259	0.226	12.7	87	0.00	10.91
116	1,3,5-trichlorobenzene	0.774	0.864	-11.6	112	0.00	11.09
117	1,2,4-trichlorobenzene	0.664	0.694	-4.5	105	0.00	11.72
118	hexachlorobutadiene	0.266	0.315	-18.4	119	0.00	11.86
119	naphthalene	2.219	2.209	0.5	101	0.00	11.99
120	1,2,3-trichlorobenzene	0.604	0.623	-3.1	106	0.00	12.21
121	hexachloroethane	0.341	0.401	-17.6	121	0.00	10.40
122	benzyl chloride	1.502	1.590	-5.9	105	0.00	9.88
123	2-ethylhexyl acrylate	0.370	0.377	-1.9	110	0.00	11.89
124	2-methylnaphthalene	0.863	0.720	16.6	94	0.00	13.15
125	bis(chloromethyl)ether		----------NA----------				
126	ethylenimine		----------NA----------				

(#) = Out of Range SPCC's out = 0 CCC's out = 0
1A198440.D M1A8558.M Fri May 01 00:28:07 2020

Run Sequence Report

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Run ID: V1A8558	**Method:** SW846 8260C	**Instrument ID:** GCMS1A

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V1A8558-BFB	1A198433.D	02/11/20 17:42	n/a	BFB Tune
V1A8558-IC8558	1A198434.D	02/11/20 18:13	n/a	Initial cal 0.2
V1A8558-IC8558	1A198435.D	02/11/20 18:38	n/a	Initial cal 0.5
V1A8558-IC8558	1A198436.D	02/11/20 19:03	n/a	Initial cal 1
V1A8558-IC8558	1A198437.D	02/11/20 19:28	n/a	Initial cal 2
V1A8558-IC8558	1A198438.D	02/11/20 19:53	n/a	Initial cal 4
V1A8558-IC8558	1A198439.D	02/11/20 20:17	n/a	Initial cal 8
V1A8558-IC8558	1A198440.D	02/11/20 20:42	n/a	Initial cal 20
V1A8558-ICC8558	1A198441.D	02/11/20 21:07	n/a	Initial cal 50
V1A8558-IC8558	1A198442.D	02/11/20 21:32	n/a	Initial cal 100
V1A8558-IC8558	1A198443.D	02/11/20 21:57	n/a	Initial cal 200
V1A8558-ICV8558	1A198446.D	02/11/20 23:12	n/a	Initial cal verification 50
V1A8558-ICV8558	1A198447.D	02/11/20 23:37	n/a	Initial cal verification 50
V1A8558-BFB2	1A198449.D	02/12/20 08:24	n/a	BFB Tune
V1A8558-ICV8558	1A198450.D	02/12/20 08:56	n/a	Initial cal verification 50

Run Sequence Report

Job Number: JD6583
Account: WSPENYC WSP Environment & Energy
Project: Former General Instrument Site (GIC), Sherburne, NY

Run ID: V1A8656	**Method:** SW846 8260C	**Instrument ID:** GCMS1A

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
V1A8656-BFB	1A200837.D	04/30/20 10:01	n/a	BFB Tune
V1A8656-CC8558	1A200837.D	04/30/20 10:01	n/a	Continuing cal 20
V1A8656-BS	1A200839.D	04/30/20 10:56	n/a	Blank Spike
V1A8656-MB	1A200841.D	04/30/20 11:46	n/a	Method Blank
JD6583-7	1A200842.D	04/30/20 12:15	n/a	P-8
JD6583-1	1A200843.D	04/30/20 12:40	n/a	MW-32
ZZZZZZ	1A200844.D	04/30/20 13:05	n/a	(unrelated sample)
ZZZZZZ	1A200845.D	04/30/20 13:30	n/a	(unrelated sample)
ZZZZZZ	1A200846.D	04/30/20 13:55	n/a	(unrelated sample)
JD6583-7MS	1A200847.D	04/30/20 14:19	n/a	Matrix Spike
JD6583-7MSD	1A200848.D	04/30/20 14:44	n/a	Matrix Spike Duplicate
JD6583-8	1A200850.D	04/30/20 15:34	n/a	TRIP BLANK
JD6583-2	1A200851.D	04/30/20 15:59	n/a	MW-31
JD6583-3	1A200852.D	04/30/20 16:24	n/a	MW-22
JD6583-4	1A200853.D	04/30/20 16:48	n/a	MW-34
JD6583-5	1A200854.D	04/30/20 17:13	n/a	MW-17
JD6583-6	1A200855.D	04/30/20 17:38	n/a	MW-0420
ZZZZZZ	1A200856.D	04/30/20 18:03	n/a	(unrelated sample)
ZZZZZZ	1A200857.D	04/30/20 18:28	n/a	(unrelated sample)
ZZZZZZ	1A200858.D	04/30/20 18:53	n/a	(unrelated sample)
ZZZZZZ	1A200859.D	04/30/20 19:18	n/a	(unrelated sample)
ZZZZZZ	1A200860.D	04/30/20 19:42	n/a	(unrelated sample)

MS Volatiles

Raw Data

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200843.d
Acq On : 30 Apr 2020 12:40 pm
Operator : edwardd
Sample : JD6583-1 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:35:41 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

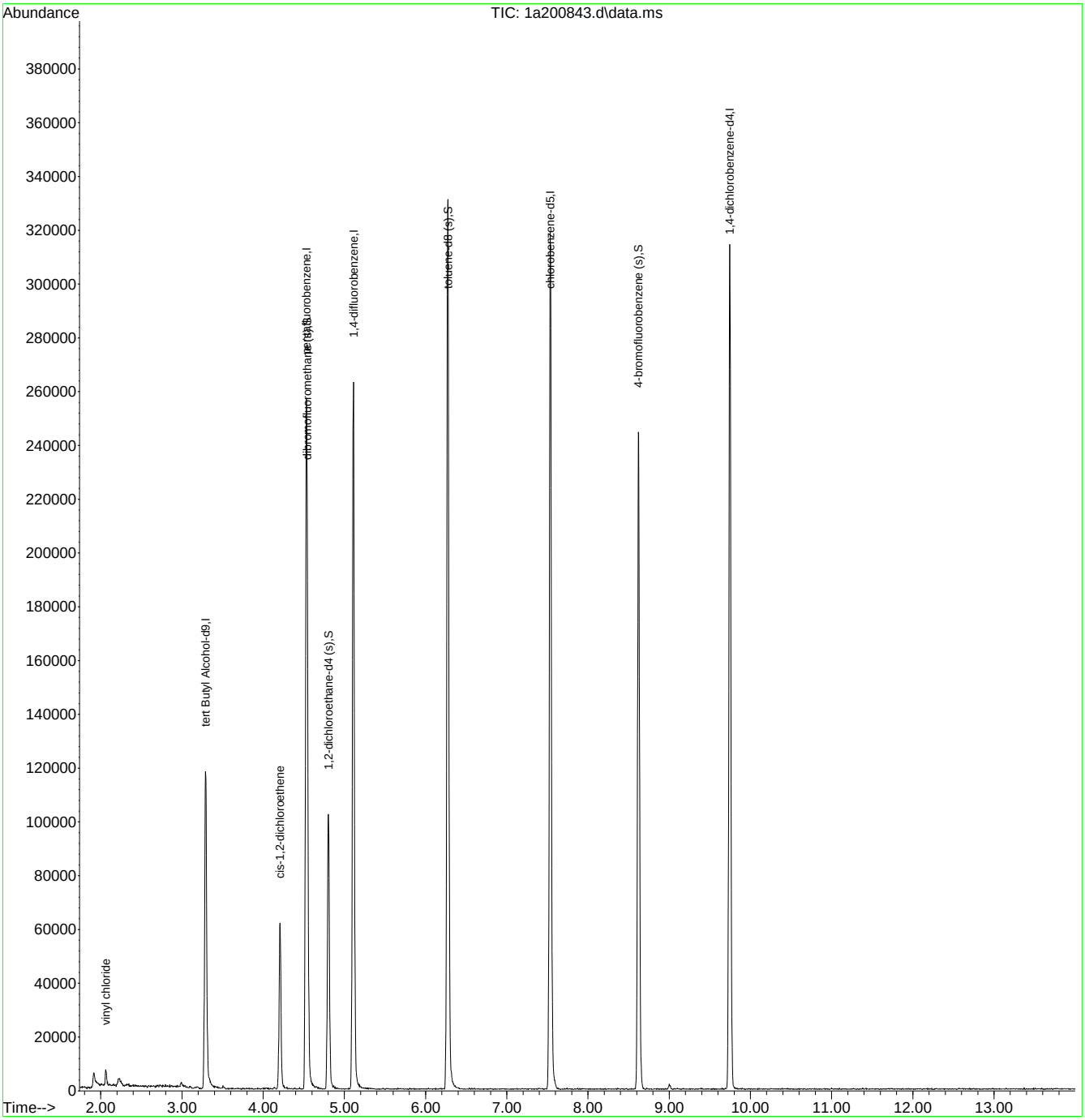
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	116250	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	122793	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	194561	50.00	ug/L	0.00
73) chlorobenzene-d5	7.535	117	186929	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.743	152	88543	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.542	113	56501	53.38	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 106.76%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	60269	49.60	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 99.20%			
74) toluene-d8 (s)	6.274	98	220780	48.58	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 97.16%			
98) 4-bromofluorobenzene (s)	8.620	95	81660	47.15	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 94.30%			
Target Compounds						Qvalue
9) vinyl chloride	2.061	62	4174	3.27	ug/L	99
38) cis-1,2-dichloroethene	4.208	96	23358	19.88	ug/L	86

(#) = qualifier out of range (m) = manual integration (+) = signals summed

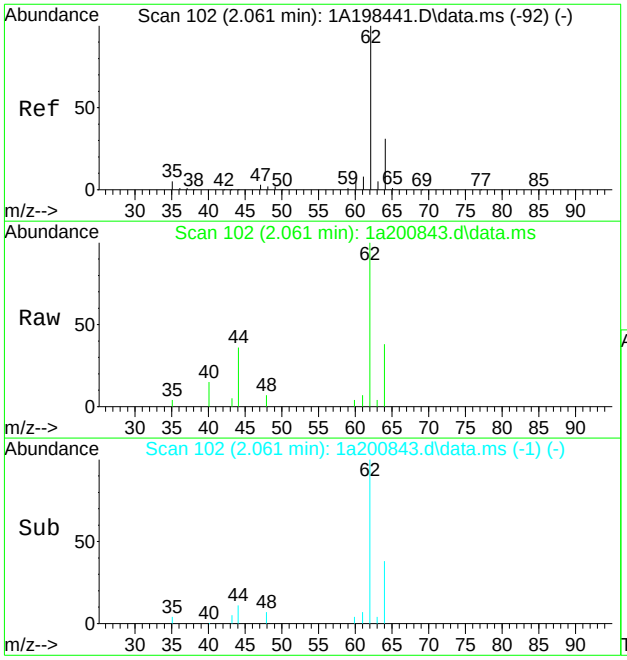
Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200843.d
Acq On : 30 Apr 2020 12:40 pm
Operator : edwardd
Sample : JD6583-1 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:35:41 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



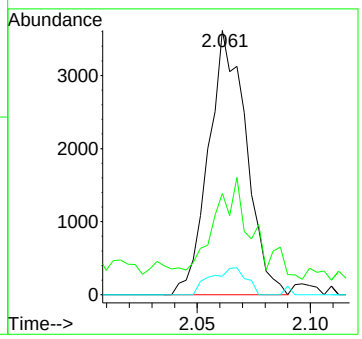
M1A8558.M Fri May 01 01:03:59 2020 Page: 2

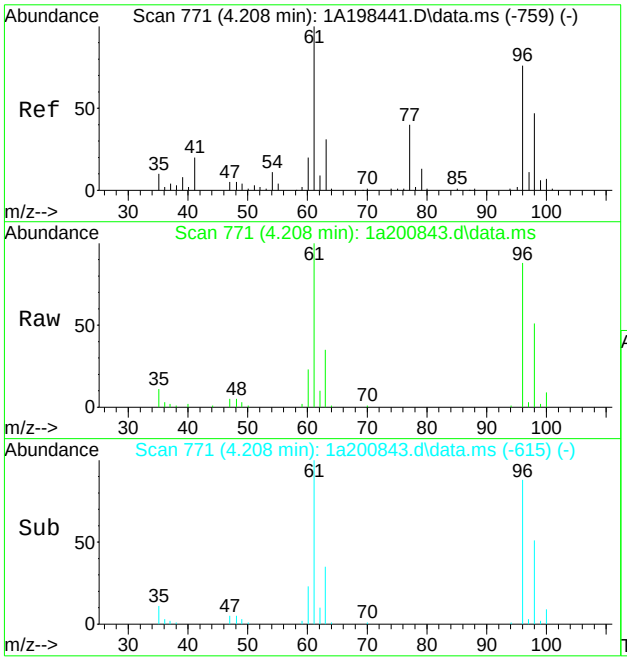


#9
vinyl chloride
Concen: 3.27 ug/L
RT: 2.061 min Scan# 102
Delta R.T. -0.000 min
Lab File: 1a200843.d
Acq: 30 Apr 2020 12:40 pm

Tgt Ion: 62 Resp: 4174

Ion	Ratio	Lower	Upper
62	100		
64	30.7	0.9	60.9
61	7.0	0.0	38.4

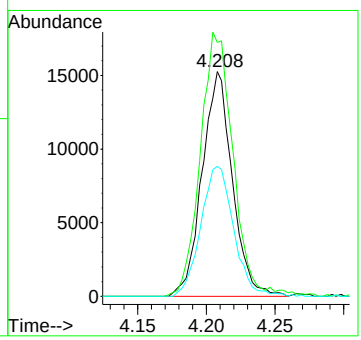




#38
cis-1,2-dichloroethene
Concen: 19.88 ug/L
RT: 4.208 min Scan# 771
Delta R.T. -0.000 min
Lab File: 1a200843.d
Acq: 30 Apr 2020 12:40 pm

Tgt Ion: 96 Resp: 23358

Ion	Ratio	Lower	Upper
96	100		
61	113.0	104.6	164.6
98	57.8	32.0	92.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200851.d
Acq On : 30 Apr 2020 3:59 pm
Operator : edwardd
Sample : JD6583-2 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:52:03 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

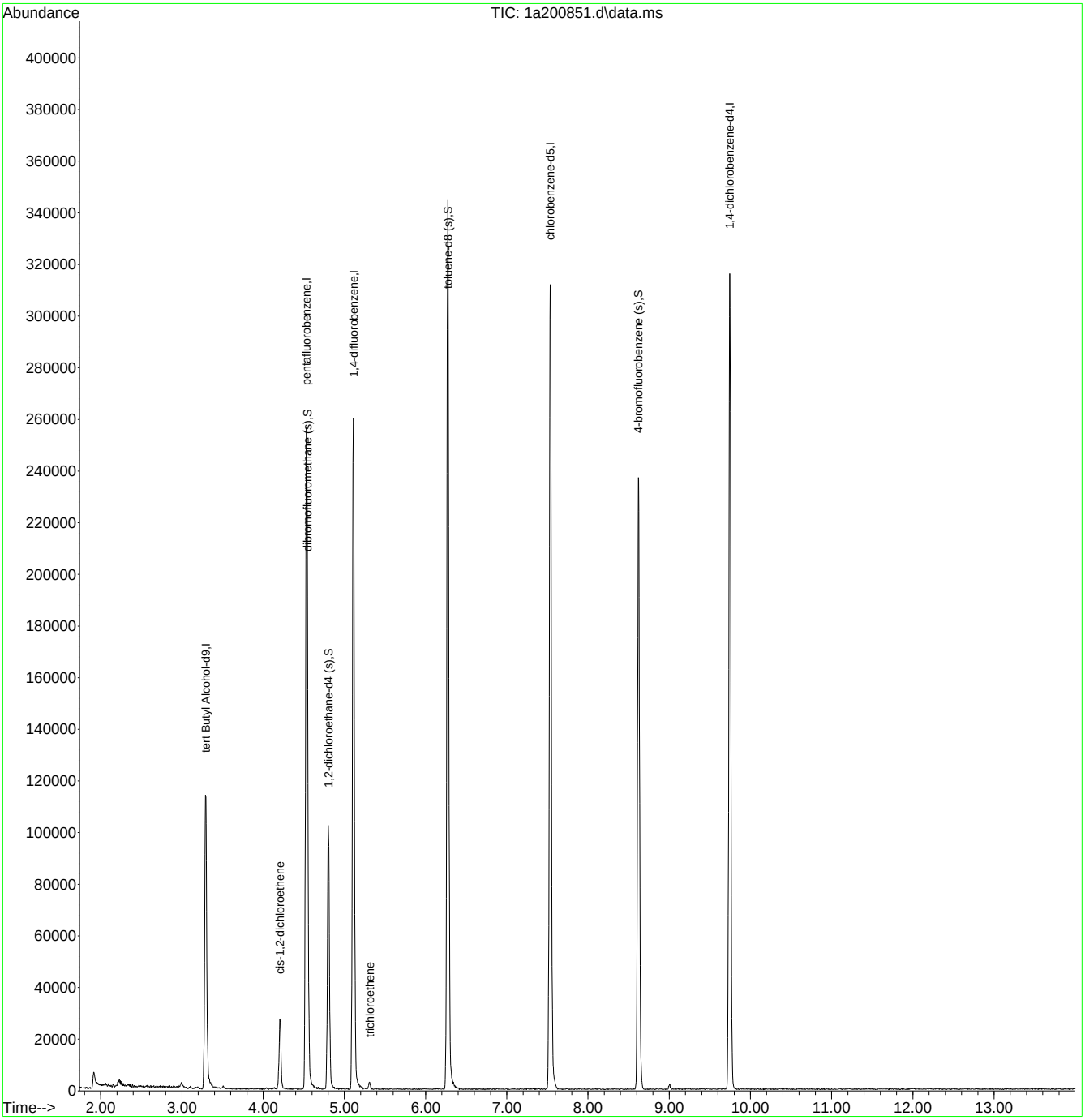
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	111352	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	121494	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	195456	50.00	ug/L	0.00
73) chlorobenzene-d5	7.535	117	187024	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.746	152	90679	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	55048	52.56	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 105.12%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	60591	49.64	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 99.28%			
74) toluene-d8 (s)	6.274	98	218589	48.07	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 96.14%			
98) 4-bromofluorobenzene (s)	8.620	95	81112	45.73	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 91.46%			
Target Compounds						Qvalue
38) cis-1,2-dichloroethene	4.205	96	10722	9.22	ug/L	85
60) trichloroethene	5.312	95	780	0.74	ug/L	88

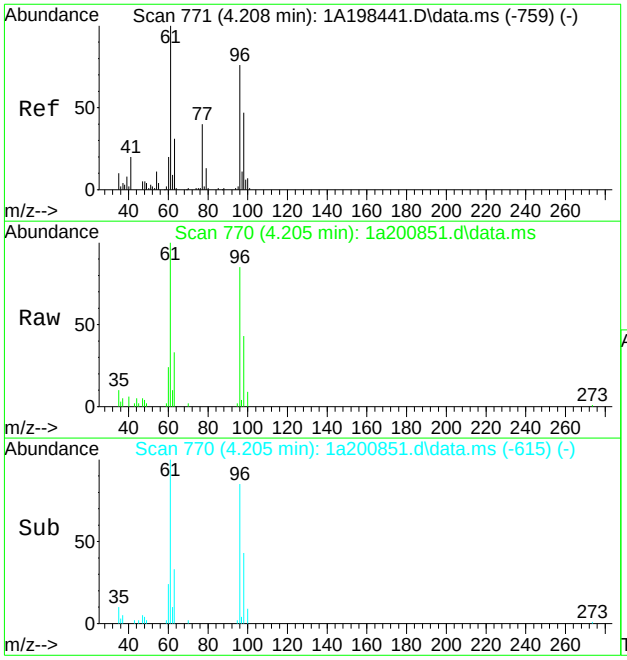
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200851.d
Acq On : 30 Apr 2020 3:59 pm
Operator : edwardd
Sample : JD6583-2 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:52:03 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

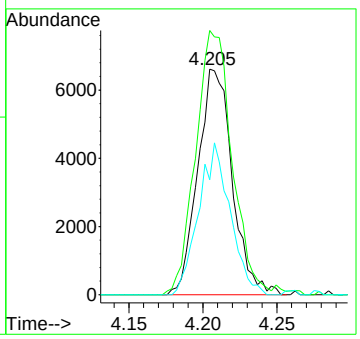


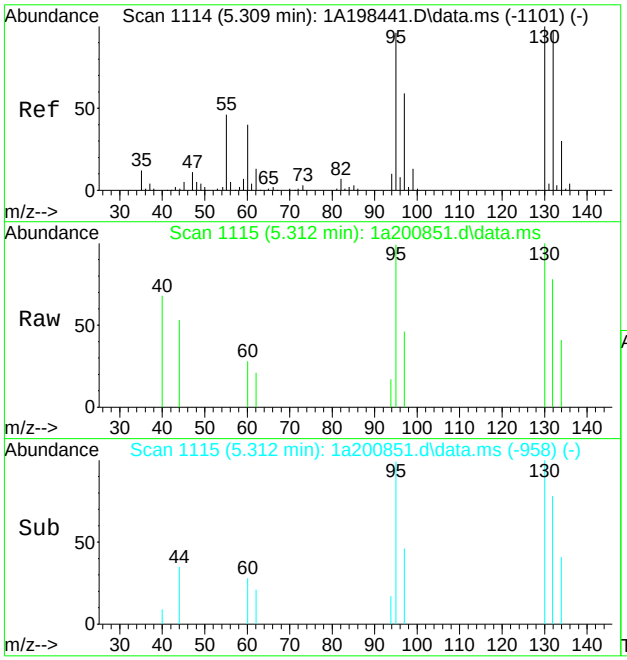


#38
cis-1,2-dichloroethene
Concen: 9.22 ug/L
RT: 4.205 min Scan# 770
Delta R.T. -0.003 min
Lab File: 1a200851.d
Acq: 30 Apr 2020 3:59 pm

Tgt Ion: 96 Resp: 10722

Ion	Ratio	Lower	Upper
96	100		
61	117.2	104.6	164.6
98	50.9	32.0	92.0

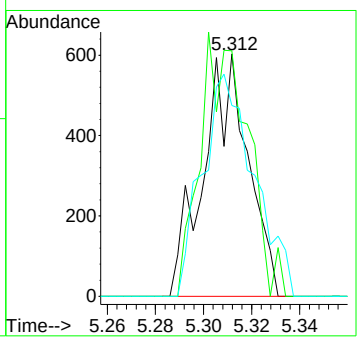




#60
trichloroethene
Concen: 0.74 ug/L
RT: 5.312 min Scan# 1115
Delta R.T. 0.003 min
Lab File: 1a200851.d
Acq: 30 Apr 2020 3:59 pm

Tgt Ion: 95 Resp: 780

Ion	Ratio	Lower	Upper
95	100		
130	101.3	74.5	134.5
132	78.8	70.9	130.9



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200852.d
Acq On : 30 Apr 2020 4:24 pm
Operator : edwardd
Sample : JD6583-3 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:52:48 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

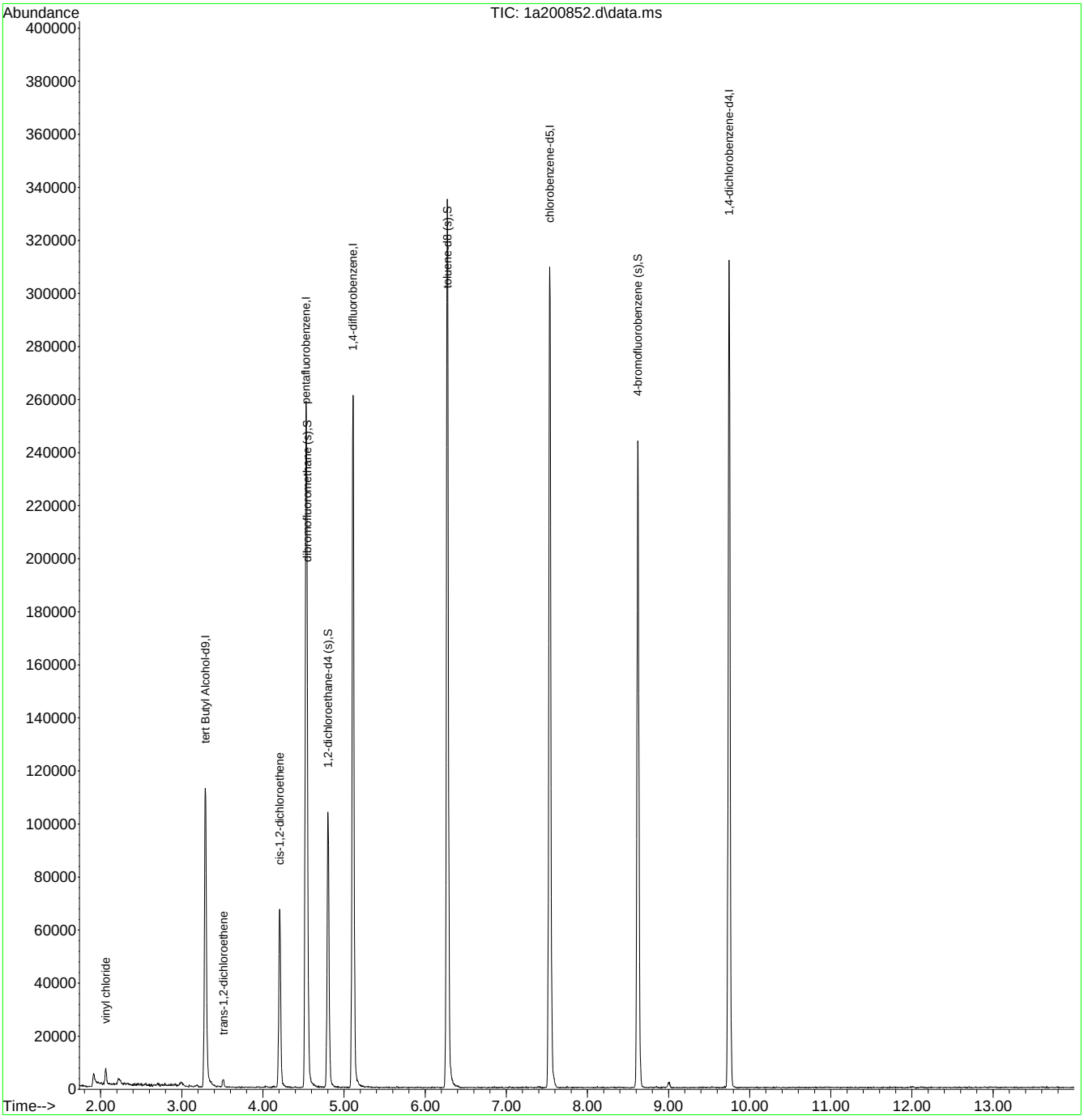
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	109355	500.00	ug/L	0.00
5) pentafluorobenzene	4.529	168	122524	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	195162	50.00	ug/L	0.00
73) chlorobenzene-d5	7.536	117	186320	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.747	152	87840	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	55751	52.79	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 105.58%			
53) 1,2-dichloroethane-d4 (s)	4.802	65	59429	48.76	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 97.52%			
74) toluene-d8 (s)	6.271	98	220182	48.60	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 97.20%			
98) 4-bromofluorobenzene (s)	8.620	95	80809	47.03	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 94.06%			
Target Compounds						Qvalue
9) vinyl chloride	2.064	62	4827	3.79	ug/L	96
27) trans-1,2-dichloroethene	3.512	96	1000	1.03	ug/L	88
38) cis-1,2-dichloroethene	4.205	96	26150	22.30	ug/L	86

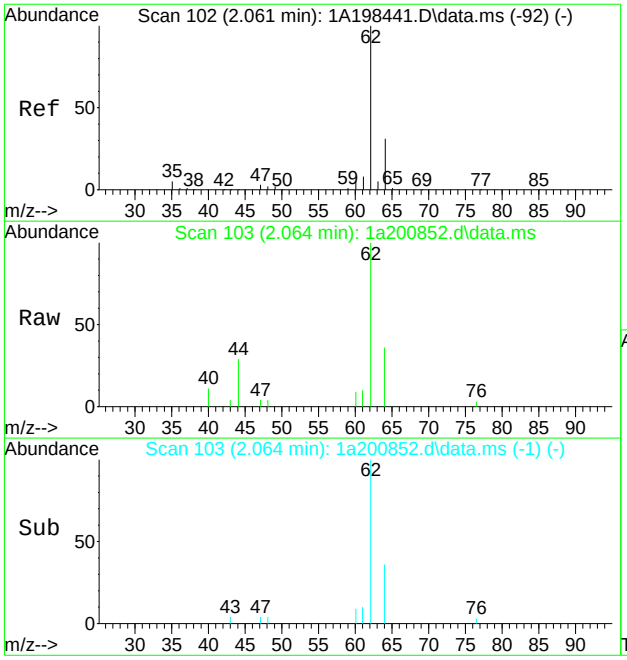
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200852.d
Acq On : 30 Apr 2020 4:24 pm
Operator : edwardd
Sample : JD6583-3 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 17 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:52:48 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

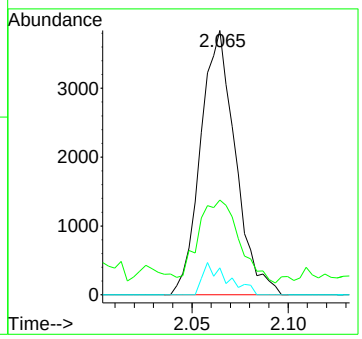


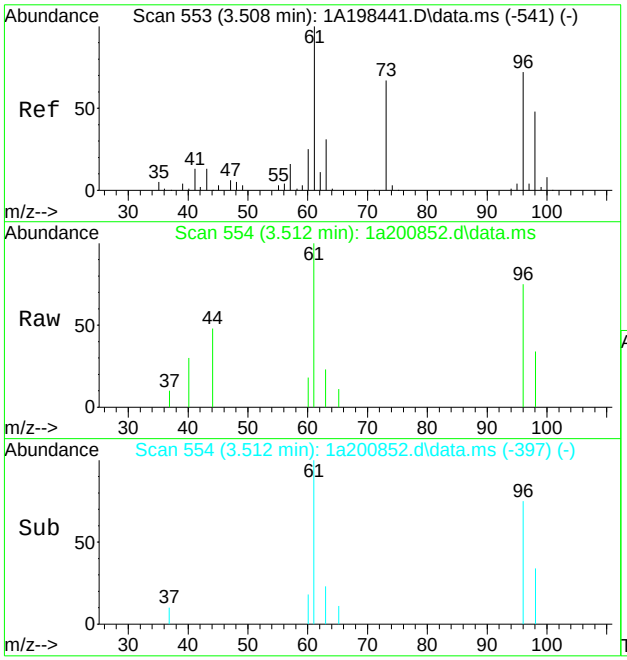


#9
vinyl chloride
Concen: 3.79 ug/L
RT: 2.064 min Scan# 103
Delta R.T. 0.003 min
Lab File: 1a200852.d
Acq: 30 Apr 2020 4:24 pm

Tgt Ion: 62 Resp: 4827

Ion	Ratio	Lower	Upper
62	100		
64	28.9	0.9	60.9
61	10.2	0.0	38.4

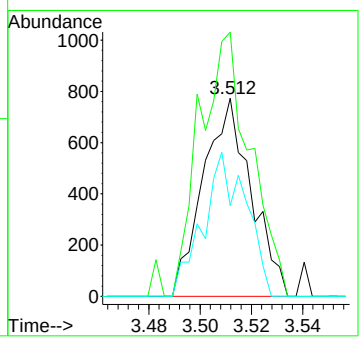


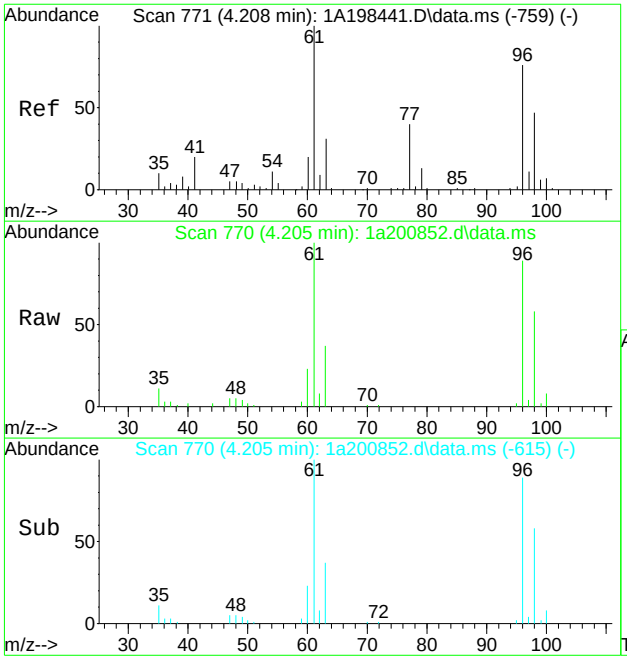


#27
trans-1,2-dichloroethene
Concen: 1.03 ug/L
RT: 3.512 min Scan# 554
Delta R.T. 0.003 min
Lab File: 1a200852.d
Acq: 30 Apr 2020 4:24 pm

Tgt Ion: 96 Resp: 1000

Ion	Ratio	Lower	Upper
96	100		
61	133.5	109.7	169.7
98	45.7	37.0	97.0

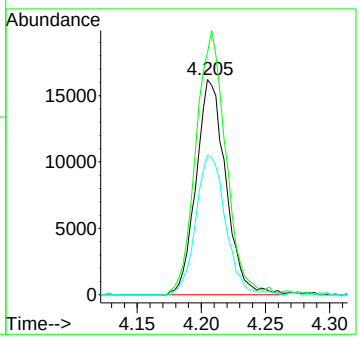




#38
cis-1,2-dichloroethene
Concen: 22.30 ug/L
RT: 4.205 min Scan# 770
Delta R.T. -0.003 min
Lab File: 1a200852.d
Acq: 30 Apr 2020 4:24 pm

Tgt Ion: 96 Resp: 26150

Ion	Ratio	Lower	Upper
96	100		
61	112.4	104.6	164.6
98	64.9	32.0	92.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200853.d
Acq On : 30 Apr 2020 4:48 pm
Operator : edwardd
Sample : JD6583-4 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:53:20 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

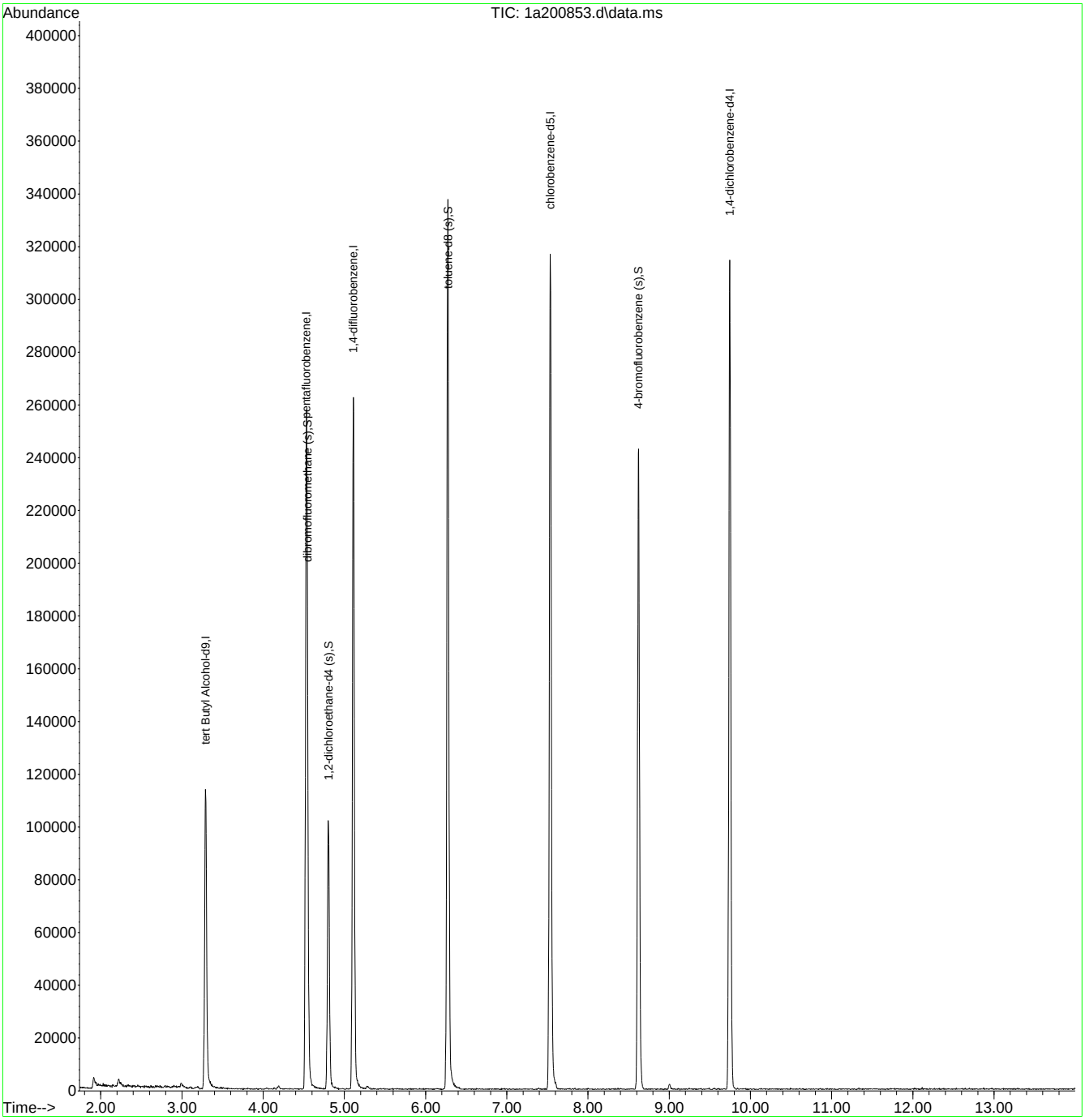
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	107446	500.00	ug/L	0.00
5) pentafluorobenzene	4.529	168	119430	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	192025	50.00	ug/L	0.00
73) chlorobenzene-d5	7.535	117	184816	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.746	152	88862	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	55400	53.81	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 107.62%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	58909	49.13	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 98.26%			
74) toluene-d8 (s)	6.274	98	218813	48.69	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 97.38%			
98) 4-bromofluorobenzene (s)	8.620	95	81157	46.69	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 93.38%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200853.d
Acq On : 30 Apr 2020 4:48 pm
Operator : edwardd
Sample : JD6583-4 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 18 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:53:20 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200854.d
Acq On : 30 Apr 2020 5:13 pm
Operator : edwardd
Sample : JD6583-5 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:53:53 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

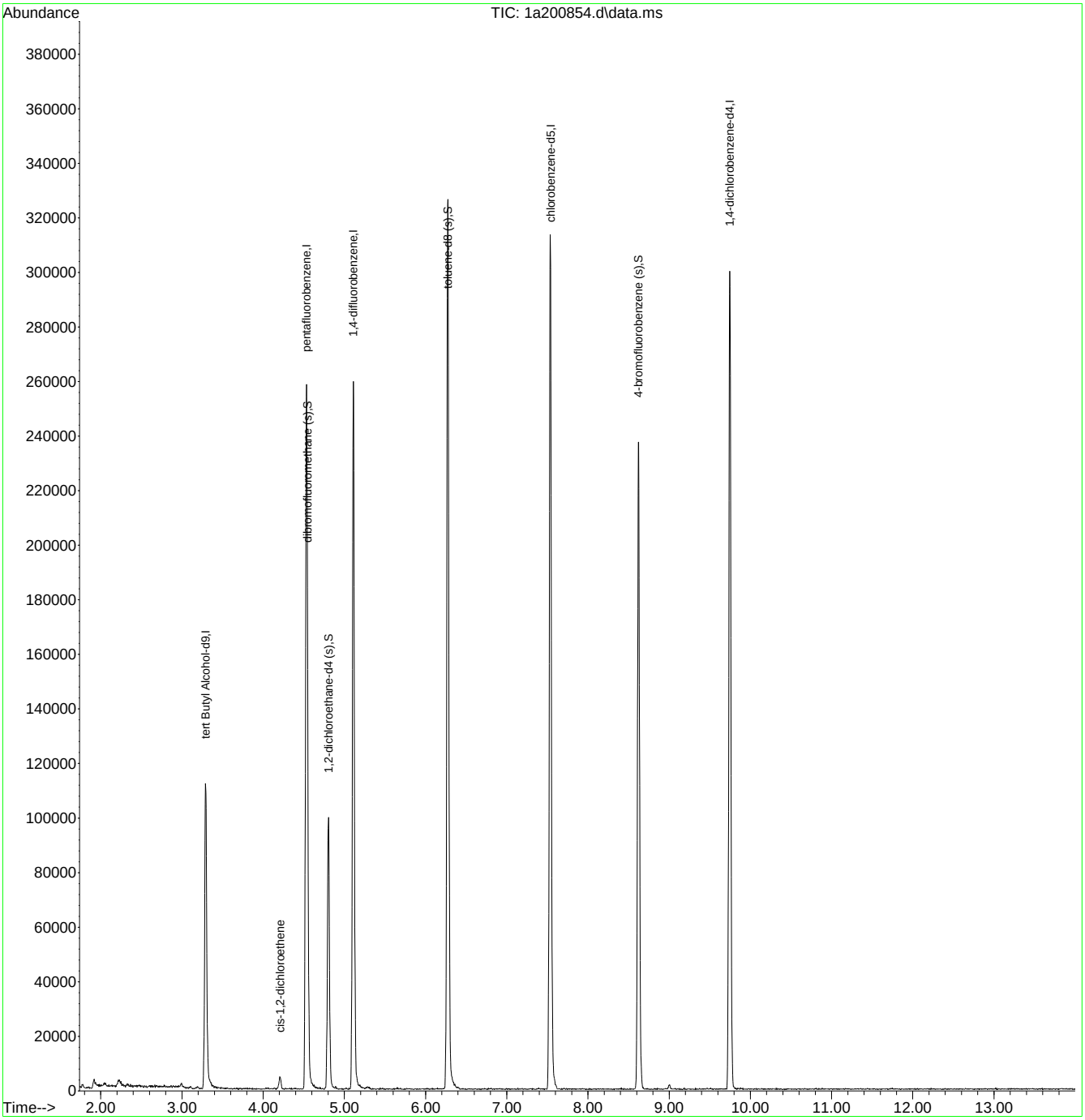
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	109934	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	119507	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	192850	50.00	ug/L	0.00
73) chlorobenzene-d5	7.539	117	184818	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.747	152	87923	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	54424	52.83	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 105.66%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	59431	49.35	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 98.70%			
74) toluene-d8 (s)	6.271	98	217209	48.34	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 96.68%			
98) 4-bromofluorobenzene (s)	8.620	95	80878	47.02	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 94.04%			
Target Compounds						Qvalue
38) cis-1,2-dichloroethene	4.211	96	1759	1.54	ug/L	95

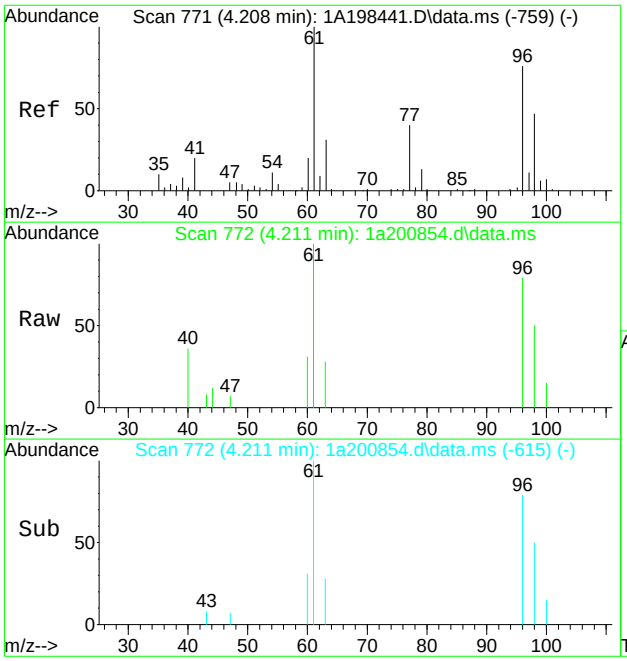
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200854.d
Acq On : 30 Apr 2020 5:13 pm
Operator : edwardd
Sample : JD6583-5 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:53:53 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

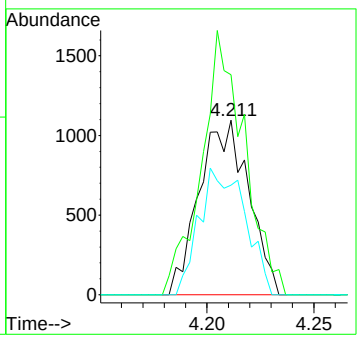




#38
cis-1,2-dichloroethene
Concen: 1.54 ug/L
RT: 4.211 min Scan# 772
Delta R.T. 0.003 min
Lab File: 1a200854.d
Acq: 30 Apr 2020 5:13 pm

Tgt Ion: 96 Resp: 1759

Ion	Ratio	Lower	Upper
96	100		
61	126.1	104.6	164.6
98	62.8	32.0	92.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200855.d
Acq On : 30 Apr 2020 5:38 pm
Operator : edwardd
Sample : JD6583-6 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:48:23 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

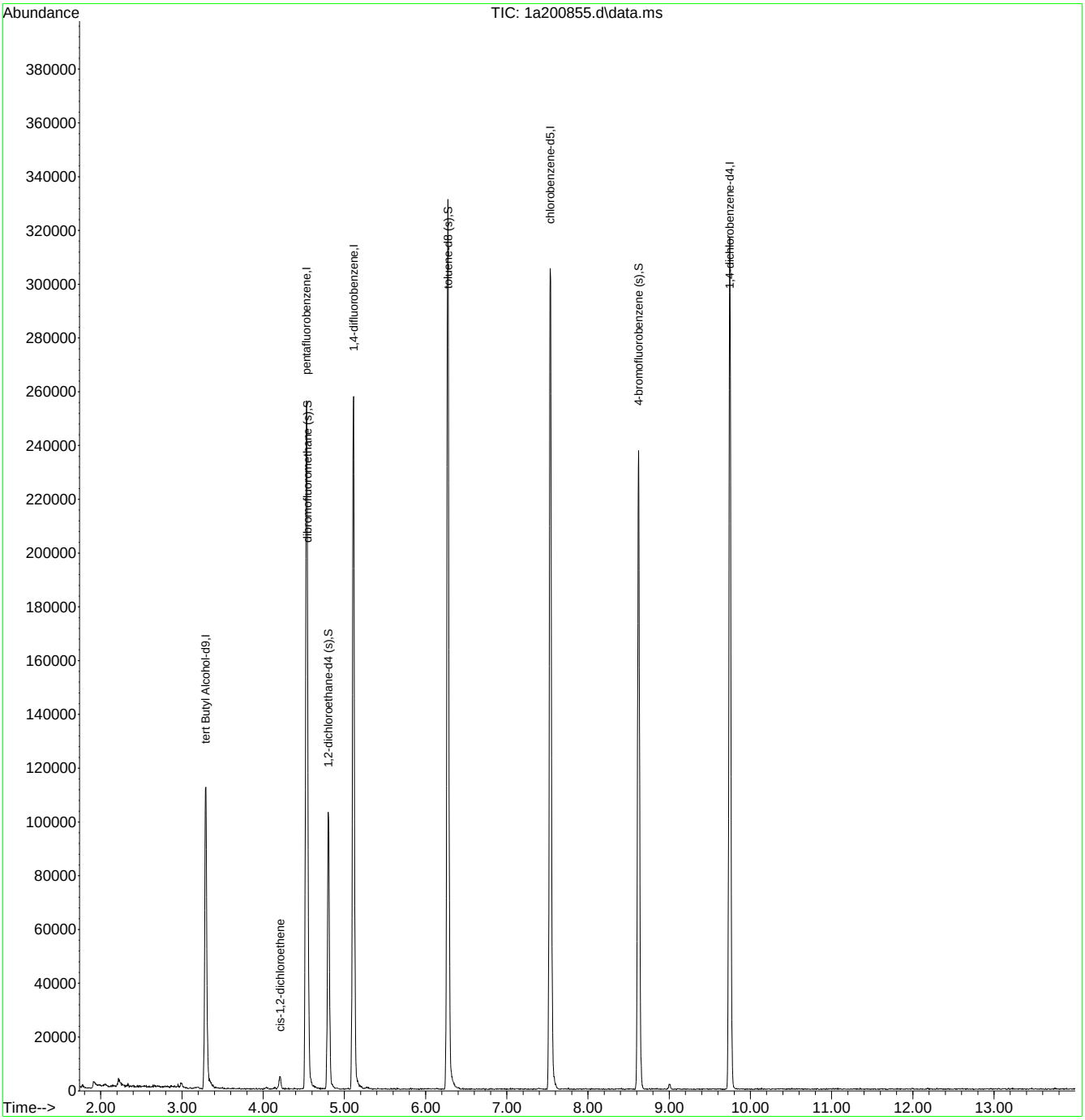
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	110315	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	119124	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	190581	50.00	ug/L	0.00
73) chlorobenzene-d5	7.535	117	184878	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.746	152	88407	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	55490	54.04	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 108.08%			
53) 1,2-dichloroethane-d4 (s)	4.801	65	60546	50.87	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 101.74%			
74) toluene-d8 (s)	6.274	98	217611	48.41	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 96.82%			
98) 4-bromofluorobenzene (s)	8.623	95	80792	46.72	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 93.44%			
Target Compounds						Qvalue
38) cis-1,2-dichloroethene	4.211	96	1870	1.64	ug/L	98

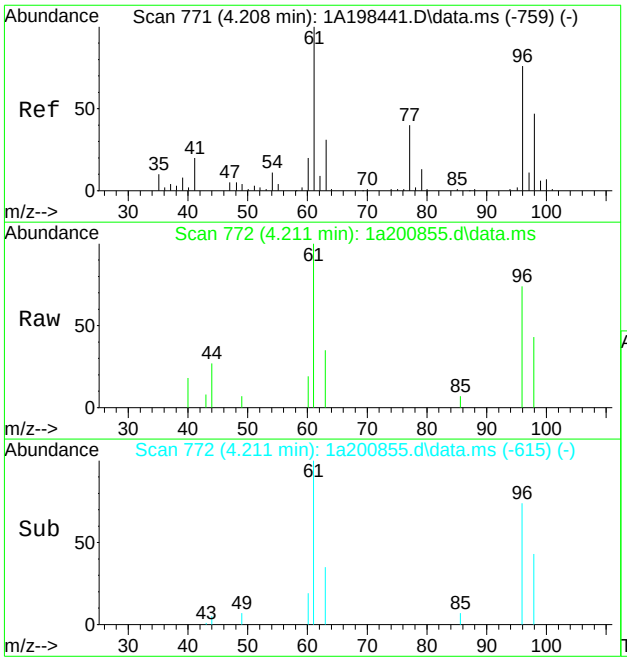
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200855.d
Acq On : 30 Apr 2020 5:38 pm
Operator : edwardd
Sample : JD6583-6 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:48:23 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

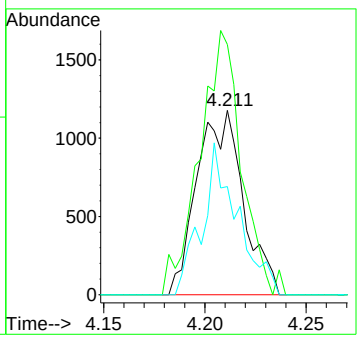




#38
cis-1,2-dichloroethene
Concen: 1.64 ug/L
RT: 4.211 min Scan# 772
Delta R.T. 0.003 min
Lab File: 1a200855.d
Acq: 30 Apr 2020 5:38 pm

Tgt Ion: 96 Resp: 1870

Ion	Ratio	Lower	Upper
96	100		
61	135.7	104.6	164.6
98	58.7	32.0	92.0



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200842.d
Acq On : 30 Apr 2020 12:15 pm
Operator : edwardd
Sample : JD6583-7 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:34:57 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

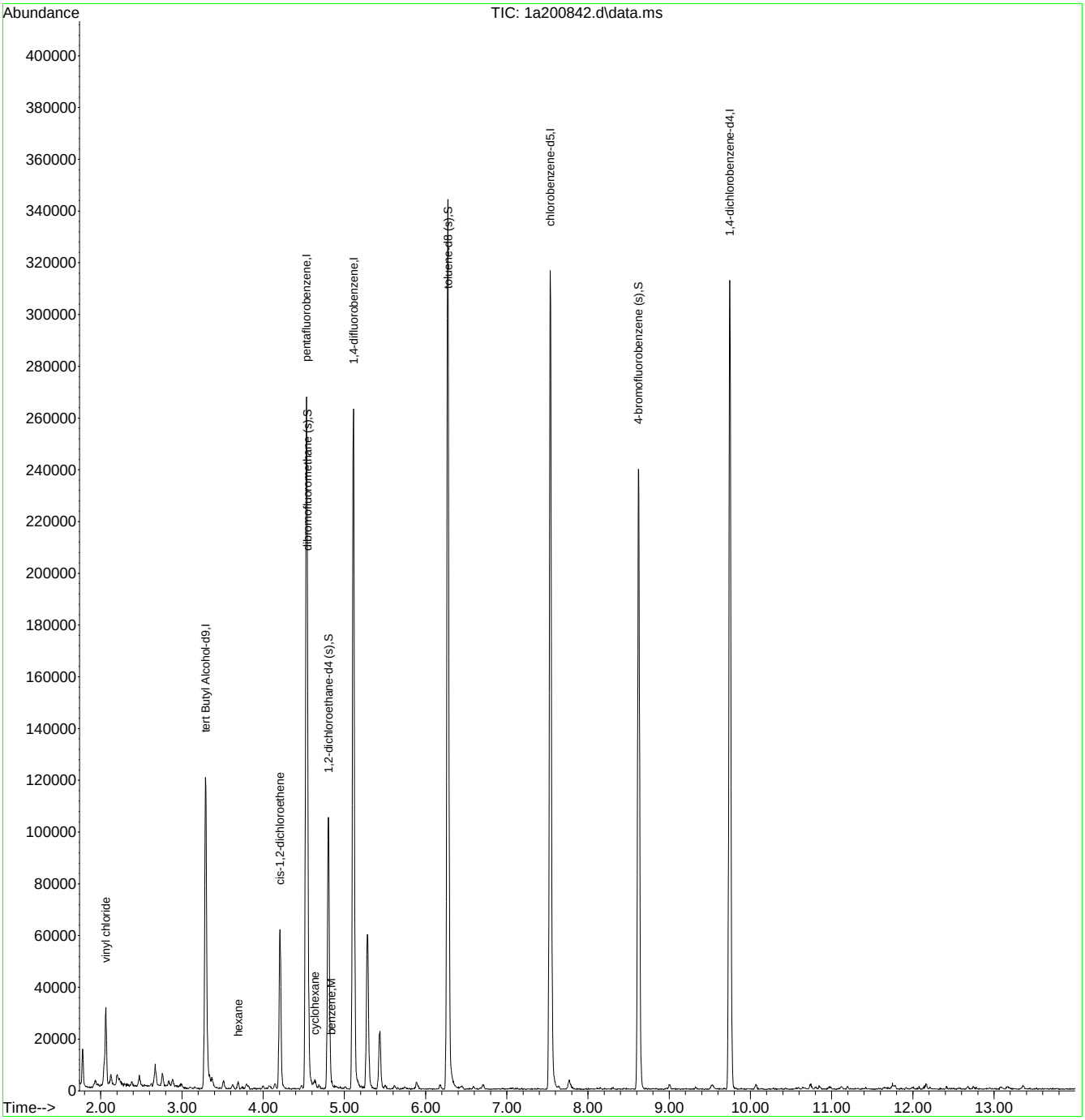
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	113802	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	124860	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	199156	50.00	ug/L	0.00
73) chlorobenzene-d5	7.536	117	190187	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.746	152	89714	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	57542	53.46	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 106.92%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	60572	48.70	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 97.40%			
74) toluene-d8 (s)	6.274	98	224191	48.48	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 96.96%			
98) 4-bromofluorobenzene (s)	8.620	95	82289	46.89	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 93.78%			
Target Compounds						Qvalue
9) vinyl chloride	2.064	62	15945	12.29	ug/L	95
28) hexane	3.691	57	872	0.59	ug/L #	56
38) cis-1,2-dichloroethene	4.208	96	23623	19.77	ug/L	91
47) cyclohexane	4.635	84	697	0.44	ug/L #	48
57) benzene	4.840	78	958	0.23	ug/L	84

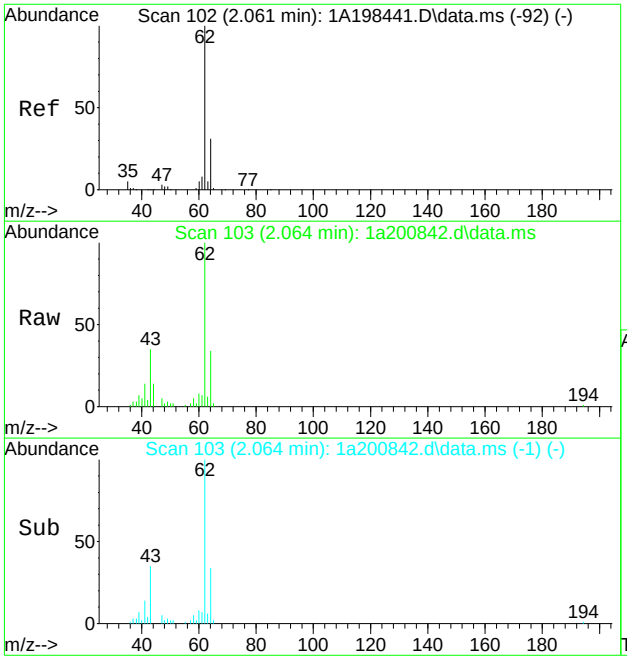
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200842.d
Acq On : 30 Apr 2020 12:15 pm
Operator : edwardd
Sample : JD6583-7 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:34:57 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

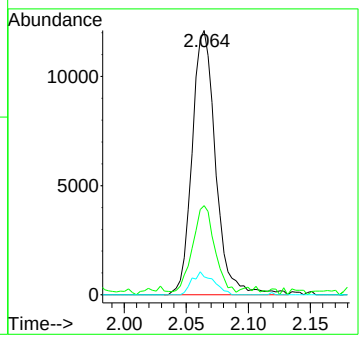


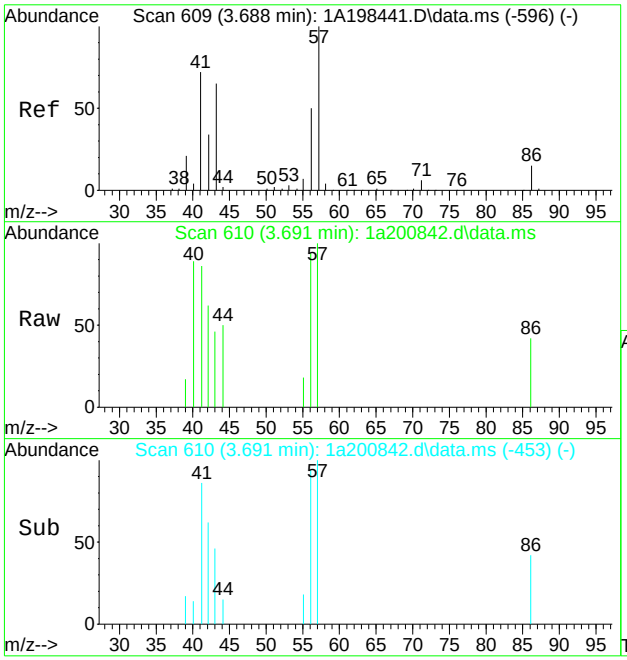


#9
vinyl chloride
Concen: 12.29 ug/L
RT: 2.064 min Scan# 103
Delta R.T. 0.003 min
Lab File: 1a200842.d
Acq: 30 Apr 2020 12:15 pm

Tgt Ion: 62 Resp: 15945

Ion	Ratio	Lower	Upper
62	100		
64	33.8	0.9	60.9
61	6.8	0.0	38.4

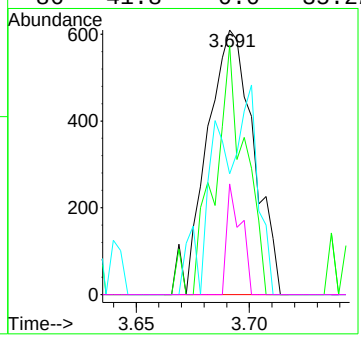


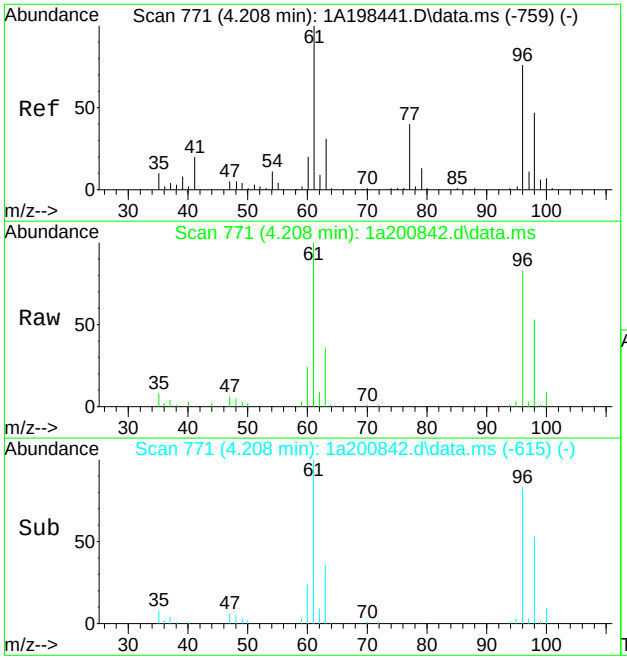


#28
hexane
Concen: 0.59 ug/L
RT: 3.691 min Scan# 610
Delta R.T. 0.003 min
Lab File: 1a200842.d
Acq: 30 Apr 2020 12:15 pm

Tgt Ion: 57 Resp: 872

Ion	Ratio	Lower	Upper
57	100		
56	94.1	30.2	70.2#
43	45.6	44.7	84.7
86	41.8	0.0	35.2#

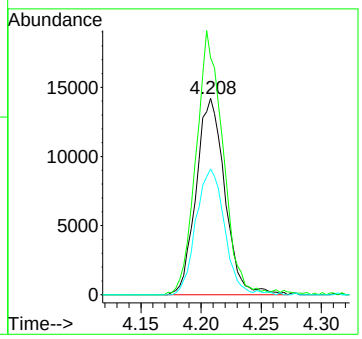


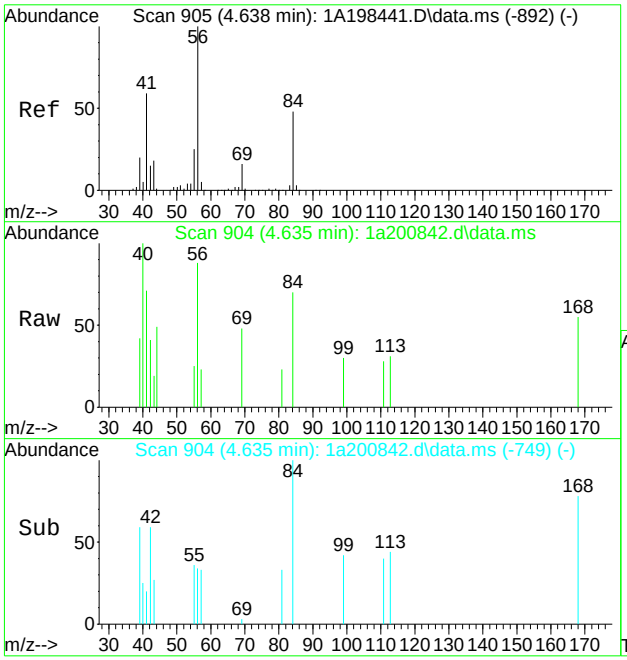


#38
cis-1,2-dichloroethene
Concen: 19.77 ug/L
RT: 4.208 min Scan# 771
Delta R.T. 0.000 min
Lab File: 1a200842.d
Acq: 30 Apr 2020 12:15 pm

Tgt Ion: 96 Resp: 23623

Ion	Ratio	Lower	Upper
96	100		
61	120.6	104.6	164.6
98	64.1	32.0	92.0

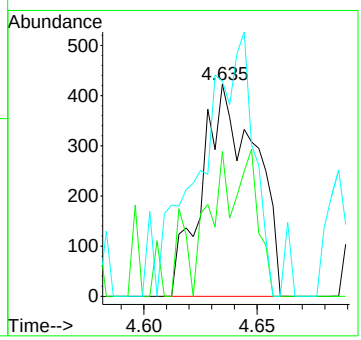


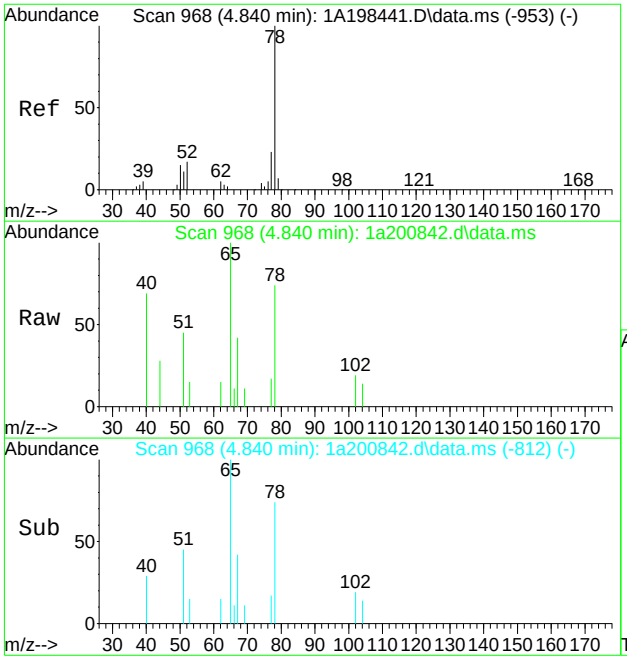


#47
cyclohexane
Concen: 0.44 ug/L
RT: 4.635 min Scan# 904
Delta R.T. -0.003 min
Lab File: 1a200842.d
Acq: 30 Apr 2020 12:15 pm

Tgt Ion: 84 Resp: 697

Ion	Ratio	Lower	Upper
84	100		
69	68.3	13.2	53.2#
41	66.4	101.7	141.7#

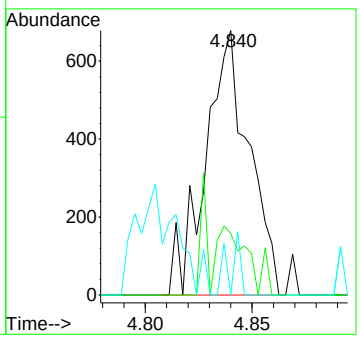




#57
benzene
Concen: 0.23 ug/L
RT: 4.840 min Scan# 968
Delta R.T. -0.000 min
Lab File: 1a200842.d
Acq: 30 Apr 2020 12:15 pm

Tgt Ion: 78 Resp: 958

Ion	Ratio	Lower	Upper
78	100		
77	23.3	0.0	53.5
52	0.0	0.0	46.8



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200850.d
Acq On : 30 Apr 2020 3:34 pm
Operator : edwardd
Sample : JD6583-8 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:51:10 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

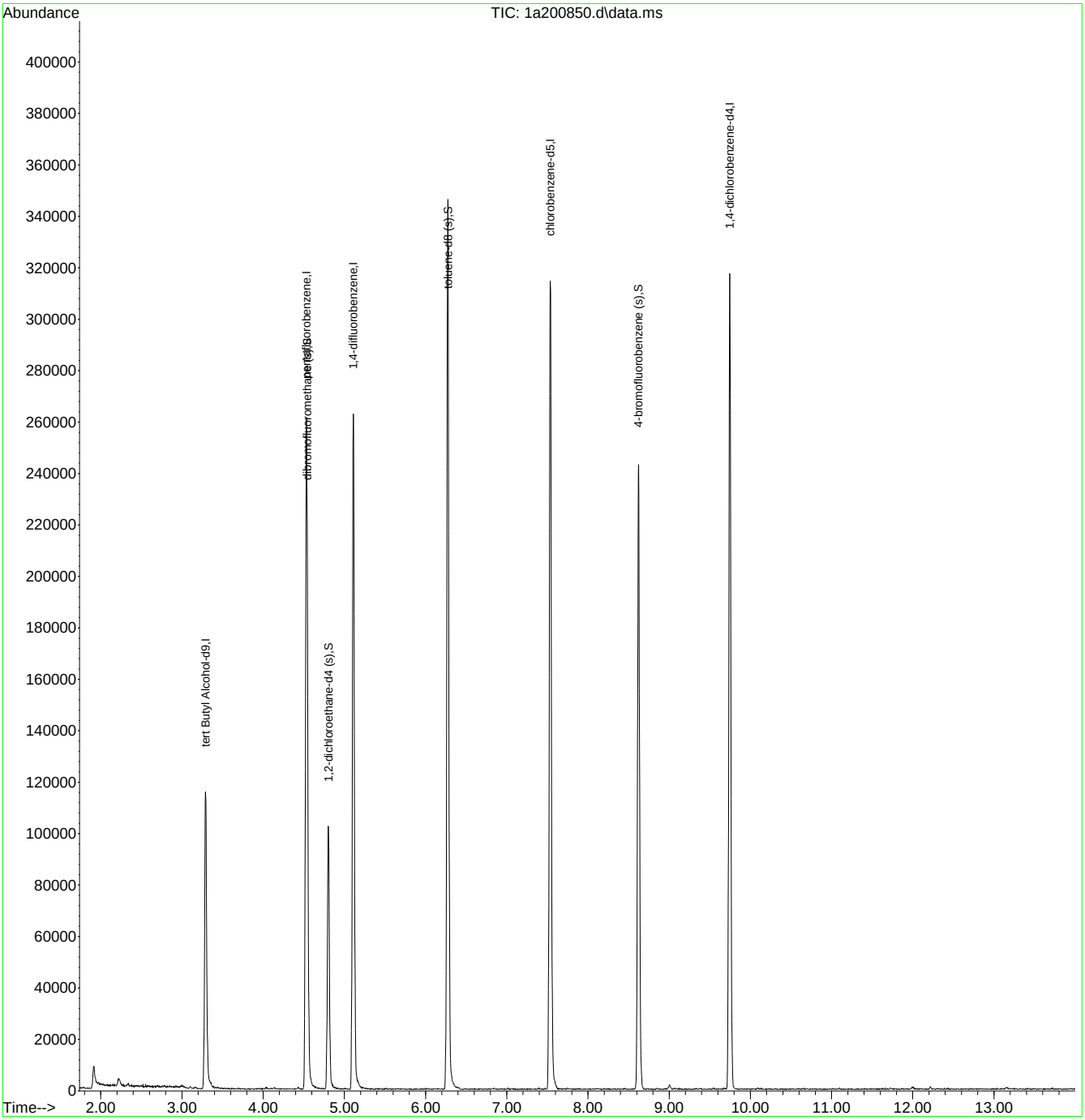
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	112850	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	124397	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	198737	50.00	ug/L	0.00
73) chlorobenzene-d5	7.536	117	188041	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.747	152	90504	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.542	113	56590	52.77	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 105.54%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	60437	48.70	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 97.40%			
74) toluene-d8 (s)	6.275	98	223820	48.95	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 97.90%			
98) 4-bromofluorobenzene (s)	8.620	95	82478	46.59	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 93.18%			
Target Compounds						Qvalue

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200850.d
Acq On : 30 Apr 2020 3:34 pm
Operator : edwardd
Sample : JD6583-8 Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:51:10 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 05/01/20 19:49

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200841.d
Acq On : 30 Apr 2020 11:46 am
Operator : edwardd
Sample : mb Inst : MSDTEST1A
Misc : MS37677,V1A8656,w,,,,1
ALS Vial : 6 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:32:50 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

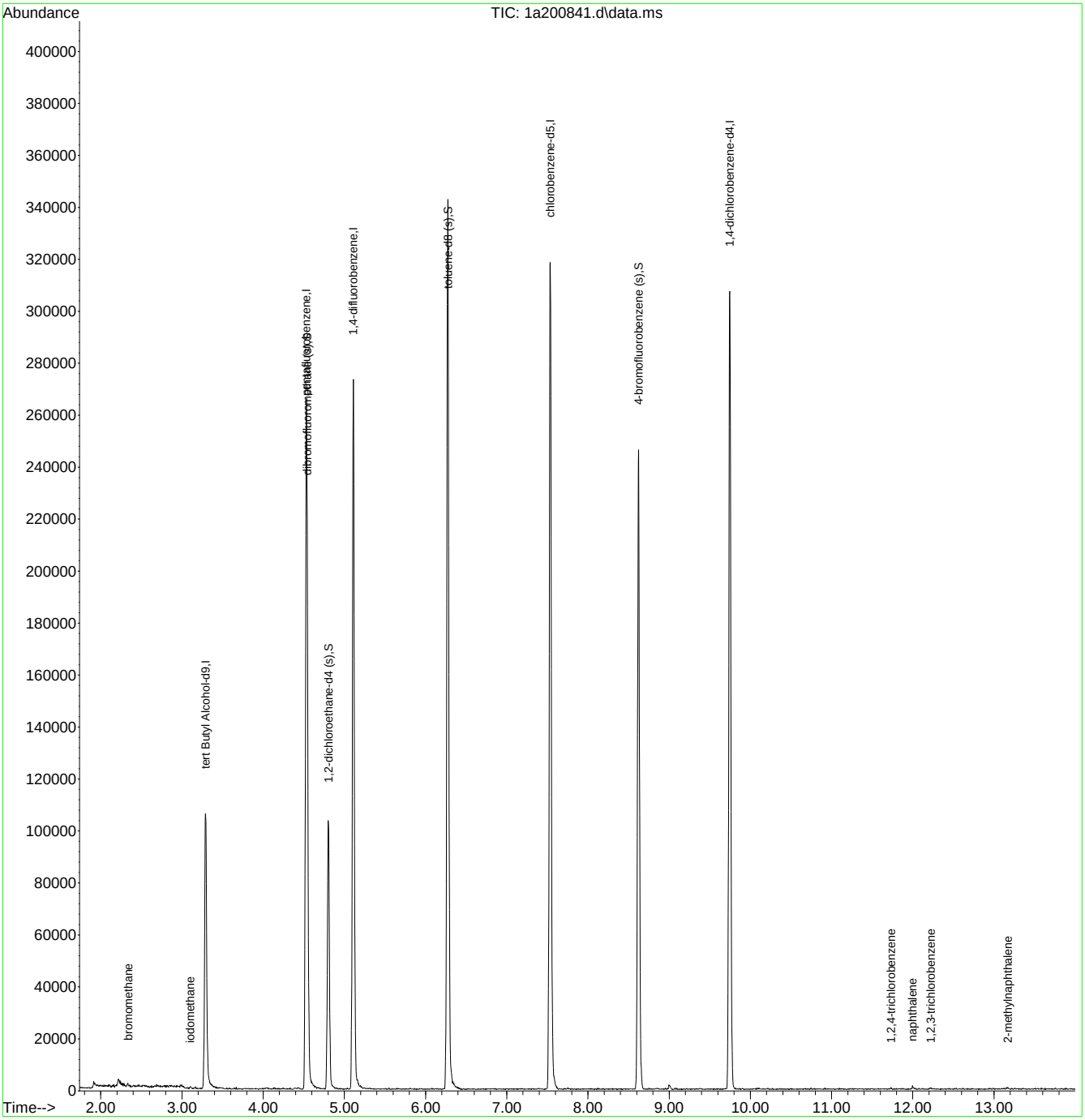
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	103715	500.00	ug/L	0.00
5) pentafluorobenzene	4.529	168	123974	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	200010	50.00	ug/L	0.00
73) chlorobenzene-d5	7.536	117	190499	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.747	152	87551	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.542	113	57413	53.72	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 107.44%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	59890	47.95	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 95.90%			
74) toluene-d8 (s)	6.275	98	220935	47.70	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 95.40%			
98) 4-bromofluorobenzene (s)	8.624	95	81701	47.70	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 95.40%			
Target Compounds						Qvalue
10) bromomethane	2.337	94	698	1.21	ug/L #	50
21) iodomethane	3.101	142	554	0.57	ug/L	87
117) 1,2,4-trichlorobenzene	11.733	180	268	0.23	ug/L #	67
119) naphthalene	11.996	128	896	0.23	ug/L	65
120) 1,2,3-trichlorobenzene	12.224	180	209	0.20	ug/L #	61
124) 2-methylnaphthalene	13.171	142	356m	0.24	ug/L	

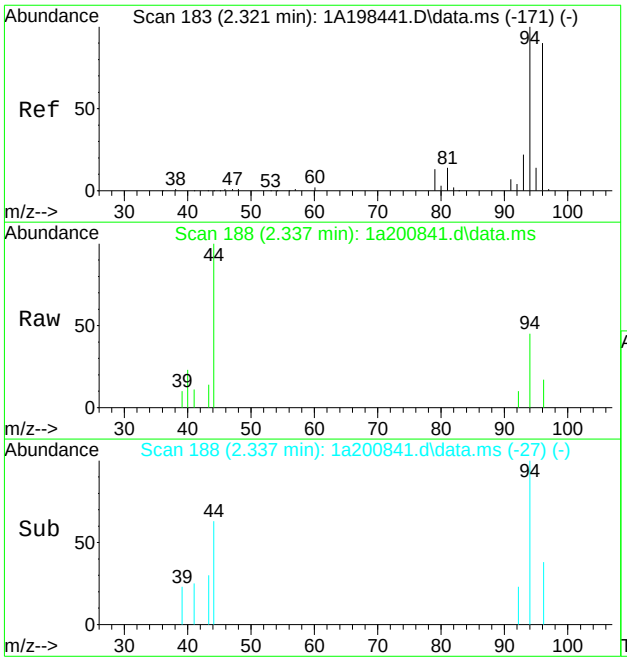
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200841.d
Acq On : 30 Apr 2020 11:46 am
Operator : edwardd
Sample : mb Inst : MSDTEST1A
Misc : MS37677,V1A8656,w,,,,1
ALS Vial : 6 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:32:50 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

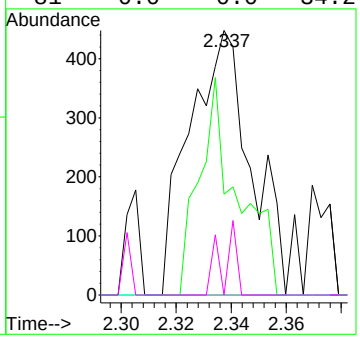


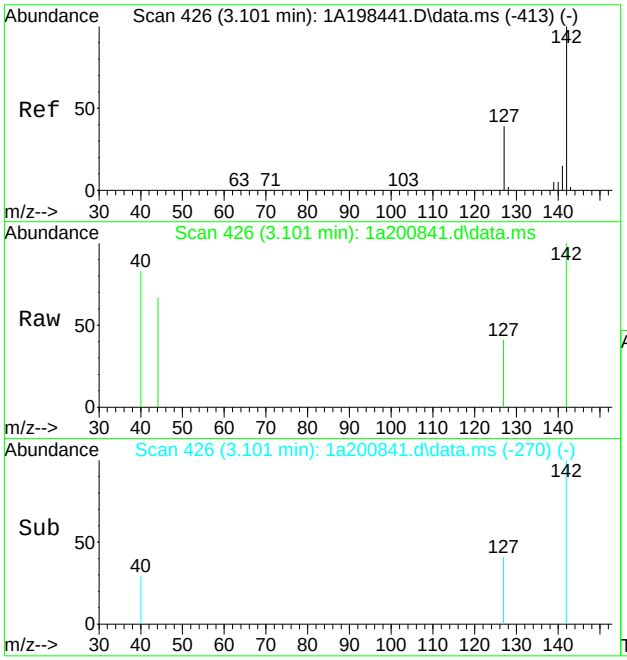


#10
bromomethane
Concen: 1.21 ug/L
RT: 2.337 min Scan# 188
Delta R.T. 0.016 min
Lab File: 1a200841.d
Acq: 30 Apr 2020 11:46 am

Tgt Ion: 94 Resp: 698

Ion	Ratio	Lower	Upper
94	100		
96	38.2	59.8	119.8#
79	0.0	0.0	42.9
81	0.0	0.0	34.2

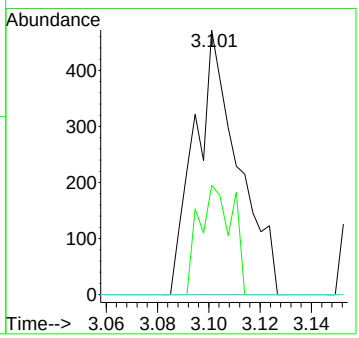


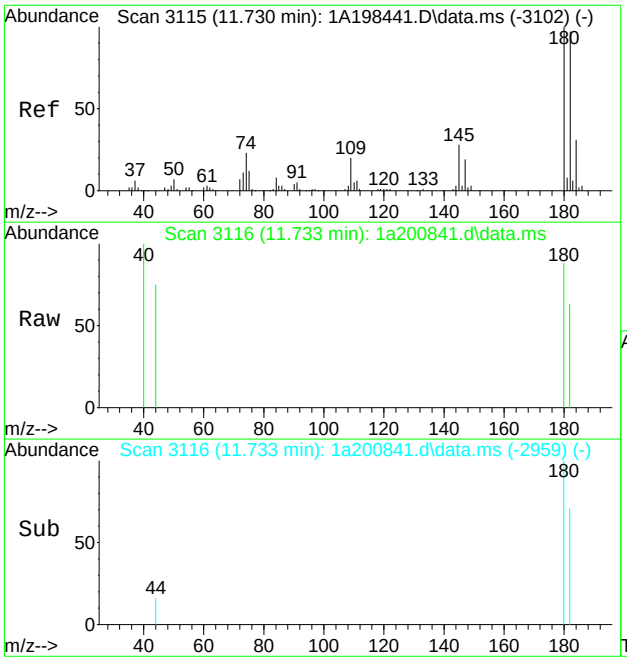


#21
iodomethane
Concen: 0.57 ug/L
RT: 3.101 min Scan# 426
Delta R.T. 0.000 min
Lab File: 1a200841.d
Acq: 30 Apr 2020 11:46 am

Tgt Ion:142 Resp: 554

Ion	Ratio	Lower	Upper
142	100		
127	41.3	8.8	68.8
141	0.0	0.0	44.6

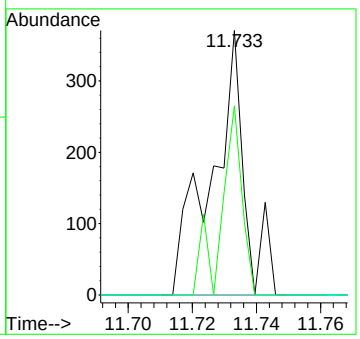


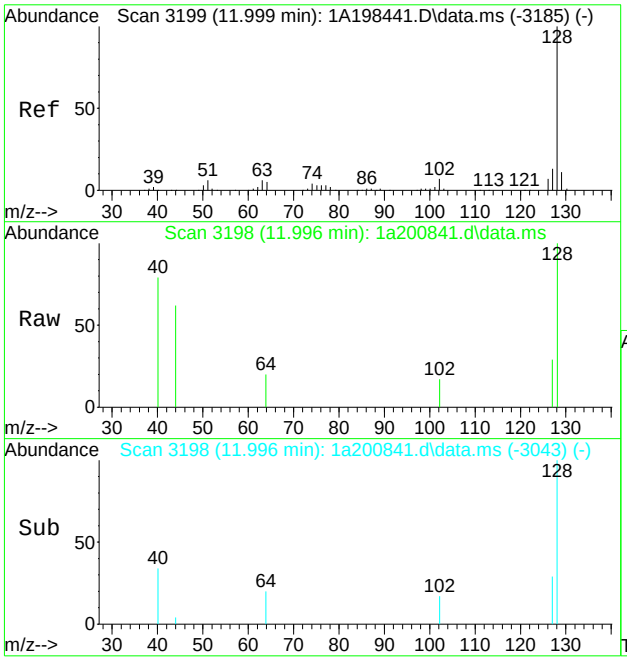


#117
1,2,4-trichlorobenzene
Concen: 0.23 ug/L
RT: 11.733 min Scan# 3116
Delta R.T. 0.003 min
Lab File: 1a200841.d
Acq: 30 Apr 2020 11:46 am

Tgt Ion:180 Resp: 268

Ion	Ratio	Lower	Upper
180	100		
182	71.4	67.2	127.2
184	0.0	0.8	60.8#

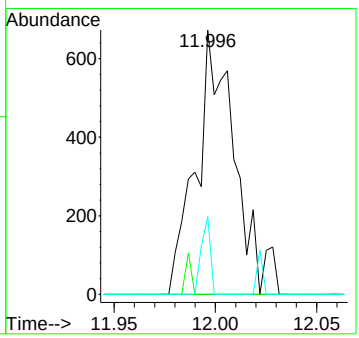


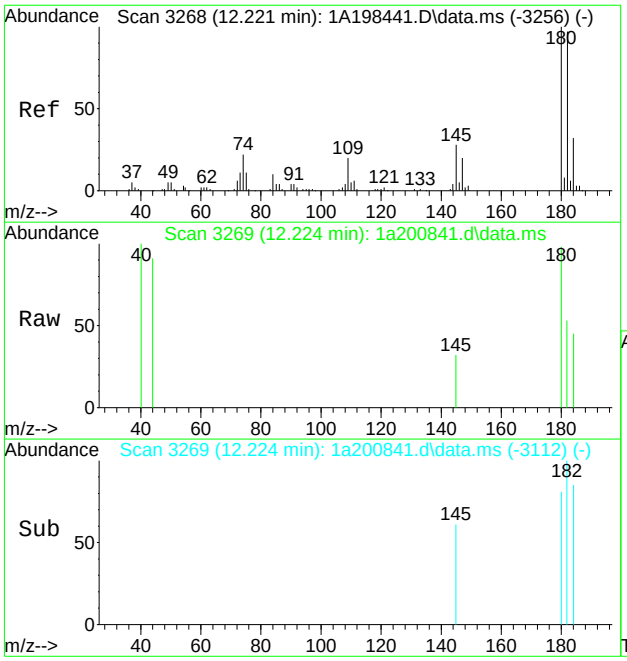


#119
naphthalene
Concen: 0.23 ug/L
RT: 11.996 min Scan# 3198
Delta R.T. -0.003 min
Lab File: 1a200841.d
Acq: 30 Apr 2020 11:46 am

Tgt Ion:128 Resp: 896

Ion	Ratio	Lower	Upper
128	100		
129	0.0	0.0	40.7
127	29.4	0.0	43.3

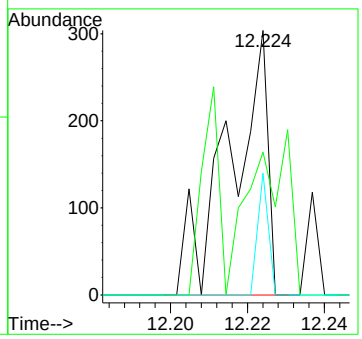


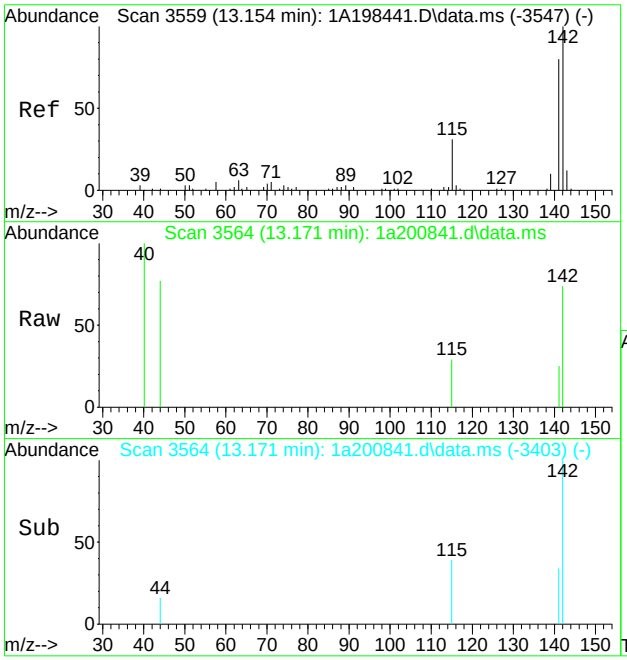


#120
1,2,3-trichlorobenzene
Concen: 0.20 ug/L
RT: 12.224 min Scan# 3269
Delta R.T. 0.004 min
Lab File: 1a200841.d
Acq: 30 Apr 2020 11:46 am

Tgt Ion:180 Resp: 209

Ion	Ratio	Lower	Upper
180	100		
182	53.9	67.0	127.0#
184	46.1	1.8	61.8

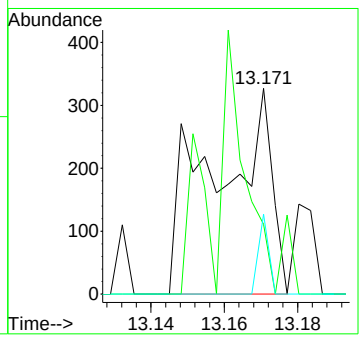




#124
2-methylnaphthalene
Concen: 0.24 ug/L m
RT: 13.171 min Scan# 3564
Delta R.T. 0.016 min
Lab File: 1a200841.d
Acq: 30 Apr 2020 11:46 am

Tgt Ion:142 Resp: 356

Ion	Ratio	Lower	Upper
142	100		
141	33.9	59.9	99.9#
115	38.8	11.3	51.3



Manual Integration Approval Summary

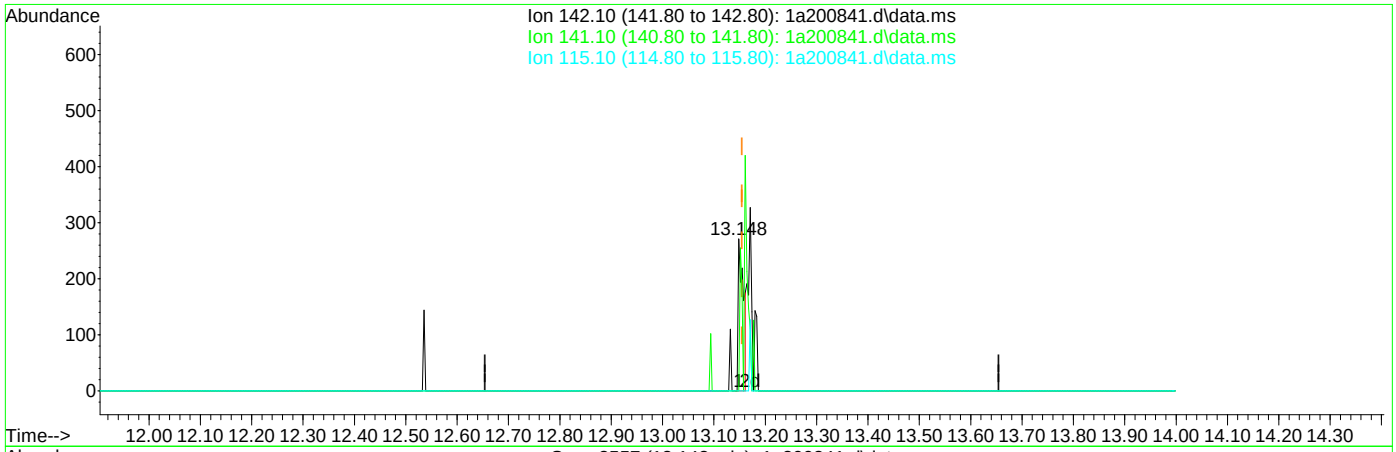
Sample Number:	V1A8656-MB	**Method:**	SW846 8260C
Lab FileID:	1A200841.D	**Analyst approved:**	05/01/20 01:03 Dave Moriente
Injection Time:	04/30/20 11:46	**Supervisor approved:**	05/01/20 19:49 Kanya Veerawat

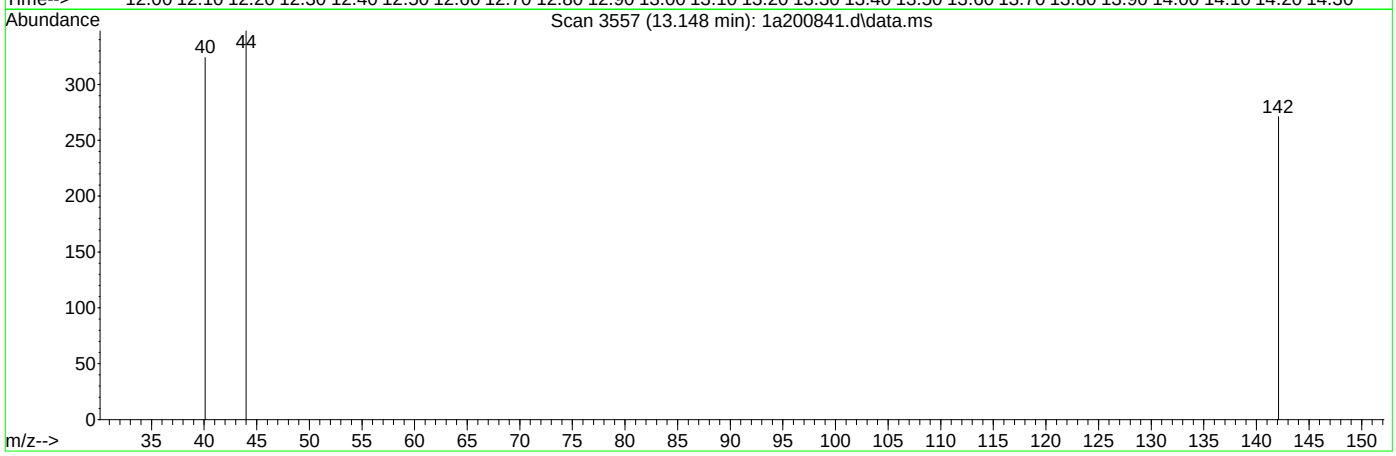
Parameter	CAS	Sig#	R.T. (min.)	Reason
2-Methylnaphthalene	91-57-6		13.17	Poor instrument integration

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200841.d
Acq On : 30 Apr 2020 11:46 am
Operator : edwardd
Sample : mb Inst : MSDTEST1A
Misc : MS37677,V1A8656,w,,,,1
ALS Vial : 6 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: Apr 30 12:01:36 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration





TIC: 1a200841.d\data.ms

(124) 2-methylnaphthalene

13.148min (-0.006) 0.13ug/L

response 196

Ion	Exp%	Act%
142.10	100	100
141.10	79.90	0.00#
115.10	31.30	0.00#
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200839.d
Acq On : 30 Apr 2020 10:56 am
Operator : edwardd
Sample : bs Inst : MSDTEST1A
Misc : MS37677,V1A8656,w,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:29:32 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	105618	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	119086	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	190687	50.00	ug/L	0.00
73) chlorobenzene-d5	7.536	117	188581	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.746	152	91516	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	54198	52.80	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 105.60%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	56921	47.80	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 95.60%			
74) toluene-d8 (s)	6.274	98	218406	47.63	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 95.26%			
98) 4-bromofluorobenzene (s)	8.623	95	81885	45.74	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 91.48%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.549	88	31647	1375.16	ug/L	96
3) ethanol	2.700	45	135115	5084.40	ug/L	97
4) tertiary butyl alcohol	3.348	59	70305	270.57	ug/L	93
7) dichlorodifluoromethane	1.804	85	61620	54.68	ug/L	93
8) chloromethane	1.968	50	56260	46.60	ug/L	98
9) vinyl chloride	2.064	62	63554	51.34	ug/L	96
10) bromomethane	2.324	94	18481	33.46	ug/L	91
11) chloroethane	2.411	64	36481	59.25	ug/L	96
12) vinyl bromide	2.555	106	36447	52.25	ug/L	100
13) trichlorofluoromethane	2.600	101	80074	57.89	ug/L	99
14) ethyl ether	2.790	74	31308	55.25	ug/L	97
16) acrolein	2.902	56	14224	44.73	ug/L	95
17) freon 113	2.972	151	35900	45.59	ug/L	93
18) 1,1-dichloroethene	2.979	96	46084	50.84	ug/L	95
19) acetone	2.992	58	32131	210.72	ug/L	98
20) acetonitrile	3.191	40	72277	563.03	ug/L	96
21) iodomethane	3.104	142	20037	21.59	ug/L	97
22) iso-butyl alcohol	4.680	43	60669	609.00	ug/L	98
23) carbon disulfide	3.162	76	121429	51.57	ug/L	98
24) methylene chloride	3.316	84	55912	54.61	ug/L	95
25) methyl acetate	3.204	74	15153	55.65	ug/L	94
26) methyl tert butyl ether	3.492	73	168748	55.12	ug/L	99
27) trans-1,2-dichloroethene	3.508	96	55265	58.69	ug/L	90
28) hexane	3.688	57	75849	54.14	ug/L	97
29) di-isopropyl ether	3.804	45	202627	56.50	ug/L	98
30) ethyl tert-butyl ether	4.054	59	181056	54.69	ug/L	96
31) 2-butanone	4.179	72	44957	215.89	ug/L #	84
32) 1,1-dichloroethane	3.813	63	95061	54.29	ug/L	98
33) chloroprene	3.865	53	79037	52.43	ug/L	97
34) acrylonitrile	3.473	53	34083	57.92	ug/L	91
35) vinyl acetate	3.781	86	14356	51.86	ug/L #	91
36) ethyl acetate	4.185	45	14573	51.63	ug/L	81
37) 2,2-dichloropropane	4.221	77	80596	56.60	ug/L	100
38) cis-1,2-dichloroethene	4.211	96	63311	55.56	ug/L	96
39) propionitrile	4.227	54	142883	638.45	ug/L	83
40) methyl acrylate	4.234	85	12827	55.83	ug/L	95
41) bromochloromethane	4.378	128	29867	57.09	ug/L	89
42) tetrahydrofuran	4.388	72	13171	58.60	ug/L	95
43) chloroform	4.429	83	97773	56.72	ug/L	97

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200839.d
Acq On : 30 Apr 2020 10:56 am
Operator : edwardd
Sample : bs Inst : MSDTEST1A
Misc : MS37677,V1A8656,w,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:29:32 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
45) methacrylonitrile	4.339	67	33076	54.54	ug/L		97
46) 1,1,1-trichloroethane	4.577	97	84000	55.12	ug/L		97
47) cyclohexane	4.635	84	72118	47.94	ug/L		93
48) 1,1-dichloropropene	4.683	75	73582	54.38	ug/L		98
49) carbon tetrachloride	4.692	117	74014	56.47	ug/L		99
50) isopropyl acetate	4.795	87	17895	55.88	ug/L	#	91
51) tert amyl alcohol	4.776	55	23305	262.57	ug/L	#	86
54) tert-amyl methyl ether	4.895	73	174441	52.72	ug/L		96
55) 2,2,4-trimethylpentane	4.898	57	151533	63.03	ug/L		97
56) n-butyl alcohol	5.161	56	187809	2745.67	ug/L		99
57) benzene	4.837	78	222996	54.76	ug/L		98
58) heptane	5.007	57	35814	58.42	ug/L		95
59) 1,2-dichloroethane	4.859	62	73112	50.27	ug/L		99
60) trichloroethene	5.309	95	55422	53.79	ug/L		97
61) ethyl acrylate	5.321	55	105147	52.90	ug/L		99
62) 2-nitropropane	5.867	41	26747	68.91	ug/L	#	78
63) 2-chloroethyl vinyl ether	5.893	63	222713	2536.48	ug/L		92
64) methyl methacrylate	5.504	100	20556	52.67	ug/L	#	73
65) 1,2-dichloropropane	5.514	63	58181	55.36	ug/L		94
66) methylcyclohexane	5.501	83	85695	56.77	ug/L		96
67) dibromomethane	5.578	93	35626	57.03	ug/L		95
68) bromodichloromethane	5.697	83	78535	56.64	ug/L		96
69) cis-1,3-dichloropropene	6.040	75	90586	53.66	ug/L		98
70) epichlorohydrin	5.950	57	33778	187.14	ug/L		99
71) 4-methyl-2-pentanone	6.140	58	141475	219.31	ug/L		95
72) 3-methyl-1-butanol	6.156	70	65249	1046.46	ug/L		94
75) toluene	6.332	92	138653	50.29	ug/L		94
76) trans-1,3-dichloropropene	6.496	75	84285	49.68	ug/L		97
77) ethyl methacrylate	6.512	69	88304	48.81	ug/L		96
78) 1,1,2-trichloroethane	6.672	83	45053	50.54	ug/L		95
79) 2-hexanone	6.836	58	145328	195.36	ug/L		97
80) tetrachloroethene	6.772	166	64573	49.25	ug/L		99
81) 1,3-dichloropropane	6.820	76	90306	49.94	ug/L		99
82) butyl acetate	6.913	56	53354	49.09	ug/L		84
83) dibromochloromethane	7.012	129	62404	53.62	ug/L		96
84) 1,2-dibromoethane	7.131	107	67994	53.20	ug/L		98
85) n-butyl ether	7.596	57	248151	50.06	ug/L		100
86) chlorobenzene	7.564	112	157774	50.18	ug/L		98
87) 1,1,1,2-tetrachloroethane	7.632	131	57624	51.24	ug/L		96
88) ethylbenzene	7.635	91	269963	51.39	ug/L		98
89) m,p-xylene	7.751	106	209032	104.34	ug/L		96
90) o-xylene	8.110	106	102515	51.23	ug/L		96
91) butyl acrylate	8.020	55	135522	50.69	ug/L		99
92) n-amyl acetate	8.225	70	50439	50.26	ug/L		94
93) styrene	8.126	104	176366	52.31	ug/L		96
94) bromoform	8.309	173	46443	55.15	ug/L		98
95) isopropylbenzene	8.447	105	258082	52.11	ug/L		99
96) cis-1,4-dichloro-2-butene	8.495	88	26329	47.05	ug/L		94
99) bromobenzene	8.774	156	69789	46.93	ug/L		99
100) 1,1,2,2-tetrachloroethane	8.729	83	80728	46.53	ug/L		98
101) trans-1,4-dichloro-2-b...	8.768	53	22913	48.43	ug/L		95
102) 1,2,3-trichloropropane	8.793	110	25513	47.50	ug/L		100
103) n-propylbenzene	8.848	91	297713	50.21	ug/L		98
104) 2-chlorotoluene	8.944	126	61786	47.41	ug/L		94
105) 4-chlorotoluene	9.063	126	62174	48.53	ug/L		91
106) 1,3,5-trimethylbenzene	9.015	105	206640	49.29	ug/L		100
107) tert-butylbenzene	9.326	119	176058	50.63	ug/L		99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200839.d
Acq On : 30 Apr 2020 10:56 am
Operator : edwardd
Sample : bs Inst : MSDTEST1A
Misc : MS37677,V1A8656,w,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:29:32 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

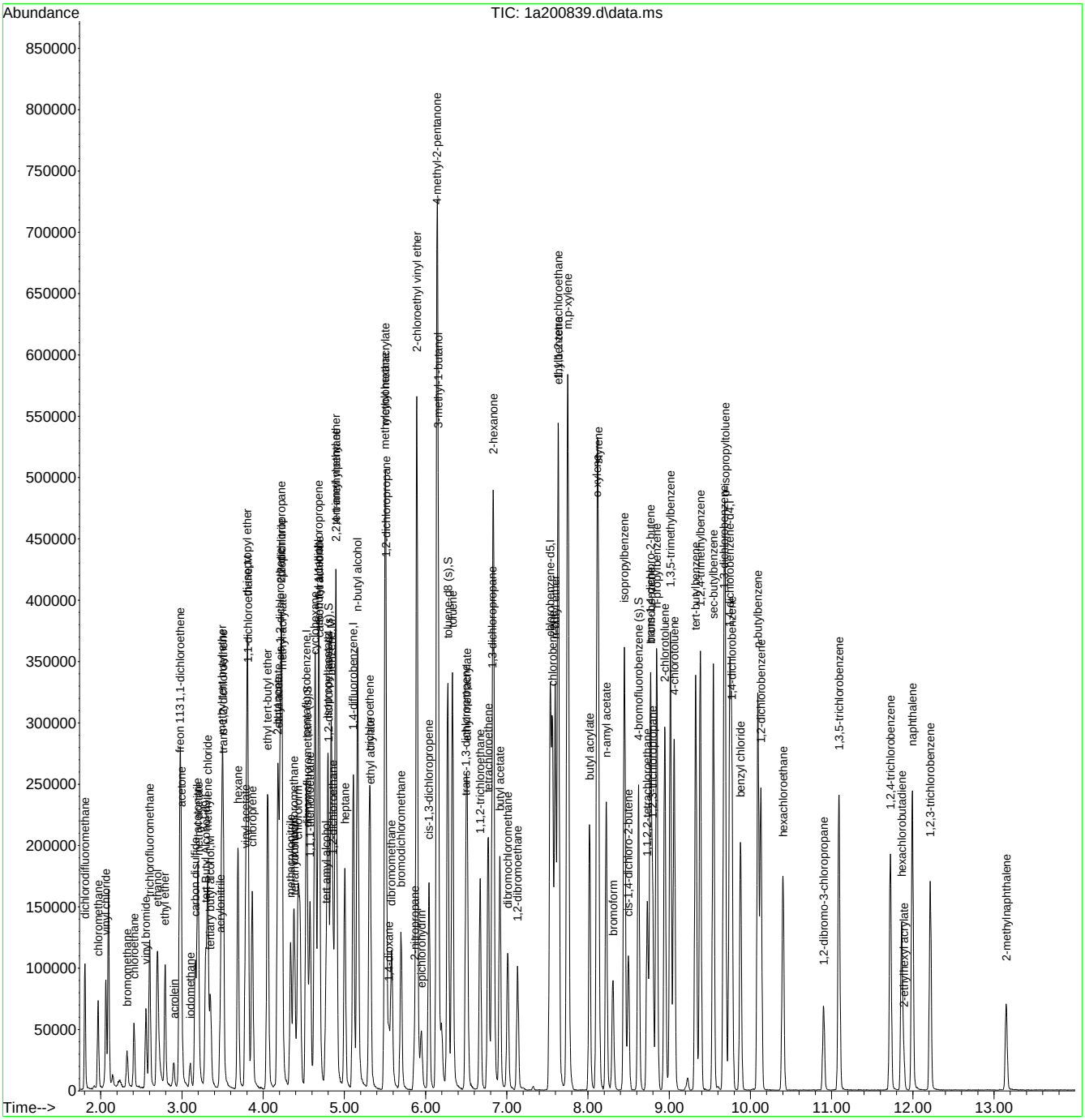
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.384	105	208393	49.45	ug/L	98
109) sec-butylbenzene	9.544	105	253981	54.51	ug/L	98
110) 1,3-dichlorobenzene	9.673	146	122795	49.27	ug/L	96
111) p-isopropyltoluene	9.689	119	218998	55.22	ug/L	98
112) 1,4-dichlorobenzene	9.772	146	123538	48.77	ug/L	97
113) 1,2-dichlorobenzene	10.128	146	114613	49.14	ug/L	97
114) n-butylbenzene	10.090	92	103580	59.94	ug/L	97
115) 1,2-dibromo-3-chloropr...	10.905	157	22439	47.30	ug/L	93
116) 1,3,5-trichlorobenzene	11.091	180	82257	58.06	ug/L	96
117) 1,2,4-trichlorobenzene	11.723	180	68777	56.60	ug/L	96
118) hexachlorobutadiene	11.864	225	28545	58.69	ug/L	97
119) naphthalene	11.996	128	214127	52.73	ug/L	100
120) 1,2,3-trichlorobenzene	12.214	180	60298	54.56	ug/L	97
121) hexachloroethane	10.404	119	37918	60.70	ug/L	96
122) benzyl chloride	9.878	91	154362	56.16	ug/L	99
123) 2-ethylhexyl acrylate	11.893	70	8438	12.45	ug/L	93
124) 2-methylnaphthalene	13.151	142	39861	25.23	ug/L	99

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200839.d
Acq On : 30 Apr 2020 10:56 am
Operator : edwardd
Sample : bs Inst : MSDTEST1A
Misc : MS37677,V1A8656,w,,,,1
ALS Vial : 4 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:29:32 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200847.d
Acq On : 30 Apr 2020 2:19 pm
Operator : edwardd
Sample : JD6583-7ms Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:42:06 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.294	65	107393	500.00	ug/L	0.00
5) pentafluorobenzene	4.529	168	117092	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	187525	50.00	ug/L	0.00
73) chlorobenzene-d5	7.536	117	188080	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.744	152	90697	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	52745	52.26	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 104.52%			
53) 1,2-dichloroethane-d4 (s)	4.802	65	56111	47.91	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 95.82%			
74) toluene-d8 (s)	6.275	98	215801	47.19	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 94.38%			
98) 4-bromofluorobenzene (s)	8.620	95	82282	46.38	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 92.76%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.550	88	30560	1305.97	ug/L	98
3) ethanol	2.700	45	130061	4813.33	ug/L	97
4) tertiary butyl alcohol	3.348	59	69403	262.68	ug/L	94
7) dichlorodifluoromethane	1.805	85	78559	70.90	ug/L	98
8) chloromethane	1.968	50	58892	49.61	ug/L	99
9) vinyl chloride	2.065	62	81215	66.73	ug/L	95
10) bromomethane	2.321	94	14020	25.82	ug/L	98
11) chloroethane	2.408	64	35599	58.80	ug/L	88
12) vinyl bromide	2.556	106	36932	53.84	ug/L	99
13) trichlorofluoromethane	2.604	101	84638	62.23	ug/L	98
14) ethyl ether	2.793	74	26371	47.33	ug/L	97
16) acrolein	2.899	56	13657	43.68	ug/L	97
17) freon 113	2.970	151	39397	50.88	ug/L	92
18) 1,1-dichloroethene	2.979	96	45116	50.62	ug/L	94
19) acetone	2.995	58	27427	182.93	ug/L	90
20) acetonitrile	3.191	40	62787	497.43	ug/L	93
21) iodomethane	3.101	142	19466	21.33	ug/L	95
22) iso-butyl alcohol	4.680	43	56089	572.61	ug/L	98
23) carbon disulfide	3.162	76	121103	52.30	ug/L	98
24) methylene chloride	3.316	84	51465	51.12	ug/L	97
25) methyl acetate	3.204	74	12862	48.04	ug/L	99
26) methyl tert butyl ether	3.493	73	146661	48.72	ug/L	97
27) trans-1,2-dichloroethene	3.509	96	52558	56.77	ug/L	91
28) hexane	3.692	57	89264	64.80	ug/L	99
29) di-isopropyl ether	3.804	45	180501	51.19	ug/L	99
30) ethyl tert-butyl ether	4.054	59	161792	49.70	ug/L	99
31) 2-butanone	4.179	72	40367	197.15	ug/L	100
32) 1,1-dichloroethane	3.814	63	90538	52.59	ug/L	98
33) chloroprene	3.865	53	77598	52.35	ug/L	97
34) acrylonitrile	3.470	53	29209	50.49	ug/L	90
35) vinyl acetate	3.781	86	13112	48.17	ug/L	96
36) ethyl acetate	4.183	45	13153	47.39	ug/L	100
37) 2,2-dichloropropane	4.224	77	78012	55.72	ug/L	100
38) cis-1,2-dichloroethene	4.208	96	81976	73.16	ug/L	97
39) propionitrile	4.228	54	129787	589.81	ug/L	84
40) methyl acrylate	4.231	85	10894	48.22	ug/L #	75
41) bromochloromethane	4.375	128	26621	51.75	ug/L	96
42) tetrahydrofuran	4.394	72	11550	52.26	ug/L	90
43) chloroform	4.430	83	90657	53.49	ug/L	97

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200847.d
Acq On : 30 Apr 2020 2:19 pm
Operator : edwardd
Sample : JD6583-7ms Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:42:06 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
45)	methacrylonitrile	4.340	67	30466	51.09	ug/L		95
46)	1,1,1-trichloroethane	4.580	97	81506	54.39	ug/L		97
47)	cyclohexane	4.638	84	78631	53.16	ug/L		93
48)	1,1-dichloropropene	4.683	75	72687	54.64	ug/L		97
49)	carbon tetrachloride	4.693	117	72266	56.08	ug/L		95
50)	isopropyl acetate	4.799	87	15884	50.44	ug/L	#	78
51)	tert amyl alcohol	4.776	55	24583	281.69	ug/L		90
54)	tert-amyl methyl ether	4.895	73	157837	48.51	ug/L		95
55)	2,2,4-trimethylpentane	4.898	57	175050	74.04	ug/L		96
56)	n-butyl alcohol	5.165	56	213720	3177.16	ug/L		97
57)	benzene	4.837	78	211667	52.85	ug/L		100
58)	heptane	5.004	57	42776	70.95	ug/L		94
59)	1,2-dichloroethane	4.860	62	65344	45.69	ug/L		97
60)	trichloroethene	5.306	95	54601	53.88	ug/L		94
61)	ethyl acrylate	5.322	55	96744	49.50	ug/L		98
62)	2-nitropropane	5.867	41	19759	51.77	ug/L		93
63)	2-chloroethyl vinyl ether	5.886	63	293	3.39	ug/L		77
64)	methyl methacrylate	5.505	100	18334	47.77	ug/L	#	70
65)	1,2-dichloropropane	5.508	63	54219	52.46	ug/L		97
66)	methylcyclohexane	5.505	83	93924	63.27	ug/L		96
67)	dibromomethane	5.582	93	32441	52.81	ug/L		98
68)	bromodichloromethane	5.700	83	73486	53.89	ug/L		96
69)	cis-1,3-dichloropropene	6.044	75	86745	52.25	ug/L		94
70)	epichlorohydrin	5.951	57	28037	157.95	ug/L		95
71)	4-methyl-2-pentanone	6.140	58	134946	212.71	ug/L		94
72)	3-methyl-1-butanol	6.156	70	68244	1112.94	ug/L		92
75)	toluene	6.333	92	139000	50.55	ug/L		100
76)	trans-1,3-dichloropropene	6.496	75	78529	46.41	ug/L		98
77)	ethyl methacrylate	6.515	69	82109	45.51	ug/L		97
78)	1,1,2-trichloroethane	6.669	83	42880	48.23	ug/L		97
79)	2-hexanone	6.836	58	141768	191.08	ug/L		96
80)	tetrachloroethene	6.769	166	64723	49.50	ug/L		95
81)	1,3-dichloropropane	6.820	76	83057	46.05	ug/L		98
82)	butyl acetate	6.917	56	51764	47.75	ug/L		90
83)	dibromochloromethane	7.010	129	59003	50.83	ug/L		99
84)	1,2-dibromoethane	7.132	107	63330	49.68	ug/L		99
85)	n-butyl ether	7.597	57	242296	49.01	ug/L		100
86)	chlorobenzene	7.562	112	154358	49.22	ug/L		99
87)	1,1,1,2-tetrachloroethane	7.629	131	55782	49.73	ug/L		94
88)	ethylbenzene	7.635	91	264002	50.39	ug/L		99
89)	m,p-xylene	7.751	106	205218	102.71	ug/L		98
90)	o-xylene	8.110	106	99753	49.98	ug/L		96
91)	butyl acrylate	8.020	55	131270	49.23	ug/L		98
92)	n-amyl acetate	8.223	70	49387	49.34	ug/L		97
93)	styrene	8.126	104	170889	50.82	ug/L		95
94)	bromoform	8.309	173	44351	52.81	ug/L		98
95)	isopropylbenzene	8.447	105	263148	53.27	ug/L		98
96)	cis-1,4-dichloro-2-butene	8.495	88	21601	38.70	ug/L		93
99)	bromobenzene	8.771	156	69053	46.86	ug/L		97
100)	1,1,2,2-tetrachloroethane	8.730	83	77958	45.33	ug/L		99
101)	trans-1,4-dichloro-2-b...	8.765	53	18706	39.89	ug/L		97
102)	1,2,3-trichloropropane	8.794	110	24270	45.59	ug/L		96
103)	n-propylbenzene	8.845	91	305547	52.00	ug/L		99
104)	2-chlorotoluene	8.945	126	62737	48.57	ug/L		99
105)	4-chlorotoluene	9.063	126	62468	49.20	ug/L		99
106)	1,3,5-trimethylbenzene	9.015	105	207393	49.92	ug/L		98
107)	tert-butylbenzene	9.326	119	181523	52.68	ug/L		100

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200847.d
Acq On : 30 Apr 2020 2:19 pm
Operator : edwardd
Sample : JD6583-7ms Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:42:06 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

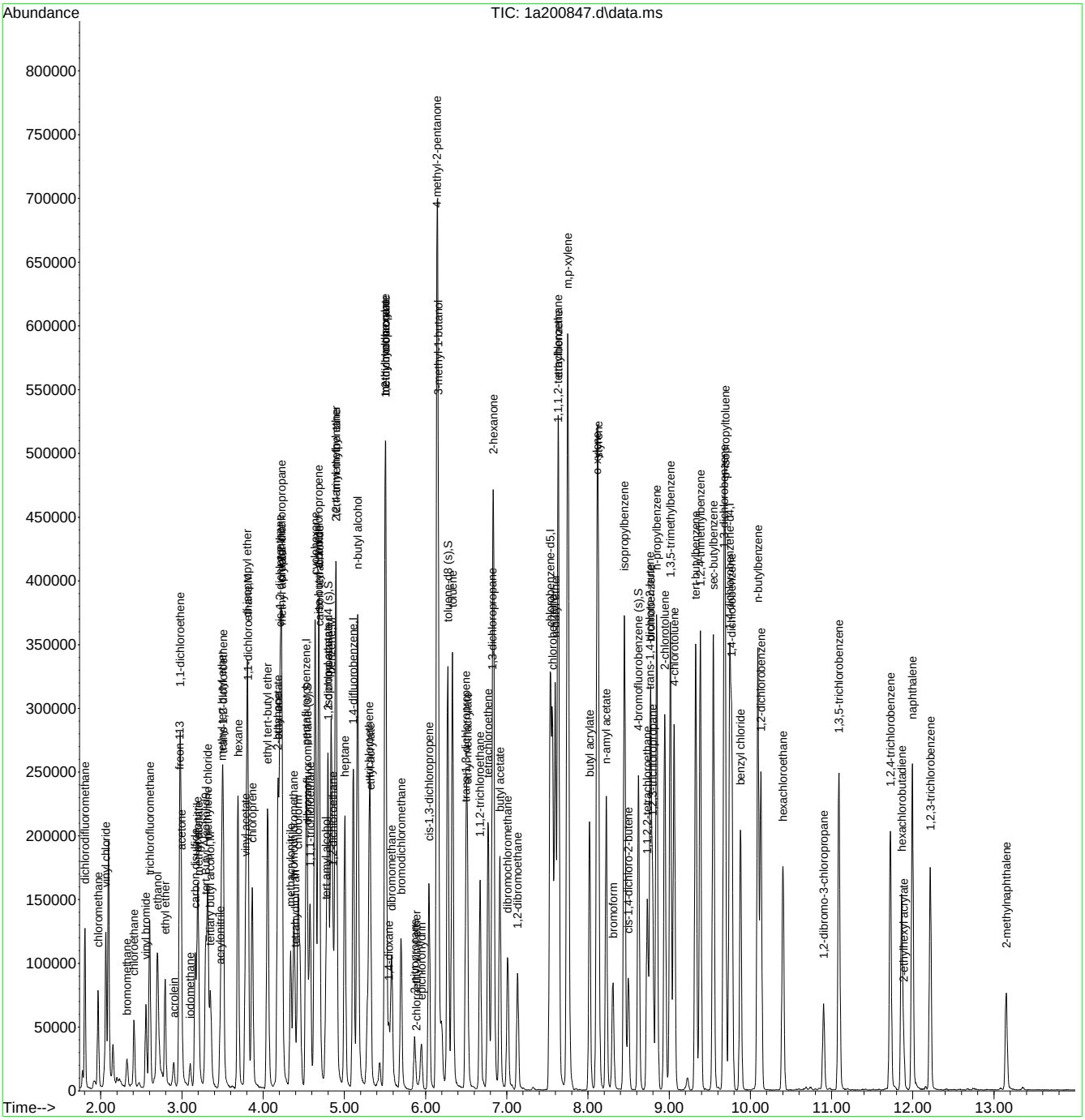
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.384	105	206675	49.48	ug/L	96
109) sec-butylbenzene	9.545	105	265945	57.60	ug/L	98
110) 1,3-dichlorobenzene	9.673	146	122739	49.69	ug/L	96
111) p-isopropyltoluene	9.689	119	223357	56.82	ug/L	99
112) 1,4-dichlorobenzene	9.769	146	121112	48.24	ug/L	97
113) 1,2-dichlorobenzene	10.132	146	113407	49.06	ug/L	98
114) n-butylbenzene	10.093	92	108030	63.08	ug/L	99
115) 1,2-dibromo-3-chloropr...	10.902	157	22119	47.05	ug/L	95
116) 1,3,5-trichlorobenzene	11.088	180	85129	60.63	ug/L	99
117) 1,2,4-trichlorobenzene	11.724	180	70192	58.29	ug/L	99
118) hexachlorobutadiene	11.865	225	30733	63.76	ug/L	96
119) naphthalene	11.996	128	217222	53.98	ug/L	99
120) 1,2,3-trichlorobenzene	12.218	180	61917	56.53	ug/L	97
121) hexachloroethane	10.401	119	37379	60.38	ug/L	96
122) benzyl chloride	9.878	91	153218	56.24	ug/L	99
123) 2-ethylhexyl acrylate	11.887	70	8622	12.83	ug/L	95
124) 2-methylnaphthalene	13.151	142	43901	28.04	ug/L	97

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200847.d
Acq On : 30 Apr 2020 2:19 pm
Operator : edwardd
Sample : JD6583-7ms Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:42:06 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200848.d
Acq On : 30 Apr 2020 2:44 pm
Operator : edwardd
Sample : JD6583-7msd Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:47:17 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	109693	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	119481	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	191802	50.00	ug/L	0.00
73) chlorobenzene-d5	7.535	117	189354	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.743	152	91995	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.542	113	54534	52.95	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 105.90%			
53) 1,2-dichloroethane-d4 (s)	4.801	65	57105	47.68	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 95.36%			
74) toluene-d8 (s)	6.271	98	217927	47.33	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 94.66%			
98) 4-bromofluorobenzene (s)	8.623	95	83088	46.17	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 92.34%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.552	88	31368	1312.40	ug/L	99
3) ethanol	2.696	45	137687	4988.71	ug/L	95
4) tertiary butyl alcohol	3.348	59	71400	264.57	ug/L	90
7) dichlorodifluoromethane	1.804	85	76849	67.97	ug/L	98
8) chloromethane	1.968	50	59124	48.81	ug/L	99
9) vinyl chloride	2.061	62	82626	66.53	ug/L	99
10) bromomethane	2.324	94	18400	33.21	ug/L	99
11) chloroethane	2.408	64	36289	58.74	ug/L	92
12) vinyl bromide	2.555	106	36998	52.86	ug/L	98
13) trichlorofluoromethane	2.600	101	88296	63.62	ug/L	98
14) ethyl ether	2.793	74	27414	48.22	ug/L	98
16) acrolein	2.899	56	13378	41.93	ug/L	91
17) freon 113	2.972	151	40808	51.65	ug/L	96
18) 1,1-dichloroethene	2.979	96	46594	51.23	ug/L	94
19) acetone	2.992	58	28804	188.28	ug/L	96
20) acetonitrile	3.191	40	64341	499.55	ug/L	96
21) iodomethane	3.101	142	28718	30.84	ug/L	94
22) iso-butyl alcohol	4.683	43	58260	582.88	ug/L	100
23) carbon disulfide	3.162	76	123774	52.39	ug/L	99
24) methylene chloride	3.316	84	51951	50.57	ug/L	100
25) methyl acetate	3.200	74	13666	50.02	ug/L	99
26) methyl tert butyl ether	3.492	73	148838	48.46	ug/L	99
27) trans-1,2-dichloroethene	3.508	96	54337	57.51	ug/L	98
28) hexane	3.691	57	91140	64.84	ug/L	97
29) di-isopropyl ether	3.804	45	187492	52.11	ug/L	98
30) ethyl tert-butyl ether	4.054	59	164565	49.54	ug/L	98
31) 2-butanone	4.179	72	41506	198.66	ug/L	92
32) 1,1-dichloroethane	3.810	63	93749	53.36	ug/L	96
33) chloroprene	3.864	53	79655	52.67	ug/L	98
34) acrylonitrile	3.470	53	30669	51.95	ug/L	96
35) vinyl acetate	3.781	86	13149	47.34	ug/L	97
36) ethyl acetate	4.182	45	13640	48.17	ug/L	99
37) 2,2-dichloropropane	4.221	77	79486	55.63	ug/L	97
38) cis-1,2-dichloroethene	4.208	96	82941	72.54	ug/L	97
39) propionitrile	4.230	54	134452	598.79	ug/L	90
40) methyl acrylate	4.230	85	11847	51.39	ug/L	99
41) bromochloromethane	4.375	128	26556	50.59	ug/L	86
42) tetrahydrofuran	4.391	72	11424	50.66	ug/L	89
43) chloroform	4.426	83	93510	54.07	ug/L	95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200848.d
Acq On : 30 Apr 2020 2:44 pm
Operator : edwardd
Sample : JD6583-7msd Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:47:17 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
45) methacrylonitrile	4.339	67	30810	50.63	ug/L		94
46) 1,1,1-trichloroethane	4.577	97	82959	54.25	ug/L		97
47) cyclohexane	4.638	84	79666	52.79	ug/L		87
48) 1,1-dichloropropene	4.686	75	73756	54.33	ug/L		94
49) carbon tetrachloride	4.692	117	74856	56.93	ug/L		100
50) isopropyl acetate	4.795	87	16807	52.31	ug/L		95
51) tert amyl alcohol	4.776	55	24588	276.11	ug/L	#	84
54) tert-amyl methyl ether	4.895	73	159480	47.92	ug/L		95
55) 2,2,4-trimethylpentane	4.898	57	179692	74.31	ug/L		96
56) n-butyl alcohol	5.164	56	198085	2879.07	ug/L		98
57) benzene	4.837	78	213643	52.16	ug/L		99
58) heptane	5.007	57	42411	68.78	ug/L		96
59) 1,2-dichloroethane	4.859	62	68762	47.01	ug/L		99
60) trichloroethene	5.308	95	55642	53.69	ug/L		97
61) ethyl acrylate	5.321	55	98533	49.29	ug/L		98
62) 2-nitropropane	5.864	41	20584	52.73	ug/L		90
64) methyl methacrylate	5.504	100	19252	49.04	ug/L	#	65
65) 1,2-dichloropropane	5.511	63	55134	52.15	ug/L		96
66) methylcyclohexane	5.504	83	96636	63.64	ug/L		97
67) dibromomethane	5.578	93	33408	53.17	ug/L		99
68) bromodichloromethane	5.697	83	75328	54.01	ug/L		98
69) cis-1,3-dichloropropene	6.043	75	88165	51.92	ug/L		98
70) epichlorohydrin	5.947	57	27925	153.81	ug/L		93
71) 4-methyl-2-pentanone	6.140	58	138468	213.40	ug/L		91
72) 3-methyl-1-butanol	6.152	70	71572	1141.19	ug/L		98
75) toluene	6.332	92	138763	50.13	ug/L		98
76) trans-1,3-dichloropropene	6.499	75	81090	47.60	ug/L		97
77) ethyl methacrylate	6.512	69	84138	46.32	ug/L		97
78) 1,1,2-trichloroethane	6.672	83	43540	48.64	ug/L		94
79) 2-hexanone	6.836	58	144261	193.14	ug/L		94
80) tetrachloroethene	6.772	166	66604	50.59	ug/L		98
81) 1,3-dichloropropane	6.820	76	85313	46.98	ug/L		98
82) butyl acetate	6.913	56	52227	47.85	ug/L		89
83) dibromochloromethane	7.012	129	59686	51.07	ug/L		99
84) 1,2-dibromoethane	7.131	107	64538	50.29	ug/L		99
85) n-butyl ether	7.596	57	248211	49.87	ug/L		100
86) chlorobenzene	7.561	112	155589	49.28	ug/L		99
87) 1,1,1,2-tetrachloroethane	7.632	131	56244	49.81	ug/L		95
88) ethylbenzene	7.638	91	269536	51.10	ug/L		100
89) m,p-xylene	7.750	106	205254	102.04	ug/L		100
90) o-xylene	8.110	106	101789	50.66	ug/L		99
91) butyl acrylate	8.020	55	132021	49.18	ug/L		97
92) n-amyl acetate	8.225	70	49662	49.29	ug/L		92
93) styrene	8.126	104	174550	51.56	ug/L		99
94) bromoform	8.309	173	44076	52.13	ug/L		97
95) isopropylbenzene	8.450	105	262761	52.84	ug/L		99
96) cis-1,4-dichloro-2-butene	8.495	88	21478	38.22	ug/L		94
99) bromobenzene	8.774	156	69644	46.59	ug/L		93
100) 1,1,2,2-tetrachloroethane	8.732	83	79244	45.43	ug/L		99
101) trans-1,4-dichloro-2-b...	8.768	53	19405	40.80	ug/L		96
102) 1,2,3-trichloropropane	8.800	110	24334	45.06	ug/L		98
103) n-propylbenzene	8.845	91	304839	51.15	ug/L		97
104) 2-chlorotoluene	8.947	126	62649	47.82	ug/L		96
105) 4-chlorotoluene	9.063	126	63476	49.29	ug/L		99
106) 1,3,5-trimethylbenzene	9.015	105	209093	49.62	ug/L		100
107) tert-butylbenzene	9.326	119	185966	53.21	ug/L		98
108) 1,2,4-trimethylbenzene	9.384	105	208845	49.30	ug/L		99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200848.d
Acq On : 30 Apr 2020 2:44 pm
Operator : edwardd
Sample : JD6583-7msd Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:47:17 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

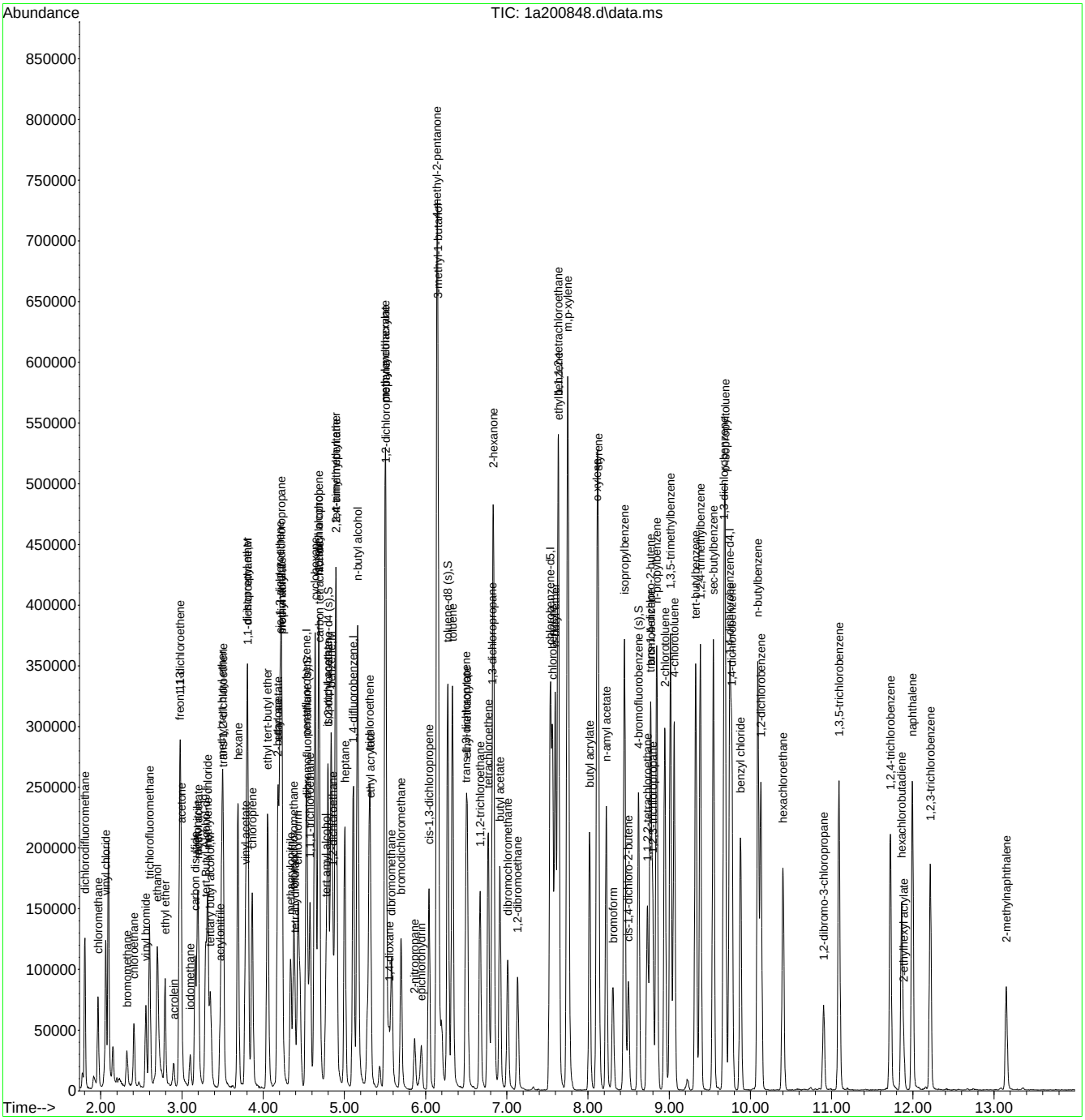
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
109) sec-butylbenzene	9.544	105	268203	57.27	ug/L	98
110) 1,3-dichlorobenzene	9.676	146	124415	49.66	ug/L	98
111) p-isopropyltoluene	9.689	119	227462	57.05	ug/L	97
112) 1,4-dichlorobenzene	9.772	146	125308	49.21	ug/L	96
113) 1,2-dichlorobenzene	10.128	146	117027	49.92	ug/L	97
114) n-butylbenzene	10.090	92	110150	63.41	ug/L	98
115) 1,2-dibromo-3-chloropr...	10.902	157	22390	46.95	ug/L	96
116) 1,3,5-trichlorobenzene	11.091	180	87060	61.13	ug/L	95
117) 1,2,4-trichlorobenzene	11.723	180	73865	60.47	ug/L	92
118) hexachlorobutadiene	11.861	225	32444	66.36	ug/L	99
119) naphthalene	11.993	128	225099	55.14	ug/L	98
120) 1,2,3-trichlorobenzene	12.217	180	64320	57.90	ug/L	95
121) hexachloroethane	10.401	119	38934	62.01	ug/L	92
122) benzyl chloride	9.878	91	157880	57.14	ug/L	98
123) 2-ethylhexyl acrylate	11.887	70	9318	13.67	ug/L	89
124) 2-methylnaphthalene	13.151	142	47605	29.97	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200848.d
Acq On : 30 Apr 2020 2:44 pm
Operator : edwardd
Sample : JD6583-7msd Inst : MSDTEST1A
Misc : MS42871,V1A8656,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

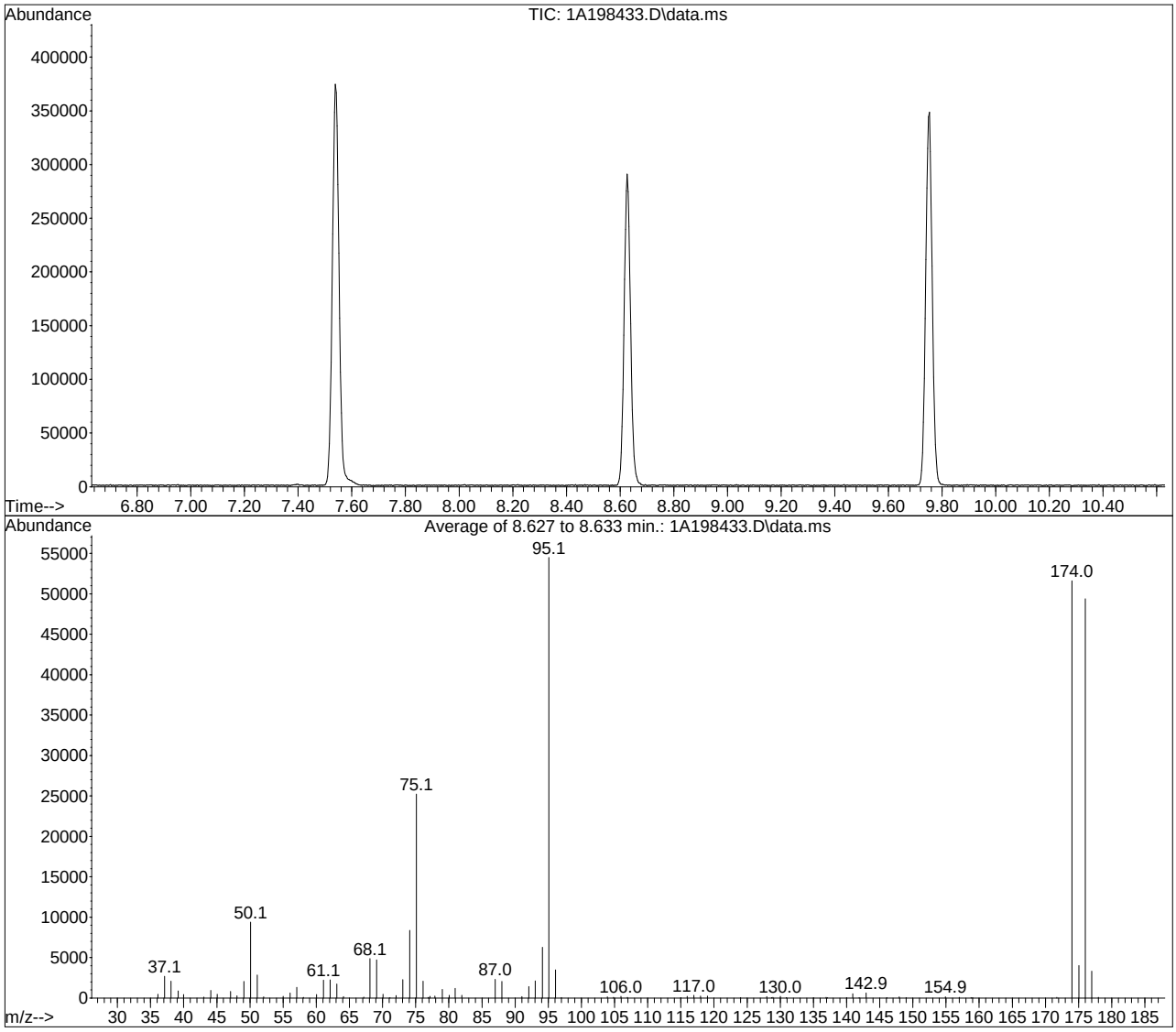
Quant Method : C:\msdchem\1\methods\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:47:17 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



SW-846 Method 8260

Data File : C:\msdchem\1\data\V1A8558\1A198433.D Vial: 6
Acq On : 11 Feb 2020 5:42 pm Operator: mariceld
Sample : bfb Inst : MSDTEST1A
Misc : MS41024,V1A8558,w,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\m1aBFB.m (RTE Integrator)
Title : SW846 Method V8260C and EPA 624.1, column ZB-624 60m x 0.25mm x 1.4 um



Spectrum Information: Average of 8.627 to 8.633 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	17.2	9376	PASS
75	95	30	60	46.3	25213	PASS
95	95	100	100	100.0	54483	PASS
96	95	5	9	6.4	3489	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	94.7	51600	PASS
175	174	5	9	7.8	4020	PASS
176	174	95	101	95.7	49397	PASS
177	176	5	9	6.7	3306	PASS

1A198433.D m1aBFB.m Fri Feb 14 15:43:10 2020 1A

Average of 8.627 to 8.633 min.: 1A198433.D\data.ms
bfb

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.10	449.667	50.10	9376	64.10	168.333	76.90	70.3333
37.10	2668.33	51.10	2855.33	67.15	123.667	77.15	213.333
38.10	2085.33	52.05	149.667	68.10	4861	77.90	255
39.15	886	55.00	195.333	69.10	4711	79.00	1059
40.00	419.667	56.05	631	70.05	453	80.05	349
43.05	110.333	57.05	1304	71.10	38	80.95	1185
44.10	927.333	58.05	71.3333	72.05	318	81.95	324
45.05	450.667	60.05	444.333	73.05	2271	87.00	2302.67
47.05	821.667	61.10	2216.67	74.10	8373	88.00	2058.67
48.05	284.667	62.10	2254	75.10	25213.3	91.00	173.333
49.10	2063	63.10	1720.67	76.10	2090.33	92.05	1417.67

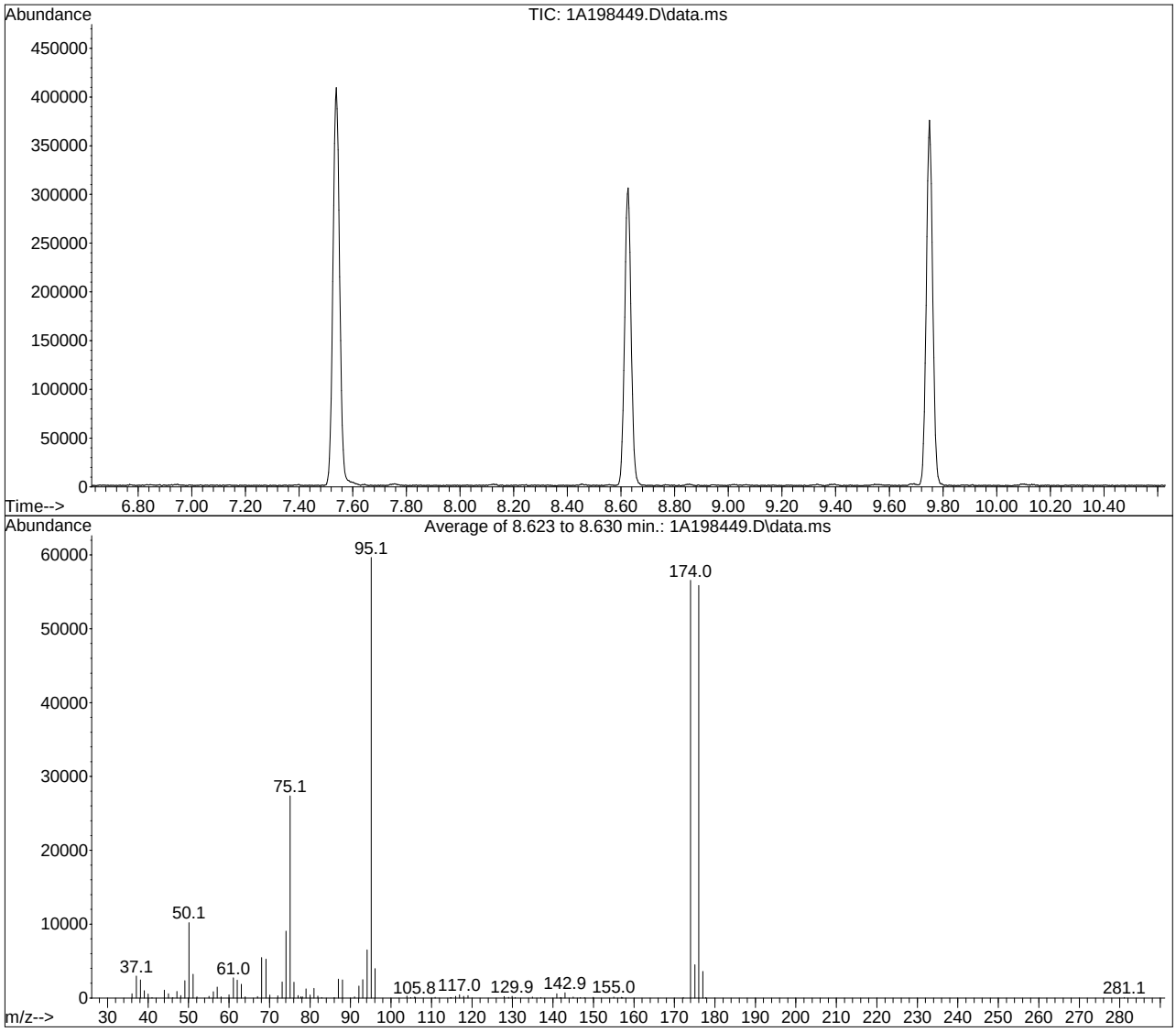
Average of 8.627 to 8.633 min.: 1A198433.D\data.ms
bfb

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
93.05	2119	116.95	327	137.10	39.6667	159.00	36.6667
94.10	6268.67	117.95	233.667	140.00	39.6667	171.70	72.3333
95.10	54482.7	119.00	235.667	140.95	521.667	174.00	51600
96.10	3489.33	124.00	45.6667	141.90	47.6667	175.05	4020.33
97.00	33.6667	127.95	173	142.95	617.333	176.00	49397.3
103.90	149.667	128.70	37.3333	146.10	49.3333	177.00	3306
104.85	89	128.90	83.6667	147.95	144	178.00	75.3333
105.95	196	130.00	195.667	149.00	40.3333		
106.95	77.6667	130.90	60	154.90	130.333		
115.00	36	135.00	35	157.00	77		
115.95	210.667	136.90	82.6667	158.80	58.6667		

SW-846 Method 8260

Data File : C:\msdchem\1\data\V1A8558\1A198449.D Vial: 22
Acq On : 12 Feb 2020 8:24 am Operator: mariceld
Sample : bfb2 Inst : MSDTEST1A
Misc : MS41024,V1A8558,w,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\m1aBFB.m (RTE Integrator)
Title : SW846 Method V8260C and EPA 624.1, column ZB-624 60m x 0.25mm x 1.4 um



Spectrum Information: Average of 8.623 to 8.630 min.

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	17.1	10204	PASS
75	95	30	60	45.9	27360	PASS
95	95	100	100	100.0	59648	PASS
96	95	5	9	6.7	3985	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	94.8	56557	PASS
175	174	5	9	7.9	4495	PASS
176	174	95	101	98.8	55885	PASS
177	176	5	9	6.4	3594	PASS

1A198449.D m1aBFB.m Fri Feb 14 16:19:34 2020 1A

Average of 8.623 to 8.630 min.: 1A198449.D\data.ms
bfb2

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.05	583.333	49.10	2354.33	63.05	1856.67	77.05	317.667
37.10	2979.67	50.10	10203.7	64.00	149	77.75	164
38.10	2441.67	51.10	3224	67.05	178	78.15	171
39.10	993.667	52.05	158	68.05	5468	79.00	1230
40.05	536.667	55.05	226.667	69.10	5280.67	80.00	397.667
41.00	44	56.10	853.667	70.10	390.667	80.95	1304
44.05	1046.67	57.05	1468.33	72.05	282.667	81.95	264.333
45.05	577.333	58.05	143.333	73.10	2191.33	82.90	37
46.10	38.3333	60.00	430.667	74.10	9040.67	86.00	45.3333
47.10	871.667	61.05	2721	75.10	27360	87.00	2555
48.05	335.333	62.05	2427.67	76.05	2130.67	88.00	2449

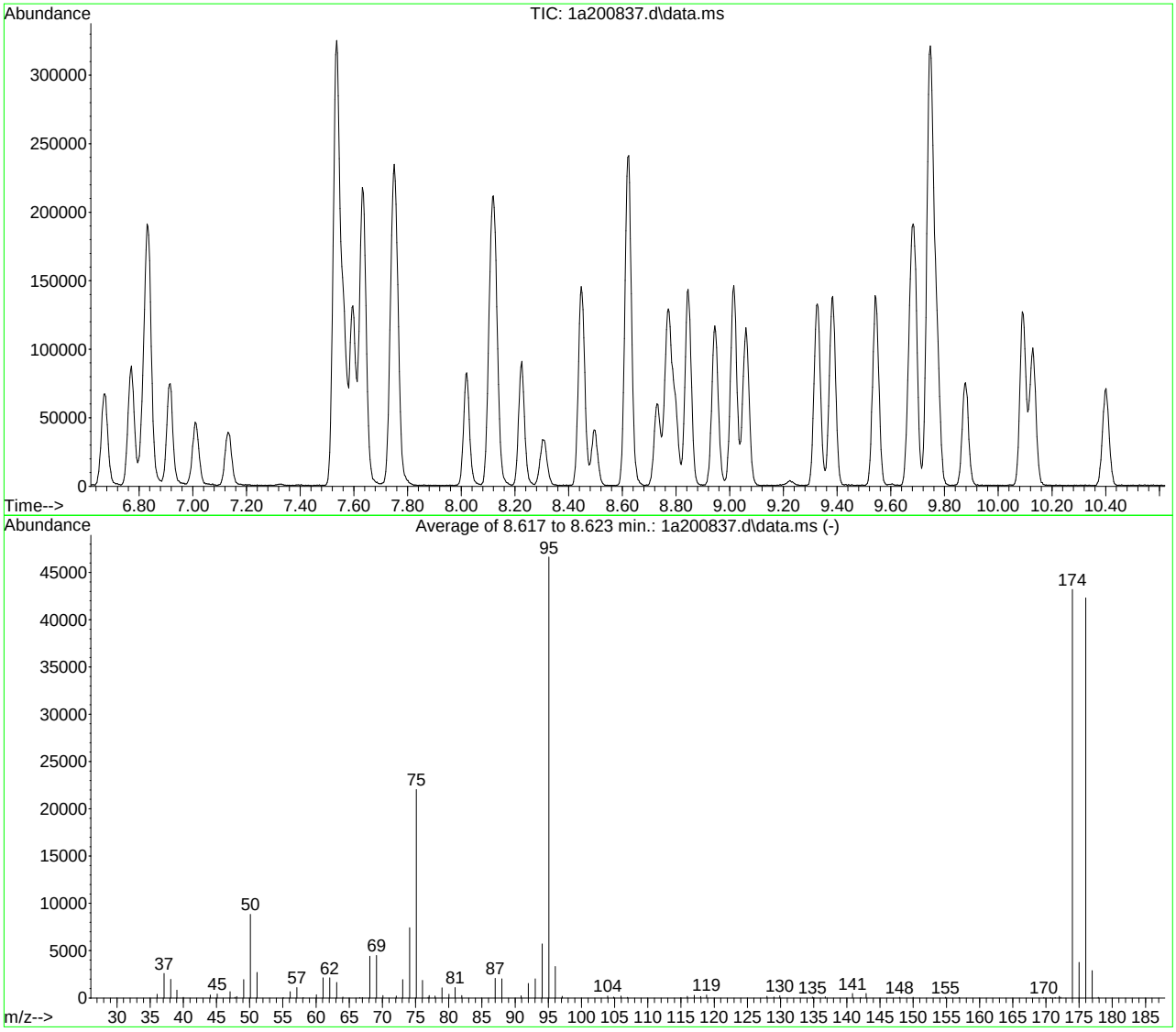
Average of 8.623 to 8.630 min.: 1A198449.D\data.ms
bfb2

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
91.00	171.333	114.70	37.6667	137.00	54	157.20	46
92.05	1624	114.90	44.3333	140.95	559.667	172.20	61
93.05	2488.67	115.95	215	141.80	34	174.00	56557.3
94.10	6520	116.95	426.667	142.00	41.6667	175.05	4495.33
95.10	59648	117.95	235.333	142.95	727.333	176.00	55885.3
96.05	3985	119.00	338	145.00	131	177.00	3594
103.95	248	127.95	185	146.80	37.3333	177.70	48
104.90	58	129.05	77.6667	147.80	43	281.10	45
105.80	132.333	129.90	243.333	149.95	72		
106.00	99.6667	130.70	48.6667	155.00	140.333		
110.90	85.6667	134.95	126.667	156.90	89.6667		

SW-846 Method 8260

Data File : C:\msdchem\1\data\da...20\v1a8656\1a200837.d Vial: 2
Acq On : 30 Apr 2020 10:01 am Operator: edwardd
Sample : bfb Inst : MSDTEST1A
Misc : MS42840,V1A8656,w,,,,1 Multiplr: 1.00
MS Integration Params: rteint.p

Method : C:\msdchem\1\methods\m1abfb.m (RTE Integrator)
Title : SW846 Method V8260C and EPA 624.1, column ZB-624 60m x 0.25mm x 1.4 um



AutoFind: Scans 2145, 2146, 2147; Background Corrected with Scan 2131

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.9	8832	PASS
75	95	30	60	47.3	22032	PASS
95	95	100	100	100.0	46621	PASS
96	95	5	9	7.2	3343	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	120	92.7	43211	PASS
175	174	5	9	8.7	3765	PASS
176	174	95	101	97.9	42320	PASS
177	176	5	9	6.8	2890	PASS

1a200837.d m1abfb.m Fri May 01 00:25:43 2020

Average of 8.617 to 8.623 min.: 1a200837.d\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
36.05	398	50.10	8832	66.60	37	77.05	257
37.10	2584	51.10	2715	67.00	49	77.95	217
38.10	1969	55.10	29	68.10	4418	79.00	1075
39.05	834	56.10	655	69.10	4495	80.05	391
40.00	57	57.10	1101	70.10	271	80.95	1104
44.05	308	58.10	43	72.10	203	81.95	255
45.10	418	60.05	337	73.05	1951	87.00	2074
47.05	660	61.05	2121	74.10	7438	88.00	2018
47.80	74	62.05	2125	75.10	22032	90.90	236
48.05	153	63.10	1636	76.05	1859	92.00	1529
49.10	1943	64.05	105	76.90	76	93.05	2021

Average of 8.617 to 8.623 min.: 1a200837.d\data.ms
bfb
Modified:subtracted

m/z	abund.	m/z	abund.	m/z	abund.	m/z	abund.
94.10	5715	117.95	148	147.95	77	176.00	42320
95.10	46621	118.85	304	150.00	75	176.95	2890
96.05	3343	127.95	180	154.85	72	177.90	66
97.10	166	129.00	85	156.90	43		
103.95	218	129.90	221	169.70	48		
104.85	86	134.80	98	170.70	36		
105.95	208	135.00	41	171.40	48		
106.95	81	136.75	117	172.00	174		
115.00	42	140.85	486	172.20	79		
115.95	174	142.10	41	174.00	43211		
117.00	291	142.90	466	175.00	3765		

Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 02/16/20 23:07

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198434.D
Acq On : 11 Feb 2020 6:13 pm
Operator : mariceld
Sample : IC8558-0.2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 14 15:46:40 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

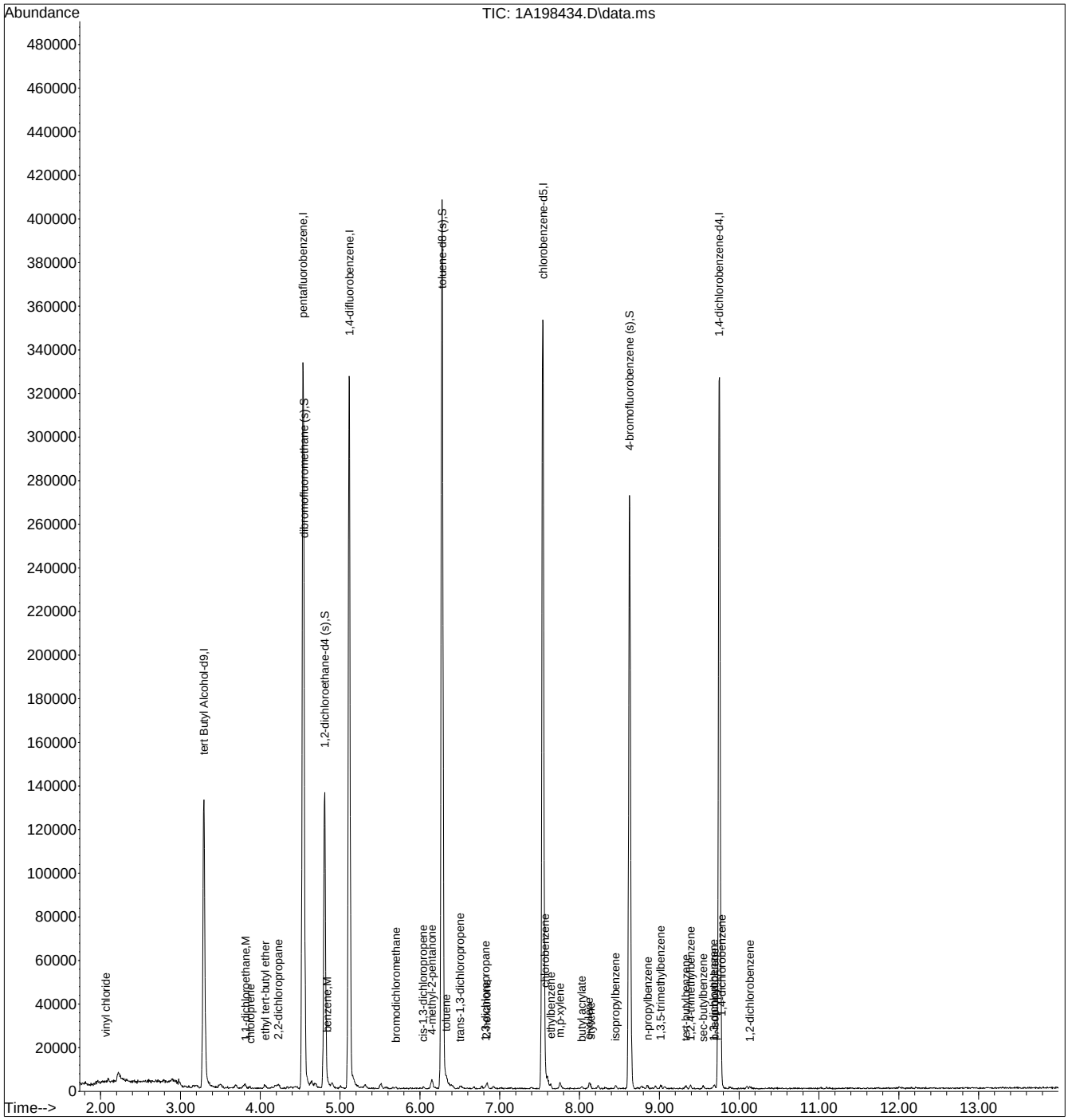
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) tert Butyl Alcohol-d9	3.293	65	134630	500.00	ug/L		0.00
5) pentafluorobenzene	4.535	168	158821	50.00	ug/L		0.00
52) 1,4-difluorobenzene	5.116	114	245100	50.00	ug/L		0.00
73) chlorobenzene-d5	7.542	117	213490	50.00	ug/L		0.00
97) 1,4-dichlorobenzene-d4	9.750	152	93515	50.00	ug/L		0.00
System Monitoring Compounds							
44) dibromofluoromethane (s)	4.548	113	67542	48.80	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 97.60%				
53) 1,2-dichloroethane-d4 (s)	4.808	65	76287	51.48	ug/L		0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 102.96%				
74) toluene-d8 (s)	6.278	98	268072	52.31	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 104.62%				
98) 4-bromofluorobenzene (s)	8.627	95	91460	50.37	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.74%				
Target Compounds							Qvalue
9) vinyl chloride	2.068	62	355	0.20	ug/L	#	51
30) ethyl tert-butyl ether	4.060	59	903	0.21	ug/L		90
32) 1,1-dichloroethane	3.816	63	479	0.21	ug/L	#	51
33) chloroprene	3.877	53	356	0.18	ug/L	#	44
37) 2,2-dichloropropane	4.227	77	358	0.19	ug/L	#	46
57) benzene	4.840	78	1054	0.21	ug/L		82
68) bromodichloromethane	5.700	83	346	0.20	ug/L		70
69) cis-1,3-dichloropropene	6.040	75	422	0.19	ug/L	#	73
71) 4-methyl-2-pentanone	6.149	58	686	0.85	ug/L	#	78
75) toluene	6.329	92	611	0.20	ug/L	#	66
76) trans-1,3-dichloropropene	6.502	75	412	0.21	ug/L	#	75
79) 2-hexanone	6.836	58	730	0.90	ug/L		81
81) 1,3-dichloropropane	6.820	76	457	0.23	ug/L		87
86) chlorobenzene	7.568	112	882	0.25	ug/L		95
88) ethylbenzene	7.641	91	1311	0.23	ug/L		86
89) m,p-xylene	7.754	106	986	0.45	ug/L	#	71
90) o-xylene	8.116	106	501	0.23	ug/L	#	38
91) butyl acrylate	8.026	55	617	0.20	ug/L		79
93) styrene	8.139	104	784	0.21	ug/L		86
95) isopropylbenzene	8.450	105	1312	0.24	ug/L		87
103) n-propylbenzene	8.854	91	1371	0.23	ug/L		93
106) 1,3,5-trimethylbenzene	9.015	105	946	0.23	ug/L		86
107) tert-butylbenzene	9.332	119	609	0.18	ug/L		77
108) 1,2,4-trimethylbenzene	9.393	105	1009	0.25	ug/L		71
109) sec-butylbenzene	9.547	105	1015	0.22	ug/L		84
110) 1,3-dichlorobenzene	9.682	146	580	0.23	ug/L	#	64
111) p-isopropyltoluene	9.692	119	885	0.22	ug/L		85
112) 1,4-dichlorobenzene	9.782	146	592m	0.24	ug/L		
113) 1,2-dichlorobenzene	10.135	146	484	0.20	ug/L		69

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198434.D
Acq On : 11 Feb 2020 6:13 pm
Operator : mariceld
Sample : IC8558-0.2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 14 15:46:40 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



Manual Integration Approval Summary

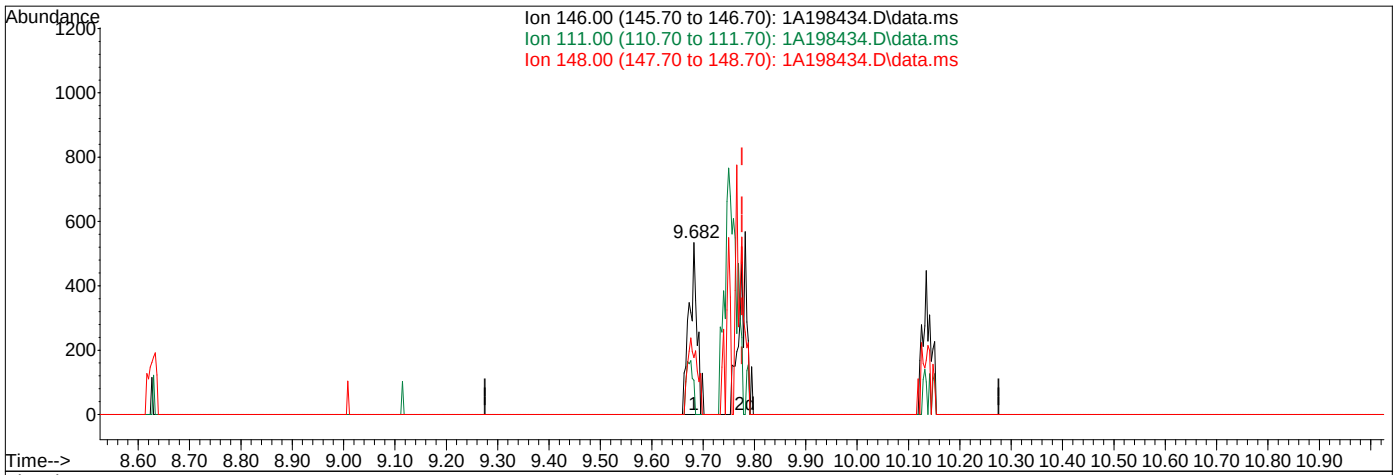
Sample Number:	V1A8558-IC8558	**Method:**	SW846 8260C
Lab FileID:	1A198434.D	**Analyst approved:**	02/14/20 16:54 Robert Szot
Injection Time:	02/11/20 18:13	**Supervisor approved:**	02/16/20 23:07 Kanya Veerawat

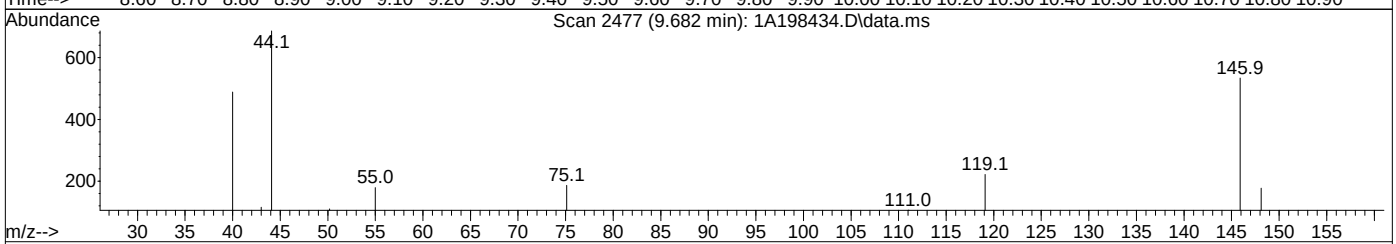
Parameter	CAS	Sig#	R.T. (min.)	Reason
1,4-Dichlorobenzene	106-46-7		9.78	Missed peak

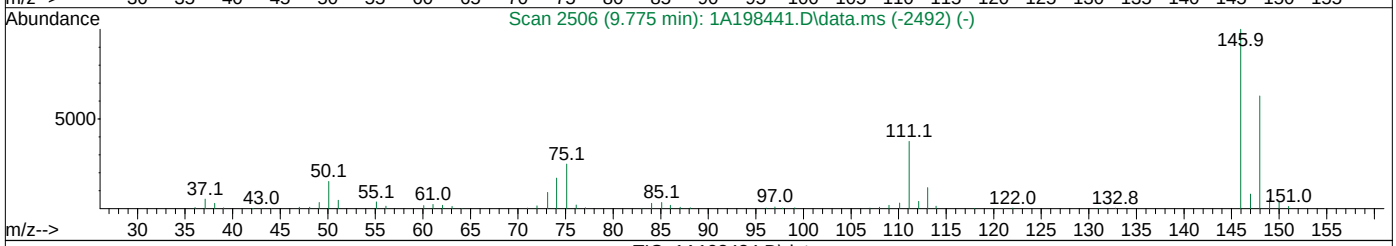
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198434.D
Acq On : 11 Feb 2020 6:13 pm
Operator : mariceld
Sample : IC8558-0.2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 12 08:03:10 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration







TIC: 1A198434.D\data.ms

(112) 1,4-dichlorobenzene

9.682min (-0.093) 0.23ug/L

response 580

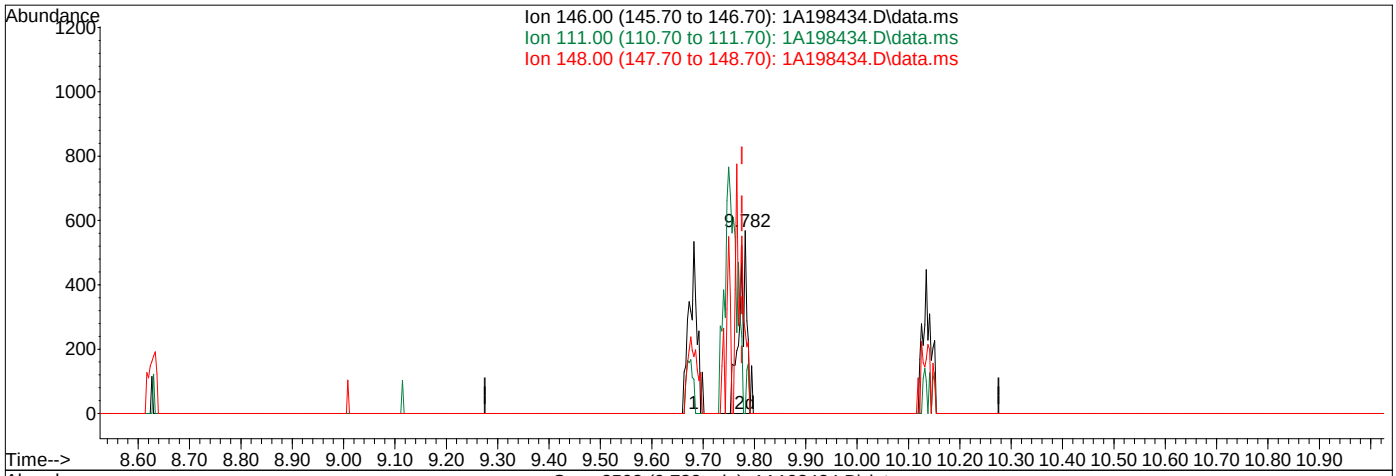
Ion	Exp%	Act%
146.00	100	100
111.00	37.50	19.85
148.00	62.70	33.15
0.00	0.00	0.00

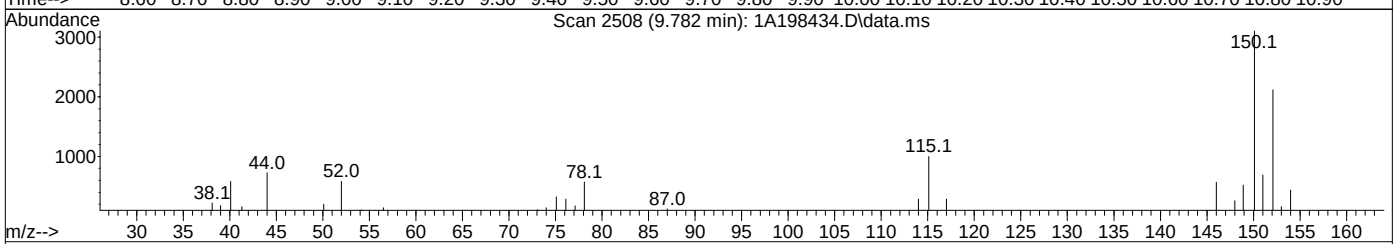
1A198434.D edits: 1,4-dichlorobenzene

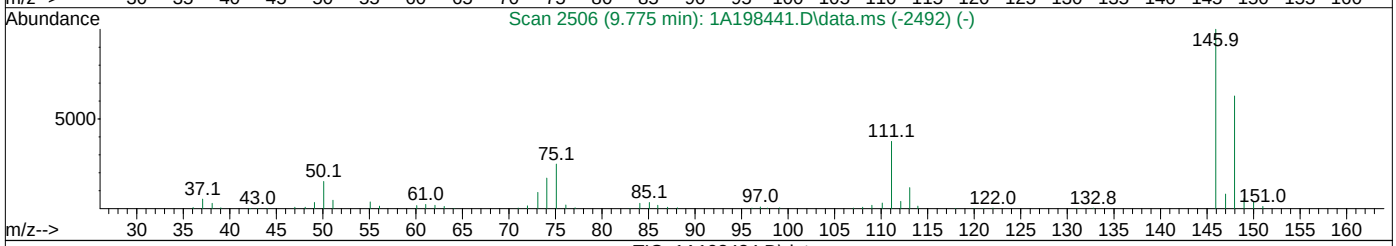
Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198434.D
Acq On : 11 Feb 2020 6:13 pm
Operator : mariceld
Sample : IC8558-0.2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 7 Sample Multiplier: 1

Quant Time: Feb 14 15:46:40 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration







TIC: 1A198434.D\data.ms

(112) 1,4-dichlorobenzene

9.782min (+0.006) 0.24ug/L m

response 592

Ion	Exp%	Act%
146.00	100	100
111.00	37.50	0.00#
148.00	62.70	45.07
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198435.D
Acq On : 11 Feb 2020 6:38 pm
Operator : mariceld
Sample : IC8558-0.5
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 14 15:54:38 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	127316	500.00	ug/L	0.00
5) pentafluorobenzene	4.535	168	153038	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	237895	50.00	ug/L	0.00
73) chlorobenzene-d5	7.542	117	211185	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.753	152	92900	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.548	113	66220	50.20	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.40%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	74280	50.00	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 100.00%			
74) toluene-d8 (s)	6.278	98	260961	50.82	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 101.64%			
98) 4-bromofluorobenzene (s)	8.627	95	91643	50.43	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.86%			
Target Compounds						Qvalue
4) tertiary butyl alcohol	3.351	59	704	2.25	ug/L	84
6) chlorodifluoromethane	1.817	51	927	0.57	ug/L	87
7) dichlorodifluoromethane	1.801	85	759	0.52	ug/L	87
9) vinyl chloride	2.064	62	817	0.51	ug/L	70
11) chloroethane	2.414	64	363	0.46	ug/L	49
12) vinyl bromide	2.555	106	469	0.52	ug/L	95
13) trichlorofluoromethane	2.603	101	917	0.52	ug/L	78
17) freon 113	2.982	151	422	0.42	ug/L #	51
18) 1,1-dichloroethene	2.985	96	535	0.46	ug/L	81
24) methylene chloride	3.316	84	733	0.56	ug/L #	72
26) methyl tert butyl ether	3.499	73	1960	0.49	ug/L	77
27) trans-1,2-dichloroethene	3.512	96	554	0.46	ug/L #	70
29) di-isopropyl ether	3.810	45	2408	0.52	ug/L	88
30) ethyl tert-butyl ether	4.057	59	2041	0.48	ug/L	90
31) 2-butanone	4.189	72	399	1.49	ug/L #	65
32) 1,1-dichloroethane	3.813	63	1049	0.47	ug/L	96
33) chloroprene	3.868	53	997	0.51	ug/L	85
34) acrylonitrile	3.470	53	384	0.51	ug/L #	53
37) 2,2-dichloropropane	4.224	77	981	0.54	ug/L	93
38) cis-1,2-dichloroethene	4.208	96	837	0.57	ug/L #	67
39) propionitrile	4.237	54	1501	5.22	ug/L	87
43) chloroform	4.432	83	1107	0.50	ug/L	91
46) 1,1,1-trichloroethane	4.580	97	945	0.48	ug/L	74
47) cyclohexane	4.641	84	1132	0.59	ug/L	86
48) 1,1-dichloropropene	4.686	75	912	0.52	ug/L	82
49) carbon tetrachloride	4.702	117	808	0.48	ug/L #	72
54) tert-amyl methyl ether	4.901	73	2186	0.53	ug/L	94
55) 2,2,4-trimethylpentane	4.898	57	1527	0.51	ug/L	94
56) n-butyl alcohol	5.161	56	2089	24.97	ug/L	94
57) benzene	4.840	78	2686	0.53	ug/L	96
59) 1,2-dichloroethane	4.862	62	1093	0.60	ug/L	80
60) trichloroethene	5.309	95	633	0.49	ug/L	90
66) methylcyclohexane	5.504	83	863	0.46	ug/L	87
67) dibromomethane	5.584	93	345	0.44	ug/L	75
68) bromodichloromethane	5.703	83	934	0.54	ug/L #	60
69) cis-1,3-dichloropropene	6.050	75	1012	0.48	ug/L	82
71) 4-methyl-2-pentanone	6.146	58	1496	1.86	ug/L #	83
75) toluene	6.335	92	1450	0.47	ug/L	94
76) trans-1,3-dichloropropene	6.502	75	898	0.47	ug/L	90
77) ethyl methacrylate	6.515	69	1088	0.54	ug/L	90

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198435.D
Acq On : 11 Feb 2020 6:38 pm
Operator : mariceld
Sample : IC8558-0.5
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 14 15:54:38 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

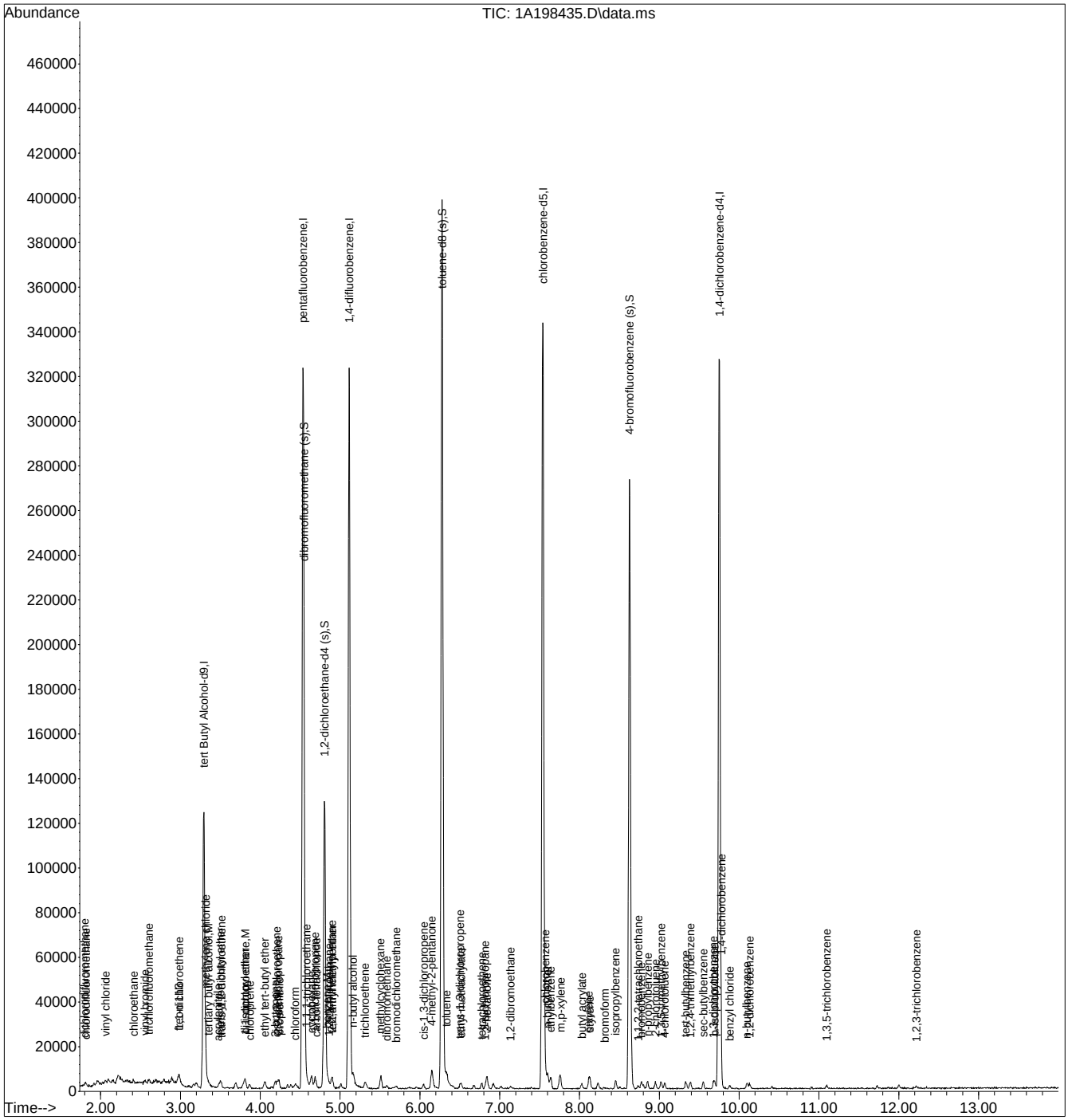
	Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
79)	2-hexanone	6.839	58	1694	2.03	ug/L	#	70
80)	tetrachloroethene	6.775	166	781	0.53	ug/L	#	56
81)	1,3-dichloropropane	6.817	76	1006	0.50	ug/L		87
84)	1,2-dibromoethane	7.134	107	694	0.48	ug/L		92
85)	n-butyl ether	7.600	57	2819	0.51	ug/L		91
86)	chlorobenzene	7.571	112	1689	0.48	ug/L		87
88)	ethylbenzene	7.638	91	3012	0.51	ug/L		91
89)	m,p-xylene	7.763	106	2157	0.96	ug/L		84
90)	o-xylene	8.113	106	1193	0.53	ug/L	#	73
91)	butyl acrylate	8.030	55	1436	0.48	ug/L		94
93)	styrene	8.129	104	1779	0.47	ug/L		94
94)	bromoform	8.315	173	471	0.50	ug/L	#	36
95)	isopropylbenzene	8.450	105	2659	0.48	ug/L		91
99)	bromobenzene	8.771	156	769	0.51	ug/L		89
100)	1,1,2,2-tetrachloroethane	8.736	83	891	0.51	ug/L		80
103)	n-propylbenzene	8.854	91	2795	0.46	ug/L		85
104)	2-chlorotoluene	8.951	126	630	0.48	ug/L		90
105)	4-chlorotoluene	9.066	126	607	0.47	ug/L	#	61
106)	1,3,5-trimethylbenzene	9.021	105	2068	0.49	ug/L		76
107)	tert-butylbenzene	9.329	119	1871	0.53	ug/L		90
108)	1,2,4-trimethylbenzene	9.387	105	2091	0.49	ug/L		87
109)	sec-butylbenzene	9.551	105	2197	0.46	ug/L		84
110)	1,3-dichlorobenzene	9.679	146	1135	0.45	ug/L		87
111)	p-isopropyltoluene	9.692	119	1919	0.48	ug/L		95
112)	1,4-dichlorobenzene	9.775	146	1296	0.51	ug/L	#	59
113)	1,2-dichlorobenzene	10.128	146	1169	0.49	ug/L		91
114)	n-butylbenzene	10.096	92	815	0.46	ug/L		82
116)	1,3,5-trichlorobenzene	11.094	180	617	0.43	ug/L		91
120)	1,2,3-trichlorobenzene	12.220	180	560	0.50	ug/L	#	65
122)	benzyl chloride	9.881	91	1176	0.41	ug/L		67

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198435.D
Acq On : 11 Feb 2020 6:38 pm
Operator : mariceld
Sample : IC8558-0.5
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 8 Sample Multiplier: 1

Quant Time: Feb 14 15:54:38 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198436.D
Acq On : 11 Feb 2020 7:03 pm
Operator : mariceld
Sample : IC8558-1
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Feb 14 15:58:59 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) tert Butyl Alcohol-d9	3.290	65	127323	500.00	ug/L		0.00
5) pentafluorobenzene	4.532	168	153577	50.00	ug/L		0.00
52) 1,4-difluorobenzene	5.113	114	237445	50.00	ug/L		0.00
73) chlorobenzene-d5	7.542	117	212298	50.00	ug/L		0.00
97) 1,4-dichlorobenzene-d4	9.753	152	93504	50.00	ug/L		0.00
System Monitoring Compounds							
44) dibromofluoromethane (s)	4.545	113	66125	49.95	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 99.90%				
53) 1,2-dichloroethane-d4 (s)	4.808	65	74414	50.18	ug/L		0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 100.36%				
74) toluene-d8 (s)	6.278	98	262492	50.85	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 101.70%				
98) 4-bromofluorobenzene (s)	8.623	95	92182	50.40	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.80%				
Target Compounds							Qvalue
2) 1,4-dioxane	5.549	88	664	23.93	ug/L		76
3) ethanol	2.690	45	4018	125.42	ug/L		91
4) tertiary butyl alcohol	3.354	59	1804	5.76	ug/L		69
6) chlorodifluoromethane	1.814	51	1798	1.11	ug/L		95
7) dichlorodifluoromethane	1.801	85	1411	0.97	ug/L		85
8) chloromethane	1.962	50	1688	1.08	ug/L		81
9) vinyl chloride	2.058	62	1559	0.98	ug/L		94
10) bromomethane	2.331	94	568	0.80	ug/L		79
11) chloroethane	2.414	64	812	1.02	ug/L	#	43
12) vinyl bromide	2.562	106	887	0.99	ug/L	#	60
13) trichlorofluoromethane	2.607	101	1571	0.88	ug/L		77
17) freon 113	2.966	151	1087	1.07	ug/L	#	77
18) 1,1-dichloroethene	2.982	96	1381	1.18	ug/L	#	66
19) acetone	2.989	58	909	4.62	ug/L	#	68
21) iodomethane	3.098	142	969	0.81	ug/L		81
23) carbon disulfide	3.165	76	3535	1.16	ug/L		79
24) methylene chloride	3.319	84	1601	1.21	ug/L	#	66
26) methyl tert butyl ether	3.499	73	4328	1.07	ug/L		94
27) trans-1,2-dichloroethene	3.512	96	1298	1.07	ug/L		81
28) hexane	3.688	57	2119	1.17	ug/L		83
29) di-isopropyl ether	3.807	45	5299	1.15	ug/L		96
30) ethyl tert-butyl ether	4.054	59	4632	1.08	ug/L		95
31) 2-butanone	4.182	72	1334	4.97	ug/L	#	55
32) 1,1-dichloroethane	3.817	63	2548	1.13	ug/L		83
33) chloroprene	3.868	53	2177	1.12	ug/L		92
34) acrylonitrile	3.470	53	772	1.02	ug/L		92
37) 2,2-dichloropropane	4.227	77	2147	1.17	ug/L		88
38) cis-1,2-dichloroethene	4.205	96	1759	1.20	ug/L		80
39) propionitrile	4.231	54	3032	10.51	ug/L		90
41) bromochloromethane	4.385	128	698	1.03	ug/L		88
43) chloroform	4.433	83	2573	1.16	ug/L		98
45) methacrylonitrile	4.349	67	905	1.16	ug/L	#	62
46) 1,1,1-trichloroethane	4.587	97	2177	1.11	ug/L		71
47) cyclohexane	4.641	84	1880	0.97	ug/L		86
48) 1,1-dichloropropene	4.686	75	1810	1.04	ug/L		91
49) carbon tetrachloride	4.689	117	1870	1.11	ug/L		87
50) isopropyl acetate	4.798	87	456	1.10	ug/L	#	43
54) tert-amyl methyl ether	4.898	73	4618	1.12	ug/L		91
55) 2,2,4-trimethylpentane	4.904	57	3514	1.17	ug/L		88
56) n-butyl alcohol	5.171	56	4480	53.66	ug/L		87

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198436.D
Acq On : 11 Feb 2020 7:03 pm
Operator : mariceld
Sample : IC8558-1
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Feb 14 15:58:59 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc Units		Dev(Min)
57) benzene	4.840	78	5746	1.13 ug/L		99
58) heptane	5.004	57	958	1.25 ug/L	#	76
59) 1,2-dichloroethane	4.863	62	2119	1.17 ug/L		92
60) trichloroethene	5.309	95	1456	1.13 ug/L	#	70
61) ethyl acrylate	5.331	55	2659	1.07 ug/L		96
64) methyl methacrylate	5.511	100	518	1.07 ug/L	#	74
65) 1,2-dichloropropane	5.511	63	1425	1.09 ug/L		81
66) methylcyclohexane	5.511	83	2127	1.13 ug/L		88
67) dibromomethane	5.581	93	797	1.02 ug/L		87
68) bromodichloromethane	5.703	83	1848	1.07 ug/L		93
69) cis-1,3-dichloropropene	6.047	75	2341	1.11 ug/L		97
70) epichlorohydrin	5.954	57	1276	5.68 ug/L		90
71) 4-methyl-2-pentanone	6.140	58	3684	4.59 ug/L	#	71
72) 3-methyl-1-butanol	6.156	70	1532	19.73 ug/L		95
75) toluene	6.336	92	3525	1.14 ug/L	#	71
76) trans-1,3-dichloropropene	6.502	75	2018	1.06 ug/L		90
77) ethyl methacrylate	6.515	69	2210	1.09 ug/L		94
78) 1,1,2-trichloroethane	6.679	83	1166	1.16 ug/L		88
79) 2-hexanone	6.843	58	3908	4.67 ug/L		89
80) tetrachloroethene	6.775	166	1689	1.14 ug/L		88
81) 1,3-dichloropropane	6.820	76	2296	1.13 ug/L		86
83) dibromochloromethane	7.006	129	1467	1.12 ug/L	#	69
84) 1,2-dibromoethane	7.141	107	1599	1.11 ug/L		96
85) n-butyl ether	7.600	57	6226	1.12 ug/L		88
86) chlorobenzene	7.565	112	3665	1.04 ug/L		94
87) 1,1,1,2-tetrachloroethane	7.638	131	1394	1.10 ug/L		84
88) ethylbenzene	7.638	91	6561	1.11 ug/L		98
89) m,p-xylene	7.754	106	5113	2.27 ug/L		99
90) o-xylene	8.123	106	2515	1.12 ug/L	#	57
91) butyl acrylate	8.030	55	3325	1.10 ug/L		89
92) n-amyl acetate	8.229	70	1199	1.06 ug/L		83
93) styrene	8.129	104	4366	1.15 ug/L		92
94) bromoform	8.309	173	957	1.01 ug/L		77
95) isopropylbenzene	8.457	105	6162	1.11 ug/L		94
99) bromobenzene	8.774	156	1593	1.05 ug/L		95
100) 1,1,2,2-tetrachloroethane	8.742	83	2026	1.14 ug/L		94
102) 1,2,3-trichloropropane	8.803	110	586	1.07 ug/L		65
103) n-propylbenzene	8.848	91	6453	1.07 ug/L		94
104) 2-chlorotoluene	8.957	126	1457	1.09 ug/L	#	48
105) 4-chlorotoluene	9.060	126	1479	1.13 ug/L	#	60
106) 1,3,5-trimethylbenzene	9.018	105	4941	1.15 ug/L		96
107) tert-butylbenzene	9.333	119	3906	1.10 ug/L		86
108) 1,2,4-trimethylbenzene	9.387	105	4960	1.15 ug/L		93
109) sec-butylbenzene	9.551	105	5326	1.12 ug/L		92
110) 1,3-dichlorobenzene	9.676	146	2776	1.09 ug/L		99
111) p-isopropyltoluene	9.692	119	4366	1.08 ug/L		94
112) 1,4-dichlorobenzene	9.775	146	2828	1.11 ug/L		95
113) 1,2-dichlorobenzene	10.132	146	2578	1.08 ug/L		96
114) n-butylbenzene	10.096	92	1921	1.09 ug/L		94
115) 1,2-dibromo-3-chloropr...	10.908	157	450	0.93 ug/L		73
116) 1,3,5-trichlorobenzene	11.098	180	1516	1.05 ug/L		83
117) 1,2,4-trichlorobenzene	11.730	180	1257	1.01 ug/L		79
118) hexachlorobutadiene	11.871	225	533	1.07 ug/L		84
119) naphthalene	12.002	128	3994	0.96 ug/L		93
120) 1,2,3-trichlorobenzene	12.221	180	1262	1.12 ug/L		93
121) hexachloroethane	10.404	119	608	0.95 ug/L	#	66
122) benzyl chloride	9.881	91	2887	1.01 ug/L		97

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198436.D
Acq On : 11 Feb 2020 7:03 pm
Operator : mariceld
Sample : IC8558-1
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Feb 14 15:58:59 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

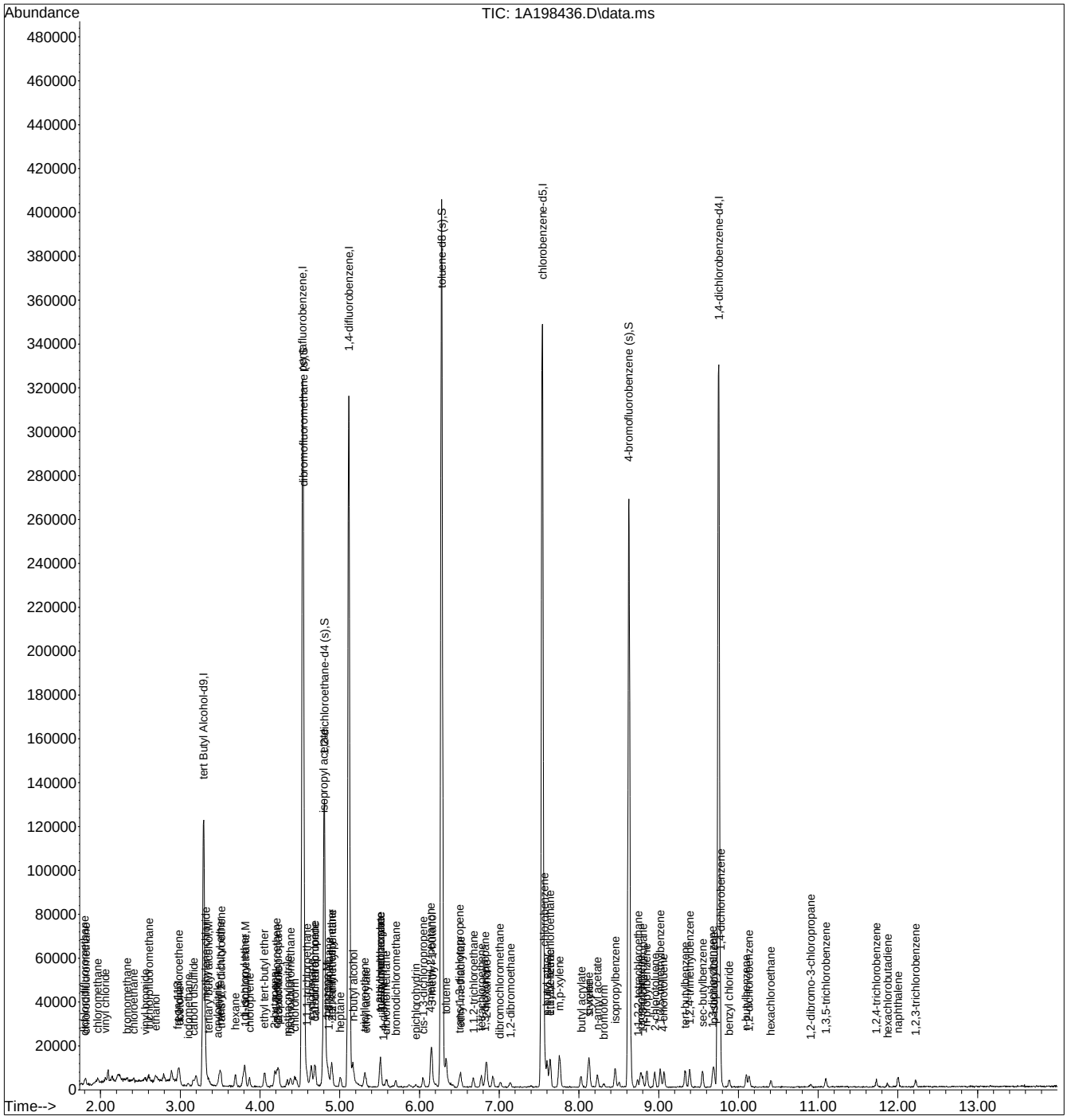
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198436.D
Acq On : 11 Feb 2020 7:03 pm
Operator : mariceld
Sample : IC8558-1
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 9 Sample Multiplier: 1

Quant Time: Feb 14 15:58:59 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198437.D
Acq On : 11 Feb 2020 7:28 pm
Operator : mariceld
Sample : IC8558-2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Feb 14 16:00:55 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	128218	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	152695	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	236369	50.00	ug/L	0.00
73) chlorobenzene-d5	7.539	117	212634	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.750	152	94708	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	65997	50.14	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.28%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	75009	50.82	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 101.64%			
74) toluene-d8 (s)	6.278	98	259033	50.10	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.20%			
98) 4-bromofluorobenzene (s)	8.626	95	91196	49.22	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 98.44%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.549	88	1314	47.03	ug/L	88
3) ethanol	2.690	45	7262	225.10	ug/L	100
4) tertiary butyl alcohol	3.348	59	3210	10.18	ug/L	89
6) chlorodifluoromethane	1.814	51	3047	1.89	ug/L	93
7) dichlorodifluoromethane	1.795	85	2677	1.85	ug/L	83
8) chloromethane	1.962	50	3160	2.04	ug/L	94
9) vinyl chloride	2.058	62	2848	1.79	ug/L	95
10) bromomethane	2.327	94	1592	2.25	ug/L	95
11) chloroethane	2.408	64	1588	2.01	ug/L	83
12) vinyl bromide	2.555	106	1814	2.03	ug/L #	77
13) trichlorofluoromethane	2.600	101	3421	1.93	ug/L	95
14) ethyl ether	2.789	74	1506	2.07	ug/L #	60
15) 2-chloropropane	2.889	43	4432	2.13	ug/L	90
17) freon 113	2.969	151	1948	1.93	ug/L	96
18) 1,1-dichloroethene	2.976	96	2306	1.98	ug/L	90
19) acetone	2.992	58	1597	8.17	ug/L #	77
20) acetonitrile	3.194	40	3822	23.22	ug/L #	80
21) iodomethane	3.098	142	1963	1.65	ug/L	97
23) carbon disulfide	3.162	76	5843	1.94	ug/L	94
24) methylene chloride	3.316	84	2545	1.94	ug/L	91
25) methyl acetate	3.203	74	761	2.18	ug/L #	69
26) methyl tert butyl ether	3.492	73	7827	1.95	ug/L	100
27) trans-1,2-dichloroethene	3.505	96	2502	2.07	ug/L	91
28) hexane	3.691	57	3650	2.03	ug/L	92
29) di-isopropyl ether	3.803	45	9056	1.97	ug/L	93
30) ethyl tert-butyl ether	4.054	59	8327	1.96	ug/L	95
31) 2-butanone	4.182	72	2197	8.23	ug/L #	65
32) 1,1-dichloroethane	3.810	63	4405	1.96	ug/L	90
33) chloroprene	3.864	53	3743	1.94	ug/L	94
34) acrylonitrile	3.473	53	1497	1.98	ug/L	93
35) vinyl acetate	3.784	86	755	2.13	ug/L #	6
36) ethyl acetate	4.189	45	773	2.14	ug/L #	64
37) 2,2-dichloropropane	4.221	77	3703	2.03	ug/L	92
38) cis-1,2-dichloroethene	4.208	96	2886	1.98	ug/L	88
39) propionitrile	4.230	54	6075	21.17	ug/L	85
40) methyl acrylate	4.230	85	584	1.98	ug/L #	47
41) bromochloromethane	4.378	128	1229	1.83	ug/L	84
42) tetrahydrofuran	4.394	72	512	1.78	ug/L #	80
43) chloroform	4.429	83	4326	1.96	ug/L	88
45) methacrylonitrile	4.339	67	1534	1.97	ug/L	94

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198437.D
Acq On : 11 Feb 2020 7:28 pm
Operator : mariceld
Sample : IC8558-2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Feb 14 16:00:55 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
46) 1,1,1-trichloroethane	4.580	97	3873	1.98	ug/L		93
47) cyclohexane	4.638	84	3801	1.97	ug/L		85
48) 1,1-dichloropropene	4.686	75	3557	2.05	ug/L		88
49) carbon tetrachloride	4.696	117	3321	1.98	ug/L		88
50) isopropyl acetate	4.798	87	836	2.04	ug/L	#	50
51) tert amyl alcohol	4.776	55	1295	11.38	ug/L	#	88
54) tert-amyl methyl ether	4.891	73	8231	2.01	ug/L		97
55) 2,2,4-trimethylpentane	4.901	57	5740	1.93	ug/L		96
56) n-butyl alcohol	5.161	56	8635	103.89	ug/L		96
57) benzene	4.837	78	9792	1.94	ug/L		99
58) heptane	5.007	57	1560	2.05	ug/L	#	82
59) 1,2-dichloroethane	4.859	62	3562	1.98	ug/L		93
60) trichloroethene	5.312	95	2489	1.95	ug/L		94
61) ethyl acrylate	5.328	55	4971	2.02	ug/L		97
64) methyl methacrylate	5.507	100	937	1.94	ug/L	#	87
65) 1,2-dichloropropane	5.507	63	2525	1.94	ug/L		87
66) methylcyclohexane	5.504	83	3657	1.95	ug/L		97
67) dibromomethane	5.584	93	1502	1.94	ug/L		78
68) bromodichloromethane	5.703	83	3345	1.95	ug/L		99
69) cis-1,3-dichloropropene	6.050	75	3823	1.83	ug/L		98
70) epichlorohydrin	5.947	57	2106	9.41	ug/L		95
71) 4-methyl-2-pentanone	6.146	58	6382	7.98	ug/L		91
72) 3-methyl-1-butanol	6.152	70	2840	36.74	ug/L	#	79
75) toluene	6.332	92	6281	2.02	ug/L		98
76) trans-1,3-dichloropropene	6.502	75	3696	1.93	ug/L		95
77) ethyl methacrylate	6.518	69	4081	2.00	ug/L		92
78) 1,1,2-trichloroethane	6.672	83	1941	1.93	ug/L		96
79) 2-hexanone	6.839	58	6543	7.80	ug/L		94
80) tetrachloroethene	6.778	166	2705	1.83	ug/L		92
81) 1,3-dichloropropane	6.826	76	3919	1.92	ug/L		87
82) butyl acetate	6.926	56	2571	2.10	ug/L	#	75
83) dibromochloromethane	7.012	129	2475	1.89	ug/L		85
84) 1,2-dibromoethane	7.138	107	2813	1.95	ug/L		93
85) n-butyl ether	7.603	57	11053	1.98	ug/L		100
86) chlorobenzene	7.571	112	6674	1.88	ug/L		98
87) 1,1,1,2-tetrachloroethane	7.638	131	2677	2.11	ug/L	#	73
88) ethylbenzene	7.638	91	11726	1.98	ug/L		97
89) m,p-xylene	7.757	106	8886	3.93	ug/L		89
90) o-xylene	8.113	106	4256	1.89	ug/L		84
91) butyl acrylate	8.030	55	5885	1.95	ug/L		92
92) n-amyl acetate	8.235	70	2202	1.95	ug/L		90
93) styrene	8.129	104	7321	1.93	ug/L		91
94) bromoform	8.312	173	1879	1.98	ug/L		89
95) isopropylbenzene	8.456	105	10968	1.96	ug/L		93
99) bromobenzene	8.771	156	3126	2.03	ug/L	#	69
100) 1,1,2,2-tetrachloroethane	8.736	83	3421	1.91	ug/L		92
102) 1,2,3-trichloropropane	8.806	110	1057	1.90	ug/L		85
103) n-propylbenzene	8.851	91	11952	1.95	ug/L		96
104) 2-chlorotoluene	8.951	126	2575	1.91	ug/L		97
105) 4-chlorotoluene	9.063	126	2509	1.89	ug/L		88
106) 1,3,5-trimethylbenzene	9.021	105	8429	1.94	ug/L		93
107) tert-butylbenzene	9.332	119	7292	2.03	ug/L		96
108) 1,2,4-trimethylbenzene	9.393	105	8248	1.89	ug/L		97
109) sec-butylbenzene	9.551	105	9005	1.87	ug/L		97
110) 1,3-dichlorobenzene	9.682	146	5023	1.95	ug/L		97
111) p-isopropyltoluene	9.695	119	7834	1.91	ug/L		96
112) 1,4-dichlorobenzene	9.778	146	5049	1.95	ug/L		91
113) 1,2-dichlorobenzene	10.135	146	4782	1.98	ug/L		90

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198437.D
Acq On : 11 Feb 2020 7:28 pm
Operator : mariceld
Sample : IC8558-2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Feb 14 16:00:55 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration

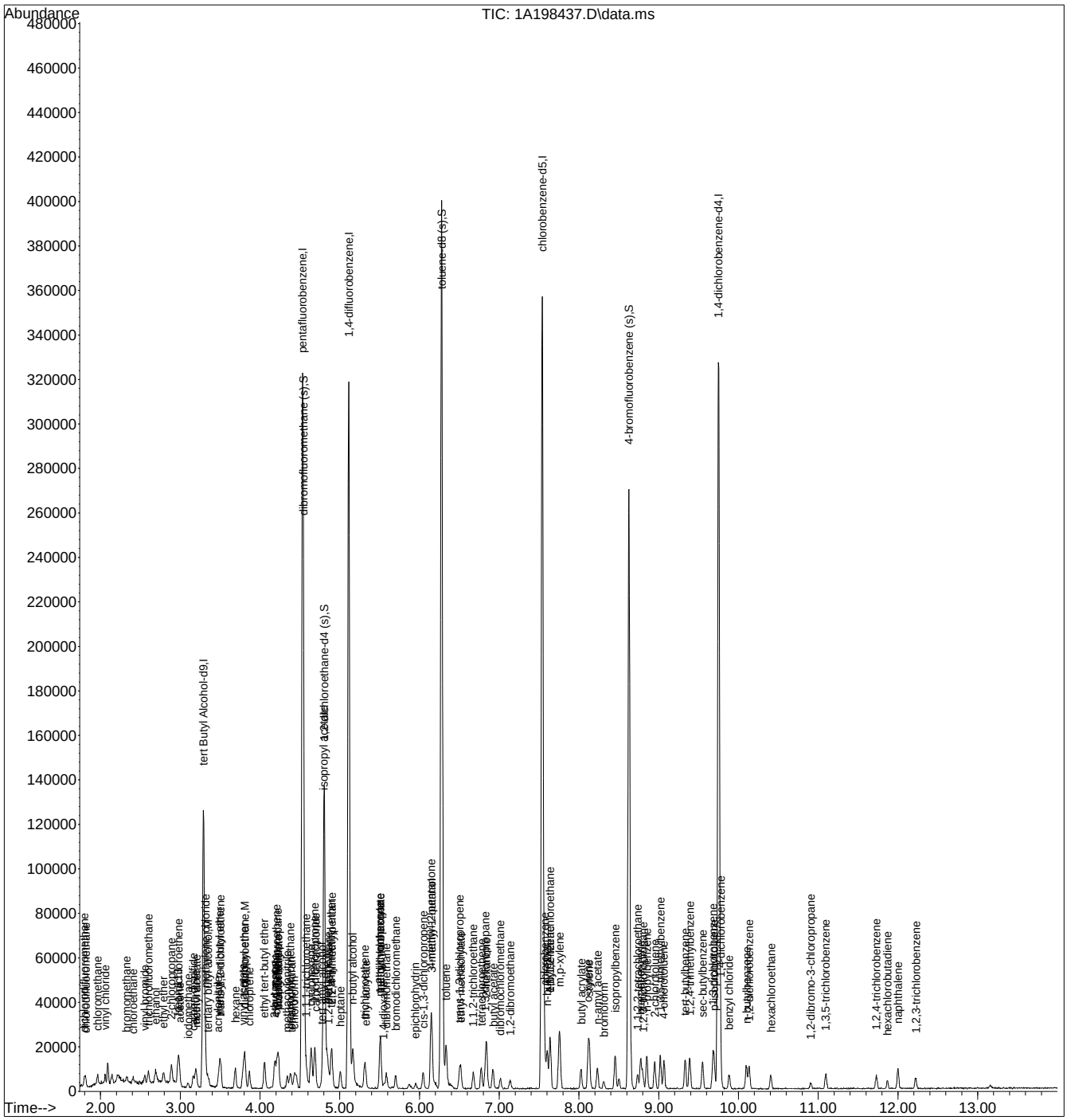
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
114) n-butylbenzene	10.103	92	3257	1.82	ug/L		92
115) 1,2-dibromo-3-chloropr...	10.908	157	886	1.80	ug/L		80
116) 1,3,5-trichlorobenzene	11.091	180	2745	1.87	ug/L		92
117) 1,2,4-trichlorobenzene	11.729	180	2283	1.82	ug/L		83
118) hexachlorobutadiene	11.867	225	924	1.84	ug/L		90
119) naphthalene	12.002	128	7565	1.80	ug/L		92
120) 1,2,3-trichlorobenzene	12.227	180	1943	1.70	ug/L		89
121) hexachloroethane	10.411	119	1165	1.80	ug/L	#	69
122) benzyl chloride	9.881	91	5088	1.75	ug/L		91

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198437.D
Acq On : 11 Feb 2020 7:28 pm
Operator : mariceld
Sample : IC8558-2
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 10 Sample Multiplier: 1

Quant Time: Feb 14 16:00:55 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:16:36 2020
Response via : Initial Calibration



Manual Integrations APPROVED (compounds with "m" flag)
Kanya Veerawat 02/16/20 23:07

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198438.D
Acq On : 11 Feb 2020 7:53 pm
Operator : mariceld
Sample : IC8558-4
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Feb 14 16:04:07 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) tert Butyl Alcohol-d9	3.293	65	126407	500.00	ug/L		0.00
5) pentafluorobenzene	4.535	168	151908	50.00	ug/L		0.00
52) 1,4-difluorobenzene	5.113	114	233927	50.00	ug/L		0.00
73) chlorobenzene-d5	7.539	117	207791	50.00	ug/L		0.00
97) 1,4-dichlorobenzene-d4	9.753	152	91597	50.00	ug/L		0.00
System Monitoring Compounds							
44) dibromofluoromethane (s)	4.548	113	64124	48.44	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 96.88%				
53) 1,2-dichloroethane-d4 (s)	4.805	65	72949	51.58	ug/L		0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 103.16%				
74) toluene-d8 (s)	6.278	98	254272	50.98	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 101.96%				
98) 4-bromofluorobenzene (s)	8.627	95	89906	50.55	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 101.10%				
Target Compounds							Qvalue
2) 1,4-dioxane	5.549	88	2509	86.42	ug/L		90
3) ethanol	2.693	45	12954	437.98	ug/L		98
4) tertiary butyl alcohol	3.348	59	6307	20.44	ug/L		89
6) chlorodifluoromethane	1.814	51	6101	3.93	ug/L		95
7) dichlorodifluoromethane	1.798	85	5568	3.64	ug/L		96
8) chloromethane	1.965	50	6170	3.98	ug/L		94
9) vinyl chloride	2.061	62	5775	3.35	ug/L		99
10) bromomethane	2.324	94	2634	3.32	ug/L	#	74
11) chloroethane	2.411	64	2980	3.45	ug/L		92
12) vinyl bromide	2.558	106	3238	3.41	ug/L		88
13) trichlorofluoromethane	2.603	101	6677	3.48	ug/L		95
14) ethyl ether	2.793	74	2939	4.13	ug/L	#	77
15) 2-chloropropane	2.889	43	8454	4.28	ug/L		93
16) acrolein	2.902	56	1696	4.29	ug/L		74
17) freon 113	2.966	151	3994	3.91	ug/L	#	71
18) 1,1-dichloroethene	2.985	96	4546	4.02	ug/L		82
19) acetone	2.995	58	3038	16.20	ug/L	#	78
20) acetonitrile	3.194	40	6604	41.36	ug/L		95
21) iodomethane	3.098	142	4230	3.14	ug/L		97
22) iso-butyl alcohol	4.683	43	5648m	46.15	ug/L		
23) carbon disulfide	3.159	76	11705	4.03	ug/L		95
24) methylene chloride	3.322	84	4928	4.02	ug/L		97
25) methyl acetate	3.210	74	1306	3.80	ug/L	#	67
26) methyl tert butyl ether	3.492	73	15218	3.94	ug/L		94
27) trans-1,2-dichloroethene	3.512	96	4741	4.01	ug/L		90
28) hexane	3.691	57	7101	4.16	ug/L		96
29) di-isopropyl ether	3.804	45	18330	4.14	ug/L		97
30) ethyl tert-butyl ether	4.057	59	16819	4.05	ug/L		97
31) 2-butanone	4.179	72	4391	16.72	ug/L	#	70
32) 1,1-dichloroethane	3.813	63	8947	4.03	ug/L		98
33) chloroprene	3.868	53	7719	3.99	ug/L		94
34) acrylonitrile	3.473	53	2938	3.96	ug/L		90
35) vinyl acetate	3.784	86	1426	4.27	ug/L	#	63
36) ethyl acetate	4.189	45	1447	4.50	ug/L		89
37) 2,2-dichloropropane	4.227	77	7120	4.04	ug/L		95
38) cis-1,2-dichloroethene	4.208	96	5552	4.09	ug/L		98
39) propionitrile	4.230	54	11452	41.43	ug/L		90
40) methyl acrylate	4.234	85	1159	4.07	ug/L	#	71
41) bromochloromethane	4.381	128	2870	4.39	ug/L		89
42) tetrahydrofuran	4.391	72	1223	4.09	ug/L	#	79

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198438.D
Acq On : 11 Feb 2020 7:53 pm
Operator : mariceld
Sample : IC8558-4
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Feb 14 16:04:07 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
43) chloroform	4.429	83	8862	4.19	ug/L		91
45) methacrylonitrile	4.339	67	3076	4.23	ug/L		88
46) 1,1,1-trichloroethane	4.580	97	7532	3.95	ug/L		92
47) cyclohexane	4.644	84	7326	3.72	ug/L		89
48) 1,1-dichloropropene	4.689	75	6921	4.20	ug/L		94
49) carbon tetrachloride	4.699	117	6473	3.90	ug/L		97
50) isopropyl acetate	4.798	87	1515	3.73	ug/L		94
51) tert amyl alcohol	4.779	55	2525	23.95	ug/L	#	71
54) tert-amyl methyl ether	4.901	73	16436	4.23	ug/L		98
55) 2,2,4-trimethylpentane	4.901	57	11806	4.22	ug/L		83
56) n-butyl alcohol	5.164	56	16708	200.15	ug/L		97
57) benzene	4.840	78	19877	4.11	ug/L		96
58) heptane	5.010	57	3089	4.54	ug/L		86
59) 1,2-dichloroethane	4.862	62	7196	4.44	ug/L		99
60) trichloroethene	5.312	95	5004	4.06	ug/L		91
61) ethyl acrylate	5.325	55	9805	4.14	ug/L		98
62) 2-nitropropane	5.870	41	1915	4.09	ug/L		81
63) 2-chloroethyl vinyl ether	5.893	63	616	5.06	ug/L	#	40
64) methyl methacrylate	5.501	100	2013	4.27	ug/L	#	71
65) 1,2-dichloropropane	5.517	63	5300	4.24	ug/L		86
66) methylcyclohexane	5.504	83	7477	4.15	ug/L		99
67) dibromomethane	5.584	93	3243	4.17	ug/L		96
68) bromodichloromethane	5.703	83	6733	4.08	ug/L		98
69) cis-1,3-dichloropropene	6.043	75	8041	3.84	ug/L		89
70) epichlorohydrin	5.950	57	4355	20.07	ug/L		99
71) 4-methyl-2-pentanone	6.146	58	12832	16.58	ug/L		95
72) 3-methyl-1-butanol	6.159	70	6258	80.60	ug/L		90
75) toluene	6.332	92	12574	4.24	ug/L		93
76) trans-1,3-dichloropropene	6.502	75	7417	3.92	ug/L		97
77) ethyl methacrylate	6.518	69	8233	4.34	ug/L		94
78) 1,1,2-trichloroethane	6.676	83	3991	4.15	ug/L		97
79) 2-hexanone	6.842	58	13103	16.55	ug/L		95
80) tetrachloroethene	6.772	166	5824	4.18	ug/L		92
81) 1,3-dichloropropane	6.823	76	8077	4.19	ug/L		93
82) butyl acetate	6.919	56	5124	4.34	ug/L		96
83) dibromochloromethane	7.016	129	5054	3.96	ug/L		96
84) 1,2-dibromoethane	7.134	107	5590	3.99	ug/L		98
85) n-butyl ether	7.603	57	22199	4.15	ug/L		100
86) chlorobenzene	7.568	112	13664	4.05	ug/L		96
87) 1,1,1,2-tetrachloroethane	7.632	131	5106	4.26	ug/L		88
88) ethylbenzene	7.641	91	23088	4.15	ug/L		97
89) m,p-xylene	7.757	106	17875	8.41	ug/L		92
90) o-xylene	8.116	106	9024	4.28	ug/L		87
91) butyl acrylate	8.023	55	11828	4.01	ug/L		96
92) n-amyl acetate	8.229	70	4694	4.20	ug/L		88
93) styrene	8.129	104	15137	4.10	ug/L		97
94) bromoform	8.312	173	3626	3.79	ug/L		96
95) isopropylbenzene	8.453	105	21815	4.16	ug/L		94
96) cis-1,4-dichloro-2-butene	8.505	88	2060	3.12	ug/L	#	79
99) bromobenzene	8.774	156	6030	4.19	ug/L		86
100) 1,1,2,2-tetrachloroethane	8.739	83	6912	4.04	ug/L		94
101) trans-1,4-dichloro-2-b...	8.777	53	1767	3.62	ug/L		89
102) 1,2,3-trichloropropane	8.797	110	2221	4.21	ug/L		84
103) n-propylbenzene	8.851	91	23868	4.14	ug/L		98
104) 2-chlorotoluene	8.951	126	5530	4.29	ug/L		95
105) 4-chlorotoluene	9.066	126	5139	4.03	ug/L		98
106) 1,3,5-trimethylbenzene	9.018	105	16950	4.24	ug/L		99
107) tert-butylbenzene	9.332	119	14377	4.23	ug/L		98

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198438.D
Acq On : 11 Feb 2020 7:53 pm
Operator : mariceld
Sample : IC8558-4
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Feb 14 16:04:07 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

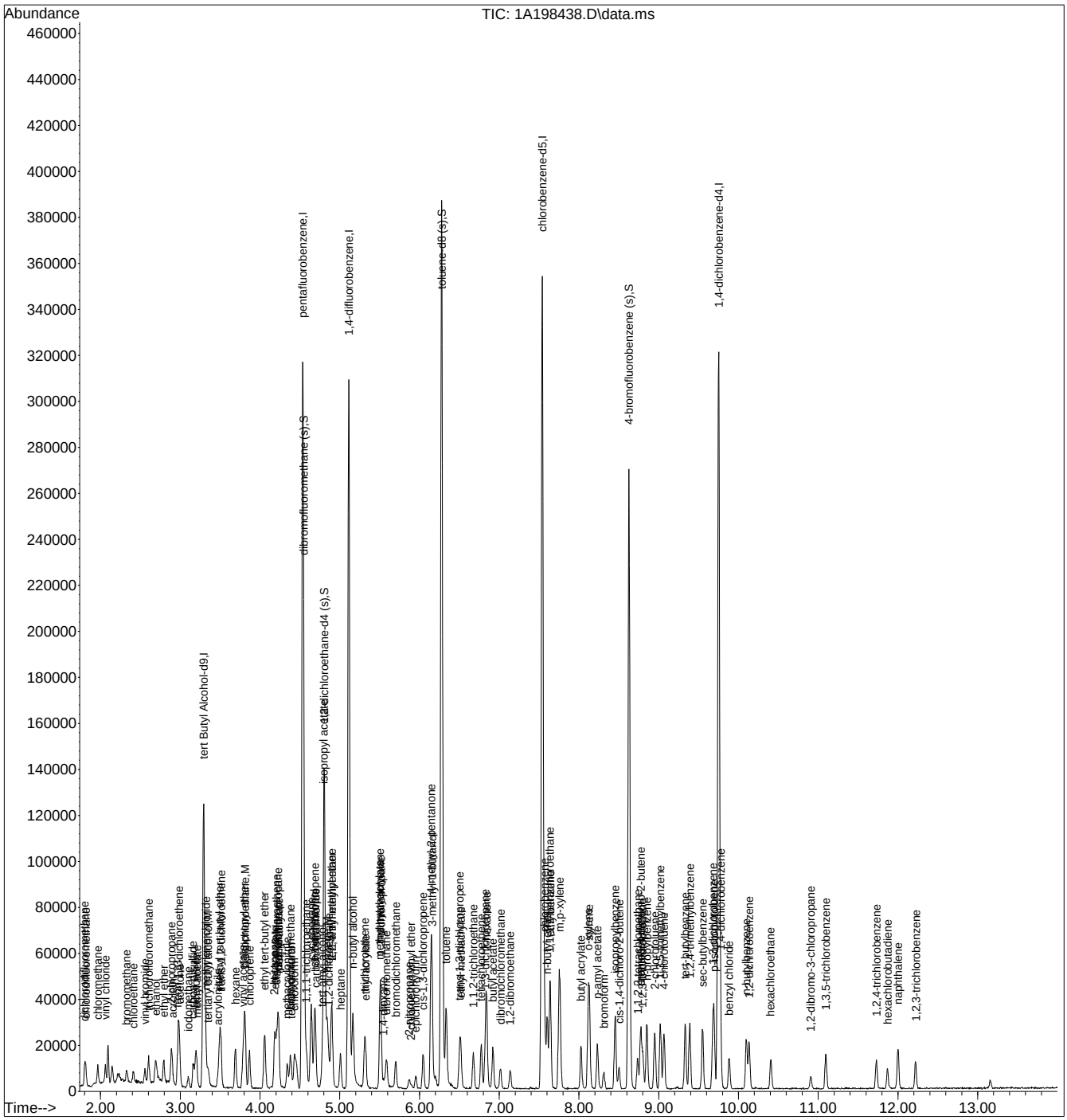
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.390	105	16670	4.14	ug/L	100
109) sec-butylbenzene	9.554	105	19054	4.16	ug/L	94
110) 1,3-dichlorobenzene	9.682	146	10190	4.18	ug/L	89
111) p-isopropyltoluene	9.695	119	16039	4.10	ug/L	97
112) 1,4-dichlorobenzene	9.779	146	10037	4.13	ug/L	95
113) 1,2-dichlorobenzene	10.135	146	9511	4.10	ug/L	93
114) n-butylbenzene	10.099	92	7134	4.11	ug/L	98
115) 1,2-dibromo-3-chloropr...	10.908	157	1754	3.60	ug/L	92
116) 1,3,5-trichlorobenzene	11.097	180	5722	4.01	ug/L	93
117) 1,2,4-trichlorobenzene	11.733	180	4621	3.78	ug/L	96
118) hexachlorobutadiene	11.871	225	1977	4.22	ug/L	86
119) naphthalene	12.002	128	15768	3.77	ug/L	97
120) 1,2,3-trichlorobenzene	12.227	180	4276	3.85	ug/L	98
121) hexachloroethane	10.401	119	2357	3.59	ug/L	90
122) benzyl chloride	9.881	91	10328	3.49	ug/L	89

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198438.D
Acq On : 11 Feb 2020 7:53 pm
Operator : mariceld
Sample : IC8558-4
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Feb 14 16:04:07 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



Manual Integration Approval Summary

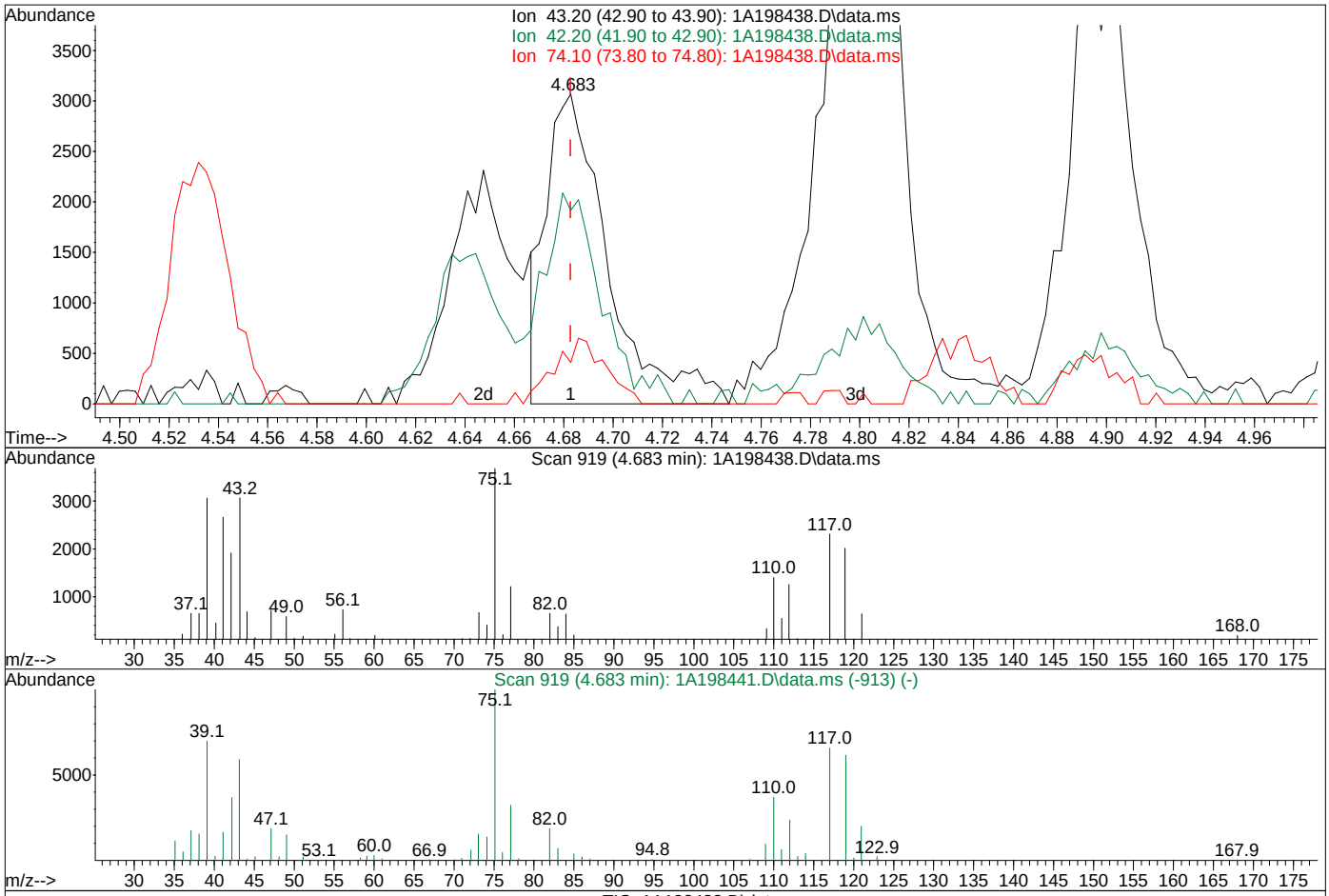
Sample Number:	V1A8558-IC8558	**Method:**	SW846 8260C
Lab FileID:	1A198438.D	**Analyst approved:**	02/14/20 16:54 Robert Szot
Injection Time:	02/11/20 19:53	**Supervisor approved:**	02/16/20 23:07 Kanya Veerawat

Parameter	CAS	Sig#	R.T. (min.)	Reason
Isobutyl alcohol	78-83-1		4.68	Overlapping peak

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198438.D
Acq On : 11 Feb 2020 7:53 pm
Operator : mariceld
Sample : IC8558-4
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Feb 14 16:02:07 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



TIC: 1A198438.D\data.ms

(22) iso-butyl alcohol

4.683min (-0.000) 43.79ug/L

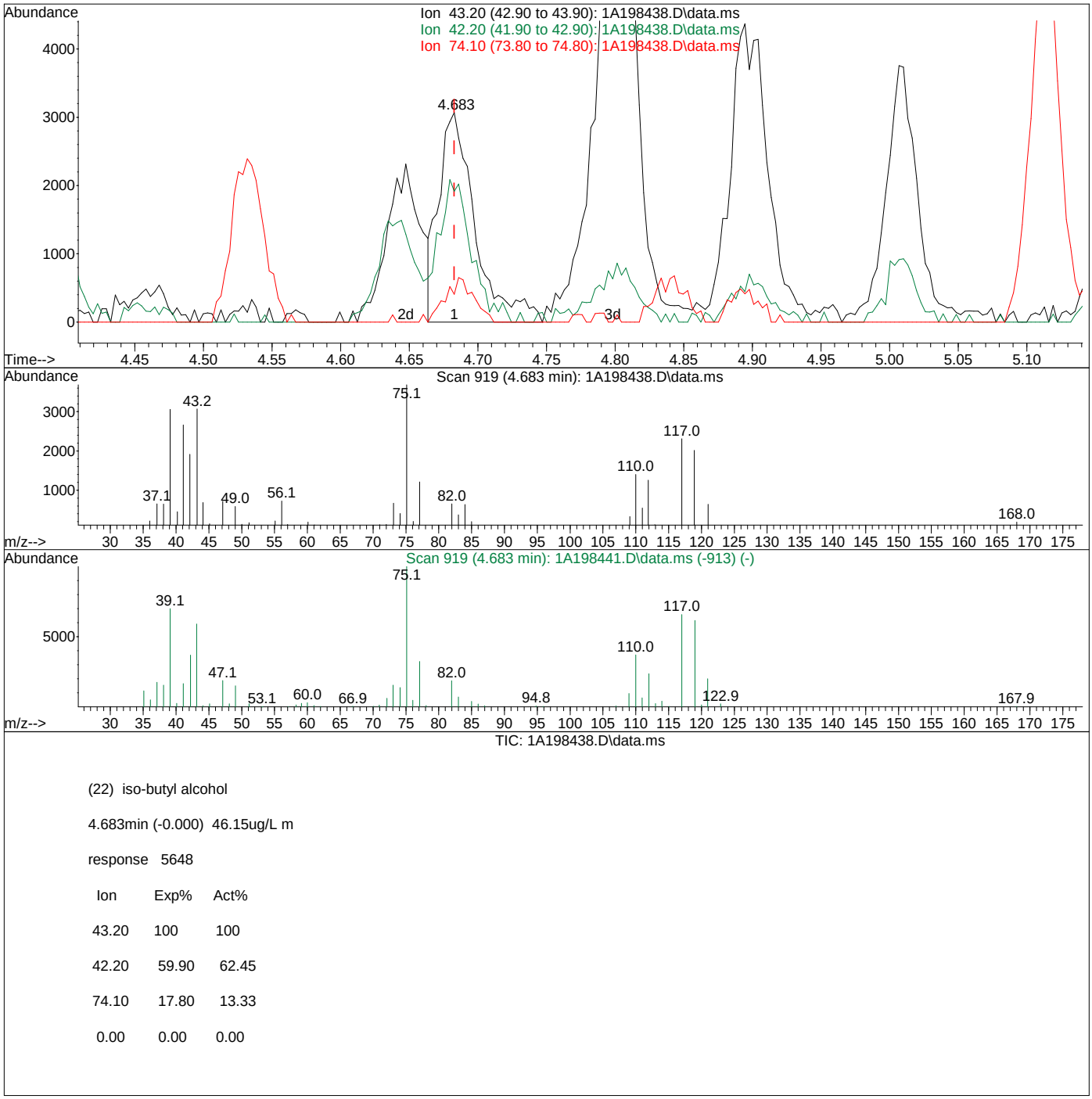
response 5359

Ion	Exp%	Act%
43.20	100	100
42.20	59.90	57.89
74.10	17.80	13.33
0.00	0.00	0.00

Quantitation Report (Qedit)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198438.D
Acq On : 11 Feb 2020 7:53 pm
Operator : mariceld
Sample : IC8558-4
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 11 Sample Multiplier: 1

Quant Time: Feb 14 16:04:07 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



TIC: 1A198438.D\data.ms

(22) iso-butyl alcohol

4.683min (-0.000) 46.15ug/L m

response 5648

Ion	Exp%	Act%
43.20	100	100
42.20	59.90	62.45
74.10	17.80	13.33
0.00	0.00	0.00

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198439.D
Acq On : 11 Feb 2020 8:17 pm
Operator : mariceld
Sample : IC8558-8
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Feb 12 08:03:26 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	128147	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	146609	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	228618	50.00	ug/L	0.00
73) chlorobenzene-d5	7.539	117	203214	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.750	152	91776	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	63083	49.37	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 98.74%			
53) 1,2-dichloroethane-d4 (s)	4.808	65	72968	52.79	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 105.58%			
74) toluene-d8 (s)	6.275	98	251977	51.66	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 103.32%			
98) 4-bromofluorobenzene (s)	8.627	95	88387	49.60	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 99.20%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.553	88	5631	191.32	ug/L	97
3) ethanol	2.697	45	24536	818.30	ug/L	99
4) tertiary butyl alcohol	3.348	59	12105	38.69	ug/L	93
6) chlorodifluoromethane	1.814	51	11754	7.85	ug/L	98
7) dichlorodifluoromethane	1.798	85	10433	7.07	ug/L	98
8) chloromethane	1.965	50	11606	7.75	ug/L	99
9) vinyl chloride	2.061	62	11562	6.95	ug/L	96
10) bromomethane	2.324	94	4972	6.50	ug/L	91
11) chloroethane	2.411	64	6082	7.29	ug/L	82
12) vinyl bromide	2.555	106	6526	7.11	ug/L	97
13) trichlorofluoromethane	2.604	101	13301	7.18	ug/L	98
14) ethyl ether	2.793	74	5582	8.13	ug/L	96
15) 2-chloropropane	2.886	43	16783	8.80	ug/L	96
16) acrolein	2.902	56	3269	8.56	ug/L	91
17) freon 113	2.973	151	8070	8.19	ug/L	93
18) 1,1-dichloroethene	2.979	96	8595	7.87	ug/L	95
19) acetone	2.992	58	5922	32.73	ug/L	96
20) acetonitrile	3.194	40	12711	82.48	ug/L	93
21) iodomethane	3.101	142	9198	7.06	ug/L	97
22) iso-butyl alcohol	4.680	43	10367	87.77	ug/L	95
23) carbon disulfide	3.165	76	22834	8.14	ug/L	97
24) methylene chloride	3.319	84	9771	8.26	ug/L	96
25) methyl acetate	3.204	74	2715	8.18	ug/L	89
26) methyl tert butyl ether	3.492	73	30182	8.09	ug/L	98
27) trans-1,2-dichloroethene	3.512	96	9261	8.13	ug/L #	80
28) hexane	3.691	57	13337	8.10	ug/L	94
29) di-isopropyl ether	3.804	45	34213	8.00	ug/L	96
30) ethyl tert-butyl ether	4.057	59	32745	8.17	ug/L	99
31) 2-butanone	4.182	72	8312	32.79	ug/L #	86
32) 1,1-dichloroethane	3.817	63	17267	8.07	ug/L	99
33) chloroprene	3.865	53	14795	7.92	ug/L	95
34) acrylonitrile	3.473	53	5707	7.98	ug/L	90
35) vinyl acetate	3.784	86	2831	8.79	ug/L #	79
36) ethyl acetate	4.182	45	2923	9.41	ug/L #	66
37) 2,2-dichloropropane	4.221	77	13900	8.18	ug/L	92
38) cis-1,2-dichloroethene	4.208	96	10902	8.32	ug/L	95
39) propionitrile	4.230	54	22142	83.01	ug/L	99
40) methyl acrylate	4.237	85	2426	8.82	ug/L #	72
41) bromochloromethane	4.378	128	5256	8.33	ug/L	95
42) tetrahydrofuran	4.397	72	2044	7.08	ug/L #	84

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198439.D
Acq On : 11 Feb 2020 8:17 pm
Operator : mariceld
Sample : IC8558-8
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Feb 12 08:03:26 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
43) chloroform	4.429	83	16752	8.21	ug/L		96
45) methacrylonitrile	4.346	67	6093	8.68	ug/L		80
46) 1,1,1-trichloroethane	4.583	97	14770	8.02	ug/L		95
47) cyclohexane	4.638	84	14568	7.67	ug/L		96
48) 1,1-dichloropropene	4.686	75	13302	8.36	ug/L		96
49) carbon tetrachloride	4.696	117	12539	7.82	ug/L		90
50) isopropyl acetate	4.798	87	3013	7.68	ug/L	#	82
51) tert amyl alcohol	4.776	55	4557	44.78	ug/L		94
54) tert-amyl methyl ether	4.898	73	30925	8.15	ug/L		98
55) 2,2,4-trimethylpentane	4.898	57	22933	8.40	ug/L		95
56) n-butyl alcohol	5.164	56	32379	396.88	ug/L		97
57) benzene	4.843	78	38597	8.16	ug/L		99
58) heptane	5.007	57	5930	8.92	ug/L		90
59) 1,2-dichloroethane	4.859	62	13455	8.49	ug/L		91
60) trichloroethene	5.309	95	9682	8.04	ug/L		97
61) ethyl acrylate	5.325	55	19285	8.34	ug/L		96
62) 2-nitropropane	5.867	41	3738	8.17	ug/L		94
63) 2-chloroethyl vinyl ether	5.896	63	2338	19.63	ug/L		91
64) methyl methacrylate	5.504	100	3631	7.87	ug/L	#	86
65) 1,2-dichloropropane	5.517	63	9956	8.15	ug/L		96
66) methylcyclohexane	5.504	83	14490	8.23	ug/L		99
67) dibromomethane	5.581	93	5998	7.89	ug/L		86
68) bromodichloromethane	5.700	83	12891	7.99	ug/L		97
69) cis-1,3-dichloropropene	6.047	75	16103	7.86	ug/L		93
70) epichlorohydrin	5.957	57	8729	41.16	ug/L		96
71) 4-methyl-2-pentanone	6.146	58	24407	32.27	ug/L		100
72) 3-methyl-1-butanol	6.159	70	12288	161.95	ug/L		95
75) toluene	6.336	92	24015	8.28	ug/L		95
76) trans-1,3-dichloropropene	6.502	75	14364	7.76	ug/L		92
77) ethyl methacrylate	6.518	69	15939	8.60	ug/L		98
78) 1,1,2-trichloroethane	6.679	83	7687	8.18	ug/L		88
79) 2-hexanone	6.839	58	26119	33.73	ug/L		99
80) tetrachloroethene	6.775	166	11460	8.41	ug/L		93
81) 1,3-dichloropropane	6.820	76	15277	8.10	ug/L		99
82) butyl acetate	6.923	56	9680	8.39	ug/L		95
83) dibromochloromethane	7.016	129	9738	7.80	ug/L		97
84) 1,2-dibromoethane	7.131	107	11224	8.19	ug/L		98
85) n-butyl ether	7.603	57	42692	8.16	ug/L		99
86) chlorobenzene	7.568	112	26655	8.09	ug/L		96
87) 1,1,1,2-tetrachloroethane	7.635	131	9374	8.00	ug/L		96
88) ethylbenzene	7.642	91	44600	8.19	ug/L		99
89) m,p-xylene	7.760	106	34351	16.52	ug/L		99
90) o-xylene	8.116	106	16753	8.12	ug/L		98
91) butyl acrylate	8.023	55	23332	8.10	ug/L		94
92) n-amyl acetate	8.235	70	8764	8.02	ug/L		92
93) styrene	8.129	104	29301	8.12	ug/L		97
94) bromoform	8.312	173	6945	7.43	ug/L		87
95) isopropylbenzene	8.453	105	41354	8.06	ug/L		99
96) cis-1,4-dichloro-2-butene	8.505	88	4591	7.12	ug/L		91
99) bromobenzene	8.777	156	11795	8.18	ug/L		98
100) 1,1,2,2-tetrachloroethane	8.736	83	13703	7.98	ug/L		97
101) trans-1,4-dichloro-2-b...	8.774	53	3419	6.98	ug/L		93
102) 1,2,3-trichloropropane	8.806	110	4451	8.43	ug/L		95
103) n-propylbenzene	8.851	91	46559	8.05	ug/L		98
104) 2-chlorotoluene	8.948	126	10276	7.96	ug/L		94
105) 4-chlorotoluene	9.063	126	10411	8.15	ug/L		87
106) 1,3,5-trimethylbenzene	9.021	105	31989	7.98	ug/L		97
107) tert-butylbenzene	9.336	119	27586	8.10	ug/L		98

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198439.D
Acq On : 11 Feb 2020 8:17 pm
Operator : mariceld
Sample : IC8558-8
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Feb 12 08:03:26 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

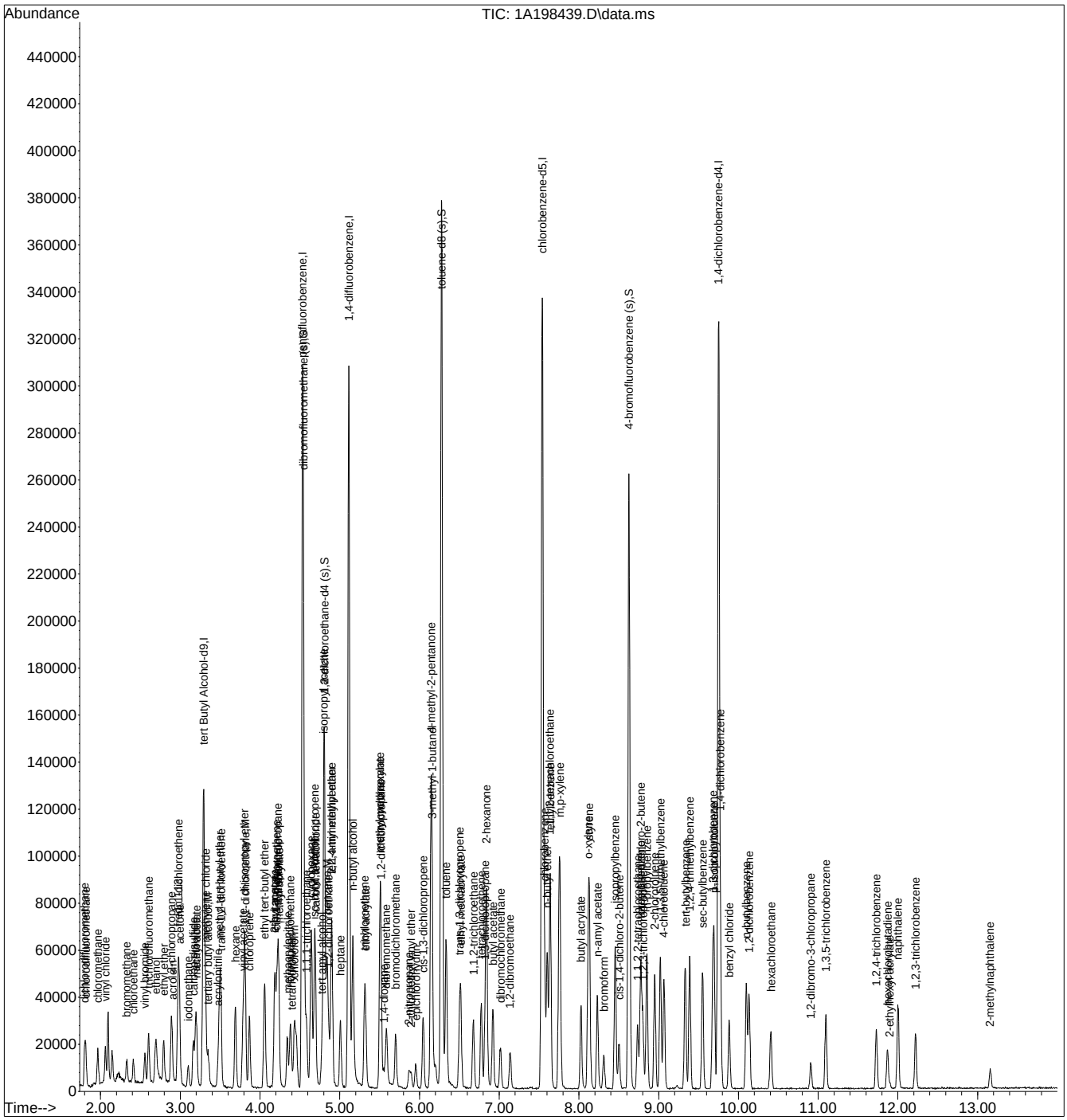
Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
108) 1,2,4-trimethylbenzene	9.387	105	32138	7.96	ug/L		96
109) sec-butylbenzene	9.551	105	36383	7.93	ug/L		98
110) 1,3-dichlorobenzene	9.682	146	19491	7.98	ug/L		93
111) p-isopropyltoluene	9.695	119	31202	7.96	ug/L		98
112) 1,4-dichlorobenzene	9.772	146	19593	8.05	ug/L		95
113) 1,2-dichlorobenzene	10.135	146	18171	7.82	ug/L		98
114) n-butylbenzene	10.100	92	13563	7.80	ug/L		87
115) 1,2-dibromo-3-chloropr...	10.908	157	3715	7.60	ug/L		80
116) 1,3,5-trichlorobenzene	11.094	180	11352	7.93	ug/L		95
117) 1,2,4-trichlorobenzene	11.726	180	9109	7.43	ug/L		95
118) hexachlorobutadiene	11.871	225	3746	7.99	ug/L		81
119) naphthalene	11.999	128	31125	7.43	ug/L		99
120) 1,2,3-trichlorobenzene	12.221	180	8266	7.43	ug/L		95
121) hexachloroethane	10.411	119	4873	7.40	ug/L		91
122) benzyl chloride	9.885	91	21447	7.23	ug/L		98
123) 2-ethylhexyl acrylate	11.897	70	794	1.13	ug/L	#	79
124) 2-methylnaphthalene	13.154	142	4736	3.00	ug/L		95

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198439.D
Acq On : 11 Feb 2020 8:17 pm
Operator : mariceld
Sample : IC8558-8
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 12 Sample Multiplier: 1

Quant Time: Feb 12 08:03:26 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198440.D
Acq On : 11 Feb 2020 8:42 pm
Operator : mariceld
Sample : IC8558-20
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Feb 12 08:03:29 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	121687	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	144364	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	224078	50.00	ug/L	0.00
73) chlorobenzene-d5	7.539	117	203472	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.750	152	90998	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	63325	50.33	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.66%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	72960	53.85	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 107.70%			
74) toluene-d8 (s)	6.278	98	250648	51.32	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 102.64%			
98) 4-bromofluorobenzene (s)	8.627	95	87797	49.69	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 99.38%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.553	88	13628	487.61	ug/L	95
3) ethanol	2.690	45	58691	2061.33	ug/L	99
4) tertiary butyl alcohol	3.348	59	29517	99.35	ug/L	94
6) chlorodifluoromethane	1.814	51	28745	19.51	ug/L	99
7) dichlorodifluoromethane	1.801	85	26620	18.31	ug/L	94
8) chloromethane	1.965	50	27672	18.76	ug/L	98
9) vinyl chloride	2.061	62	28922	17.65	ug/L	97
10) bromomethane	2.328	94	13470	17.89	ug/L	99
11) chloroethane	2.408	64	14811	18.02	ug/L	94
12) vinyl bromide	2.555	106	16504	18.26	ug/L	89
13) trichlorofluoromethane	2.604	101	33228	18.21	ug/L	95
14) ethyl ether	2.793	74	13473	19.92	ug/L	97
15) 2-chloropropane	2.889	43	39400	20.99	ug/L	95
16) acrolein	2.899	56	7884	20.98	ug/L	85
17) freon 113	2.973	151	19650	20.24	ug/L	100
18) 1,1-dichloroethene	2.979	96	21726	20.19	ug/L	95
19) acetone	2.992	58	14769	82.89	ug/L	98
20) acetonitrile	3.191	40	30307	199.71	ug/L	90
21) iodomethane	3.101	142	24315	18.96	ug/L	94
22) iso-butyl alcohol	4.680	43	23438	201.52	ug/L	95
23) carbon disulfide	3.162	76	55522	20.10	ug/L	99
24) methylene chloride	3.316	84	23774	20.41	ug/L	98
25) methyl acetate	3.204	74	6598	20.19	ug/L	97
26) methyl tert butyl ether	3.496	73	73211	19.94	ug/L	99
27) trans-1,2-dichloroethene	3.512	96	23439	20.89	ug/L	92
28) hexane	3.695	57	32865	20.26	ug/L	98
29) di-isopropyl ether	3.807	45	85369	20.27	ug/L	98
30) ethyl tert-butyl ether	4.057	59	80513	20.39	ug/L	99
31) 2-butanone	4.182	72	20182	80.85	ug/L	92
32) 1,1-dichloroethane	3.817	63	42116	19.98	ug/L	98
33) chloroprene	3.868	53	36774	19.99	ug/L	99
34) acrylonitrile	3.473	53	14474	20.55	ug/L	94
35) vinyl acetate	3.788	86	6814	21.49	ug/L #	67
36) ethyl acetate	4.195	45	7261	23.74	ug/L #	4
37) 2,2-dichloropropane	4.224	77	33084	19.77	ug/L	98
38) cis-1,2-dichloroethene	4.208	96	26782	20.76	ug/L	94
39) propionitrile	4.230	54	54165	206.21	ug/L	91
40) methyl acrylate	4.230	85	5631	20.78	ug/L #	87
41) bromochloromethane	4.378	128	12749	20.51	ug/L	89
42) tetrahydrofuran	4.391	72	5887	20.72	ug/L	92

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198440.D
Acq On : 11 Feb 2020 8:42 pm
Operator : mariceld
Sample : IC8558-20
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Feb 12 08:03:29 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
43) chloroform	4.429	83	41470	20.65	ug/L		96
45) methacrylonitrile	4.343	67	14366	20.78	ug/L		91
46) 1,1,1-trichloroethane	4.580	97	37169	20.49	ug/L		98
47) cyclohexane	4.638	84	34870	18.64	ug/L		97
48) 1,1-dichloropropene	4.686	75	32652	20.84	ug/L		97
49) carbon tetrachloride	4.696	117	31886	20.20	ug/L		100
50) isopropyl acetate	4.802	87	7839	20.29	ug/L	#	83
51) tert amyl alcohol	4.779	55	10611	105.89	ug/L		89
54) tert-amyl methyl ether	4.898	73	76034	20.44	ug/L		96
55) 2,2,4-trimethylpentane	4.901	57	56674	21.17	ug/L		99
56) n-butyl alcohol	5.164	56	82206	1028.04	ug/L		99
57) benzene	4.840	78	93957	20.27	ug/L		98
58) heptane	5.007	57	13971	21.45	ug/L		97
59) 1,2-dichloroethane	4.859	62	32404	20.85	ug/L		99
60) trichloroethene	5.309	95	23828	20.20	ug/L		96
61) ethyl acrylate	5.325	55	46646	20.58	ug/L		98
62) 2-nitropropane	5.870	41	8763	19.55	ug/L		99
63) 2-chloroethyl vinyl ether	5.893	63	8766	75.11	ug/L		90
64) methyl methacrylate	5.508	100	9009	19.93	ug/L	#	88
65) 1,2-dichloropropane	5.514	63	24461	20.44	ug/L		98
66) methylcyclohexane	5.508	83	35753	20.72	ug/L		97
67) dibromomethane	5.585	93	15181	20.36	ug/L		96
68) bromodichloromethane	5.703	83	32153	20.34	ug/L		98
69) cis-1,3-dichloropropene	6.047	75	39785	19.81	ug/L		95
70) epichlorohydrin	5.954	57	20911	100.61	ug/L		95
71) 4-methyl-2-pentanone	6.146	58	60858	82.09	ug/L		93
72) 3-methyl-1-butanol	6.156	70	30589	411.31	ug/L		94
75) toluene	6.332	92	59913	20.62	ug/L		98
76) trans-1,3-dichloropropene	6.502	75	36559	19.72	ug/L		98
77) ethyl methacrylate	6.518	69	38161	20.56	ug/L		97
78) 1,1,2-trichloroethane	6.672	83	19077	20.27	ug/L		92
79) 2-hexanone	6.839	58	63365	81.72	ug/L		97
80) tetrachloroethene	6.778	166	28373	20.80	ug/L		96
81) 1,3-dichloropropane	6.823	76	38480	20.37	ug/L		96
82) butyl acetate	6.920	56	23480	20.32	ug/L		92
83) dibromochloromethane	7.016	129	24726	19.77	ug/L		98
84) 1,2-dibromoethane	7.135	107	27659	20.16	ug/L		94
85) n-butyl ether	7.603	57	105401	20.13	ug/L		100
86) chlorobenzene	7.568	112	66205	20.06	ug/L		98
87) 1,1,1,2-tetrachloroethane	7.635	131	23637	20.15	ug/L		96
88) ethylbenzene	7.642	91	110916	20.35	ug/L		98
89) m,p-xylene	7.754	106	85484	41.05	ug/L		99
90) o-xylene	8.116	106	41661	20.17	ug/L		99
91) butyl acrylate	8.023	55	57700	20.00	ug/L		99
92) n-amyl acetate	8.232	70	21452	19.61	ug/L		94
93) styrene	8.133	104	72446	20.06	ug/L		97
94) bromoform	8.309	173	17797	19.02	ug/L		95
95) isopropylbenzene	8.453	105	102948	20.05	ug/L		99
96) cis-1,4-dichloro-2-butene	8.505	88	12038	18.64	ug/L		95
99) bromobenzene	8.777	156	28620	20.02	ug/L		96
100) 1,1,2,2-tetrachloroethane	8.736	83	34099	20.04	ug/L		98
101) trans-1,4-dichloro-2-b...	8.774	53	9423	19.41	ug/L		87
102) 1,2,3-trichloropropane	8.803	110	10483	20.02	ug/L		97
103) n-propylbenzene	8.851	91	115582	20.16	ug/L		98
104) 2-chlorotoluene	8.951	126	25456	19.89	ug/L		95
105) 4-chlorotoluene	9.063	126	25320	19.99	ug/L		97
106) 1,3,5-trimethylbenzene	9.021	105	80125	20.16	ug/L		97
107) tert-butylbenzene	9.333	119	68483	20.27	ug/L		97

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198440.D
Acq On : 11 Feb 2020 8:42 pm
Operator : mariceld
Sample : IC8558-20
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Feb 12 08:03:29 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

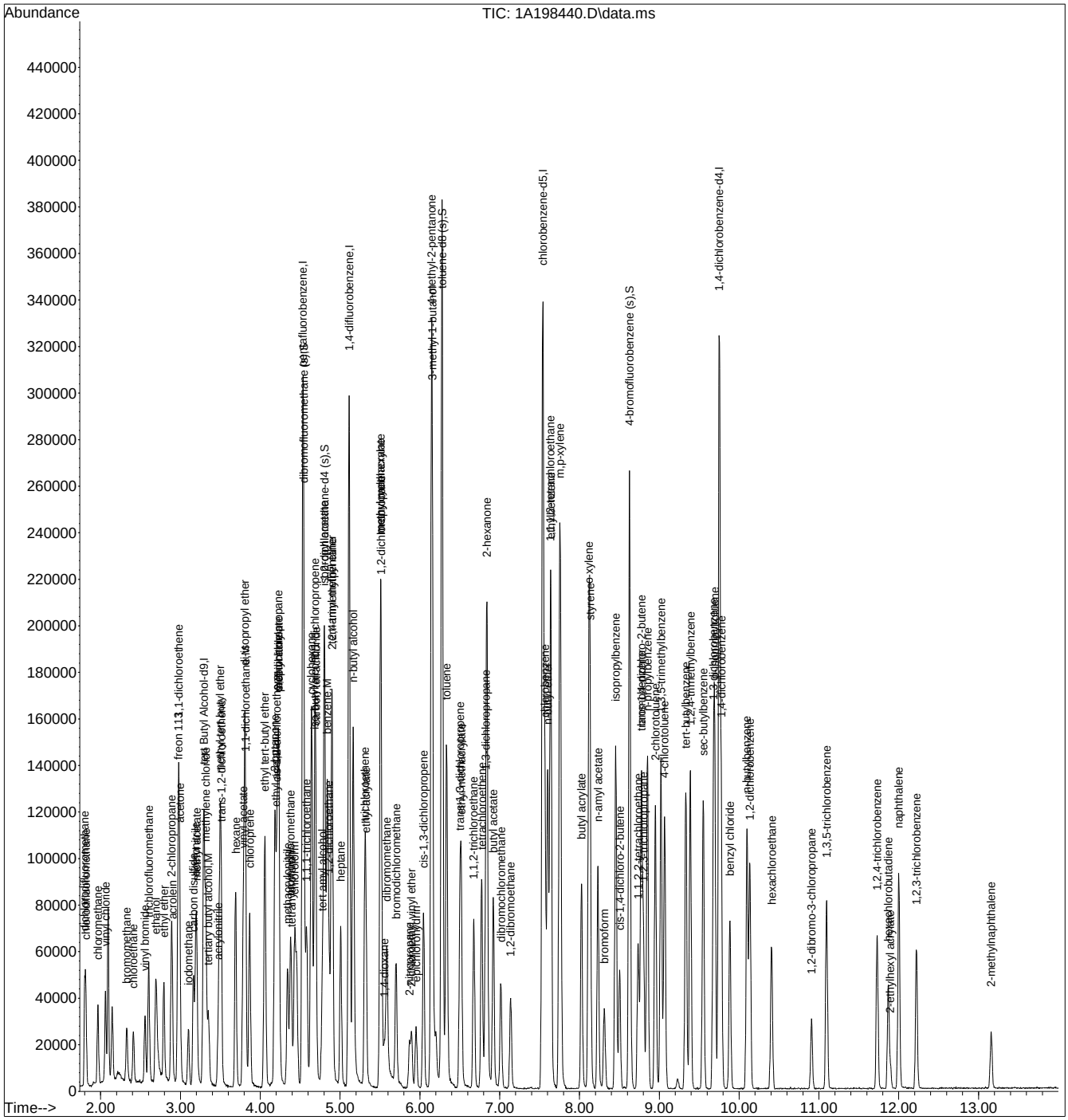
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.390	105	80864	20.19	ug/L	97
109) sec-butylbenzene	9.551	105	92138	20.24	ug/L	99
110) 1,3-dichlorobenzene	9.679	146	48757	20.13	ug/L	97
111) p-isopropyltoluene	9.695	119	77993	20.07	ug/L	100
112) 1,4-dichlorobenzene	9.775	146	48647	20.15	ug/L	98
113) 1,2-dichlorobenzene	10.135	146	45394	19.69	ug/L	99
114) n-butylbenzene	10.096	92	34197	19.82	ug/L	98
115) 1,2-dibromo-3-chloropr...	10.908	157	9406	19.41	ug/L	89
116) 1,3,5-trichlorobenzene	11.094	180	28062	19.78	ug/L	98
117) 1,2,4-trichlorobenzene	11.730	180	23982	19.73	ug/L	91
118) hexachlorobutadiene	11.868	225	9660	20.78	ug/L	93
119) naphthalene	11.999	128	79394	19.11	ug/L	98
120) 1,2,3-trichlorobenzene	12.221	180	21273	19.27	ug/L	93
121) hexachloroethane	10.408	119	12059	18.47	ug/L	93
122) benzyl chloride	9.885	91	55278	18.80	ug/L	99
123) 2-ethylhexyl acrylate	11.893	70	2485	3.57	ug/L #	85
124) 2-methylnaphthalene	13.158	142	13926	8.90	ug/L	85

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198440.D
Acq On : 11 Feb 2020 8:42 pm
Operator : mariceld
Sample : IC8558-20
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 13 Sample Multiplier: 1

Quant Time: Feb 12 08:03:29 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198441.D
Acq On : 11 Feb 2020 9:07 pm
Operator : mariceld
Sample : ICC8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Feb 12 08:03:32 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	118920	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	141763	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	221579	50.00	ug/L	0.00
73) chlorobenzene-d5	7.539	117	200716	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.753	152	89569	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	61773	50.00	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.00%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	66983	50.00	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 100.00%			
74) toluene-d8 (s)	6.278	98	240891	50.00	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.00%			
98) 4-bromofluorobenzene (s)	8.627	95	86961	50.00	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.00%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.556	88	34141	1250.00	ug/L	100
3) ethanol	2.693	45	139125	5000.00	ug/L	100
4) tertiary butyl alcohol	3.351	59	72586	250.00	ug/L	100
6) chlorodifluoromethane	1.814	51	72349	50.00	ug/L	100
7) dichlorodifluoromethane	1.801	85	71381	50.00	ug/L	100
8) chloromethane	1.965	50	72420	50.00	ug/L	100
9) vinyl chloride	2.061	62	80476	50.00	ug/L	100
10) bromomethane	2.321	94	36974	50.00	ug/L	100
11) chloroethane	2.405	64	40350	50.00	ug/L	100
12) vinyl bromide	2.555	106	44369	50.00	ug/L	100
13) trichlorofluoromethane	2.600	101	89603	50.00	ug/L	100
14) ethyl ether	2.793	74	33215	50.00	ug/L	100
15) 2-chloropropane	2.886	43	92163	50.00	ug/L	100
16) acrolein	2.899	56	18454	50.00	ug/L	100
17) freon 113	2.969	151	47668	50.00	ug/L	100
18) 1,1-dichloroethene	2.979	96	52826	50.00	ug/L	100
19) acetone	2.992	58	34993	200.00	ug/L	100
20) acetonitrile	3.191	40	74511	500.00	ug/L	100
21) iodomethane	3.101	142	62957	50.00	ug/L	100
22) iso-butyl alcohol	4.683	43	57104	500.00	ug/L	100
23) carbon disulfide	3.162	76	135616	50.00	ug/L	100
24) methylene chloride	3.319	84	57204	50.00	ug/L	100
25) methyl acetate	3.204	74	16045	50.00	ug/L	100
26) methyl tert butyl ether	3.496	73	180294	50.00	ug/L	100
27) trans-1,2-dichloroethene	3.508	96	55101	50.00	ug/L	100
28) hexane	3.688	57	79645	50.00	ug/L	100
29) di-isopropyl ether	3.807	45	206778	50.00	ug/L	100
30) ethyl tert-butyl ether	4.057	59	193877	50.00	ug/L	100
31) 2-butanone	4.182	72	49024	200.00	ug/L	100
32) 1,1-dichloroethane	3.813	63	103495	50.00	ug/L	100
33) chloroprene	3.868	53	90335	50.00	ug/L	100
34) acrylonitrile	3.473	53	34578	50.00	ug/L	100
35) vinyl acetate	3.781	86	15569	50.00	ug/L	100
36) ethyl acetate	4.185	45	15017	50.00	ug/L	100
37) 2,2-dichloropropane	4.221	77	82168	50.00	ug/L	100
38) cis-1,2-dichloroethene	4.208	96	63338	50.00	ug/L	100
39) propionitrile	4.234	54	128967	500.00	ug/L	100
40) methyl acrylate	4.234	85	13303	50.00	ug/L	100
41) bromochloromethane	4.378	128	30521	50.00	ug/L	100
42) tetrahydrofuran	4.391	72	13953	50.00	ug/L	100

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198441.D
Acq On : 11 Feb 2020 9:07 pm
Operator : mariceld
Sample : ICC8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Feb 12 08:03:32 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) chloroform	4.433	83	98598	50.00	ug/L	100
45) methacrylonitrile	4.343	67	33945	50.00	ug/L	100
46) 1,1,1-trichloroethane	4.580	97	89071	50.00	ug/L	100
47) cyclohexane	4.638	84	91837	50.00	ug/L	100
48) 1,1-dichloropropene	4.686	75	76931	50.00	ug/L	100
49) carbon tetrachloride	4.692	117	77496	50.00	ug/L	100
50) isopropyl acetate	4.802	87	18974	50.00	ug/L	100
51) tert amyl alcohol	4.779	55	24600	250.00	ug/L	100
54) tert-amyl methyl ether	4.898	73	183906	50.00	ug/L	100
55) 2,2,4-trimethylpentane	4.901	57	132362	50.00	ug/L	100
56) n-butyl alcohol	5.164	56	197680	2500.00	ug/L	100
57) benzene	4.840	78	229174	50.00	ug/L	100
58) heptane	5.007	57	32208	50.00	ug/L	100
59) 1,2-dichloroethane	4.859	62	76827	50.00	ug/L	100
60) trichloroethene	5.309	95	58336	50.00	ug/L	100
61) ethyl acrylate	5.325	55	112063	50.00	ug/L	100
62) 2-nitropropane	5.870	41	21745	49.05	ug/L	100
63) 2-chloroethyl vinyl ether	5.896	63	28853	250.00	ug/L	100
64) methyl methacrylate	5.511	100	22346	50.00	ug/L	100
65) 1,2-dichloropropane	5.514	63	59181	50.00	ug/L	100
66) methylcyclohexane	5.504	83	85298	50.00	ug/L	100
67) dibromomethane	5.585	93	36861	50.00	ug/L	100
68) bromodichloromethane	5.700	83	78156	50.00	ug/L	100
69) cis-1,3-dichloropropene	6.047	75	99281	50.00	ug/L	100
70) epichlorohydrin	5.954	57	51383	250.00	ug/L	100
71) 4-methyl-2-pentanone	6.146	58	146626	200.00	ug/L	100
72) 3-methyl-1-butanol	6.156	70	73541	1000.00	ug/L	100
75) toluene	6.335	92	143313	50.00	ug/L	100
76) trans-1,3-dichloropropene	6.502	75	91442	50.00	ug/L	100
77) ethyl methacrylate	6.518	69	91551	50.00	ug/L	100
78) 1,1,2-trichloroethane	6.676	83	46411	50.00	ug/L	100
79) 2-hexanone	6.839	58	152987	200.00	ug/L	100
80) tetrachloroethene	6.775	166	67289	50.00	ug/L	100
81) 1,3-dichloropropane	6.823	76	93196	50.00	ug/L	100
82) butyl acetate	6.923	56	56982	50.00	ug/L	100
83) dibromochloromethane	7.016	129	61695	50.00	ug/L	100
84) 1,2-dibromoethane	7.138	107	67677	50.00	ug/L	100
85) n-butyl ether	7.603	57	258263	50.00	ug/L	100
86) chlorobenzene	7.568	112	162811	50.00	ug/L	100
87) 1,1,1,2-tetrachloroethane	7.632	131	57860	50.00	ug/L	100
88) ethylbenzene	7.641	91	268889	50.00	ug/L	100
89) m,p-xylene	7.754	106	205410	100.00	ug/L	100
90) o-xylene	8.116	106	101858	50.00	ug/L	100
91) butyl acrylate	8.027	55	142310	50.00	ug/L	100
92) n-amyl acetate	8.232	70	53961	50.00	ug/L	100
93) styrene	8.132	104	178169	50.00	ug/L	100
94) bromoform	8.312	173	46159	50.00	ug/L	100
95) isopropylbenzene	8.453	105	253296	50.00	ug/L	100
96) cis-1,4-dichloro-2-butene	8.505	88	31856	50.00	ug/L	100
99) bromobenzene	8.777	156	70354	50.00	ug/L	100
100) 1,1,2,2-tetrachloroethane	8.732	83	83746	50.00	ug/L	100
101) trans-1,4-dichloro-2-b...	8.774	53	23892	50.00	ug/L	100
102) 1,2,3-trichloropropane	8.803	110	25773	50.00	ug/L	100
103) n-propylbenzene	8.851	91	282158	50.00	ug/L	100
104) 2-chlorotoluene	8.951	126	62975	50.00	ug/L	100
105) 4-chlorotoluene	9.066	126	62323	50.00	ug/L	100
106) 1,3,5-trimethylbenzene	9.021	105	195573	50.00	ug/L	100
107) tert-butylbenzene	9.333	119	166260	50.00	ug/L	100

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198441.D
Acq On : 11 Feb 2020 9:07 pm
Operator : mariceld
Sample : ICC8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Feb 12 08:03:32 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

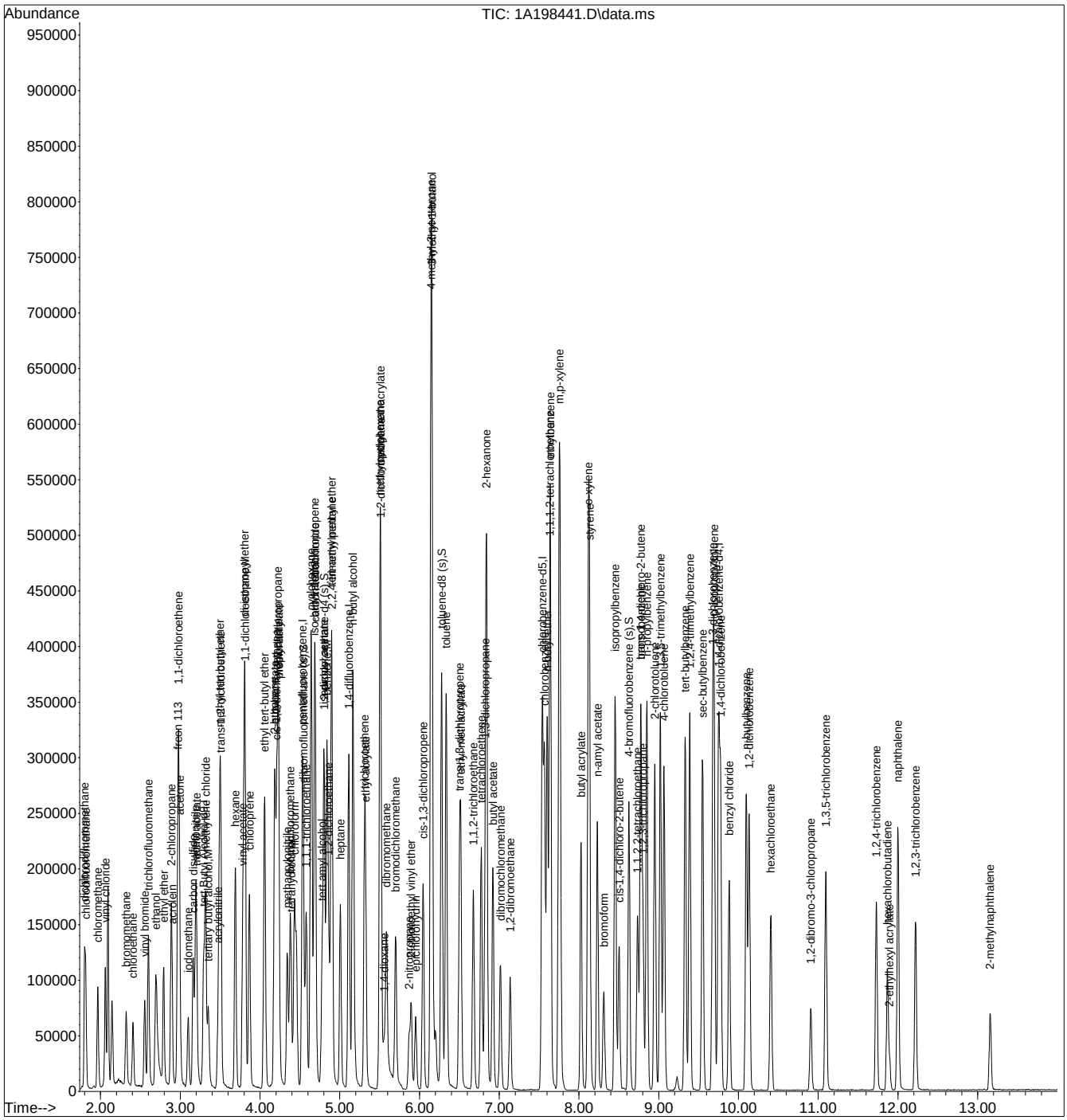
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.390	105	197070	50.00	ug/L	100
109) sec-butylbenzene	9.551	105	224019	50.00	ug/L	100
110) 1,3-dichlorobenzene	9.679	146	119202	50.00	ug/L	100
111) p-isopropyltoluene	9.695	119	191283	50.00	ug/L	100
112) 1,4-dichlorobenzene	9.775	146	118824	50.00	ug/L	100
113) 1,2-dichlorobenzene	10.135	146	113435	50.00	ug/L	100
114) n-butylbenzene	10.099	92	84894	50.00	ug/L	100
115) 1,2-dibromo-3-chloropr...	10.908	157	23848	50.00	ug/L	100
116) 1,3,5-trichlorobenzene	11.097	180	69822	50.00	ug/L	100
117) 1,2,4-trichlorobenzene	11.730	180	59811	50.00	ug/L	100
118) hexachlorobutadiene	11.868	225	22883	50.00	ug/L	100
119) naphthalene	11.999	128	204436	50.00	ug/L	100
120) 1,2,3-trichlorobenzene	12.221	180	54319	50.00	ug/L	100
121) hexachloroethane	10.404	119	32127	50.00	ug/L	100
122) benzyl chloride	9.884	91	144716	50.00	ug/L	100
123) 2-ethylhexyl acrylate	11.893	70	6847	10.00	ug/L	100
124) 2-methylnaphthalene	13.154	142	38500	25.00	ug/L	100

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198441.D
Acq On : 11 Feb 2020 9:07 pm
Operator : mariceld
Sample : ICC8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 14 Sample Multiplier: 1

Quant Time: Feb 12 08:03:32 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198442.D
Acq On : 11 Feb 2020 9:32 pm
Operator : mariceld
Sample : IC8558-100
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Feb 12 08:03:35 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) tert Butyl Alcohol-d9	3.297	65	115074	500.00	ug/L		0.00
5) pentafluorobenzene	4.532	168	133993	50.00	ug/L		0.00
52) 1,4-difluorobenzene	5.113	114	211754	50.00	ug/L		0.00
73) chlorobenzene-d5	7.542	117	202381	50.00	ug/L		0.00
97) 1,4-dichlorobenzene-d4	9.750	152	87101	50.00	ug/L		0.00
System Monitoring Compounds							
44) dibromofluoromethane (s)	4.545	113	57935	49.61	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 99.22%				
53) 1,2-dichloroethane-d4 (s)	4.805	65	64393	50.30	ug/L		0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 100.60%				
74) toluene-d8 (s)	6.278	98	234137	48.20	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 96.40%				
98) 4-bromofluorobenzene (s)	8.627	95	86623	51.22	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 102.44%				
Target Compounds							Qvalue
2) 1,4-dioxane	5.559	88	65683	2485.22	ug/L		98
3) ethanol	2.700	45	264431	9820.98	ug/L		100
4) tertiary butyl alcohol	3.354	59	142541	507.35	ug/L		97
6) chlorodifluoromethane	1.814	51	144376	105.56	ug/L		99
7) dichlorodifluoromethane	1.798	85	136140	100.89	ug/L		98
8) chloromethane	1.965	50	134907	98.54	ug/L		99
9) vinyl chloride	2.061	62	148763	97.79	ug/L		98
10) bromomethane	2.315	94	68009	97.30	ug/L		95
11) chloroethane	2.401	64	72529	95.09	ug/L		95
12) vinyl bromide	2.549	106	81958	97.72	ug/L		97
13) trichlorofluoromethane	2.597	101	168500	99.48	ug/L		97
14) ethyl ether	2.790	74	64561	102.82	ug/L		96
15) 2-chloropropane	2.886	43	177571	101.92	ug/L		97
16) acrolein	2.896	56	35811	102.65	ug/L		95
17) freon 113	2.969	151	94615	105.00	ug/L		99
18) 1,1-dichloroethene	2.979	96	104499	104.64	ug/L		94
19) acetone	2.995	58	67442	407.81	ug/L		96
20) acetonitrile	3.194	40	142976	1015.06	ug/L		92
21) iodomethane	3.098	142	120616	101.35	ug/L		99
22) iso-butyl alcohol	4.686	43	112751	1044.49	ug/L		99
23) carbon disulfide	3.159	76	267202	104.23	ug/L		98
24) methylene chloride	3.316	84	112087	103.65	ug/L		98
25) methyl acetate	3.207	74	30708	101.24	ug/L		100
26) methyl tert butyl ether	3.492	73	345418	101.35	ug/L		100
27) trans-1,2-dichloroethene	3.508	96	108251	103.93	ug/L		98
28) hexane	3.691	57	156508	103.95	ug/L		98
29) di-isopropyl ether	3.807	45	396195	101.36	ug/L		98
30) ethyl tert-butyl ether	4.057	59	375700	102.51	ug/L		99
31) 2-butanone	4.182	72	95644	412.82	ug/L		97
32) 1,1-dichloroethane	3.813	63	195877	100.12	ug/L		98
33) chloroprene	3.865	53	172406	100.96	ug/L		98
34) acrylonitrile	3.473	53	68946	105.48	ug/L		94
35) vinyl acetate	3.781	86	30922	105.06	ug/L		95
36) ethyl acetate	4.189	45	32732	115.30	ug/L	#	70
37) 2,2-dichloropropane	4.221	77	156995	101.07	ug/L		97
38) cis-1,2-dichloroethene	4.208	96	121157	101.19	ug/L		99
39) propionitrile	4.234	54	248511	1019.34	ug/L		99
40) methyl acrylate	4.234	85	26304	104.60	ug/L	#	93
41) bromochloromethane	4.378	128	59689	103.45	ug/L		94
42) tetrahydrofuran	4.394	72	25753	97.64	ug/L		97

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198442.D
Acq On : 11 Feb 2020 9:32 pm
Operator : mariceld
Sample : IC8558-100
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Feb 12 08:03:35 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
43) chloroform	4.429	83	189545	101.69	ug/L	97
45) methacrylonitrile	4.340	67	67232	104.77	ug/L	98
46) 1,1,1-trichloroethane	4.580	97	173943	103.31	ug/L	99
47) cyclohexane	4.638	84	169939	97.89	ug/L	96
48) 1,1-dichloropropene	4.686	75	150017	103.15	ug/L	99
49) carbon tetrachloride	4.696	117	151213	103.22	ug/L	98
50) isopropyl acetate	4.802	87	36761	102.49	ug/L	99
51) tert amyl alcohol	4.782	55	47673	512.58	ug/L	95
54) tert-amyl methyl ether	4.898	73	353753	100.64	ug/L	97
55) 2,2,4-trimethylpentane	4.898	57	260155	102.83	ug/L	97
56) n-butyl alcohol	5.171	56	388615	5142.73	ug/L	99
57) benzene	4.840	78	438527	100.11	ug/L	99
58) heptane	5.007	57	62987	102.32	ug/L	97
59) 1,2-dichloroethane	4.859	62	147838	100.68	ug/L	97
60) trichloroethene	5.312	95	114405	102.61	ug/L	96
61) ethyl acrylate	5.325	55	217510	101.55	ug/L	98
62) 2-nitropropane	5.867	41	45266	106.84	ug/L	95
63) 2-chloroethyl vinyl ether	5.896	63	71276	646.23	ug/L	95
64) methyl methacrylate	5.508	100	43826	102.61	ug/L	95
65) 1,2-dichloropropane	5.514	63	115295	101.93	ug/L	97
66) methylcyclohexane	5.504	83	170644	104.67	ug/L	98
67) dibromomethane	5.585	93	70768	100.45	ug/L	96
68) bromodichloromethane	5.700	83	154669	103.54	ug/L	98
69) cis-1,3-dichloropropene	6.043	75	194897	102.71	ug/L	97
70) epichlorohydrin	5.954	57	102574	522.22	ug/L	97
71) 4-methyl-2-pentanone	6.146	58	283477	404.61	ug/L	97
72) 3-methyl-1-butanol	6.159	70	145302	2067.47	ug/L	95
75) toluene	6.335	92	283808	98.20	ug/L	99
76) trans-1,3-dichloropropene	6.499	75	179707	97.45	ug/L	93
77) ethyl methacrylate	6.518	69	182710	98.96	ug/L	99
78) 1,1,2-trichloroethane	6.676	83	91170	97.41	ug/L	95
79) 2-hexanone	6.842	58	298012	386.39	ug/L	99
80) tetrachloroethene	6.772	166	134848	99.38	ug/L	98
81) 1,3-dichloropropane	6.823	76	182322	97.01	ug/L	98
82) butyl acetate	6.920	56	111145	96.72	ug/L	90
83) dibromochloromethane	7.016	129	125944	101.23	ug/L	98
84) 1,2-dibromoethane	7.138	107	133563	97.86	ug/L	95
85) n-butyl ether	7.603	57	516322	99.14	ug/L	100
86) chlorobenzene	7.568	112	323551	98.55	ug/L	99
87) 1,1,1,2-tetrachloroethane	7.635	131	116651	99.98	ug/L	99
88) ethylbenzene	7.641	91	531001	97.93	ug/L	99
89) m,p-xylene	7.757	106	410905	198.40	ug/L	98
90) o-xylene	8.116	106	202943	98.80	ug/L	99
91) butyl acrylate	8.023	55	284873	99.27	ug/L	99
92) n-amyl acetate	8.229	70	105995	97.41	ug/L	98
93) styrene	8.132	104	353295	98.33	ug/L	98
94) bromoform	8.312	173	94010	101.00	ug/L	97
95) isopropylbenzene	8.453	105	512107	100.26	ug/L	99
96) cis-1,4-dichloro-2-butene	8.505	88	66190	103.03	ug/L	94
99) bromobenzene	8.777	156	143360	104.77	ug/L	96
100) 1,1,2,2-tetrachloroethane	8.736	83	164909	101.25	ug/L	98
101) trans-1,4-dichloro-2-b...	8.774	53	49414	106.34	ug/L	98
102) 1,2,3-trichloropropane	8.803	110	51497	102.74	ug/L	98
103) n-propylbenzene	8.851	91	565834	103.11	ug/L	100
104) 2-chlorotoluene	8.951	126	125908	102.80	ug/L	93
105) 4-chlorotoluene	9.066	126	123977	102.28	ug/L	98
106) 1,3,5-trimethylbenzene	9.021	105	393141	103.36	ug/L	98
107) tert-butylbenzene	9.333	119	336825	104.16	ug/L	99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198442.D
Acq On : 11 Feb 2020 9:32 pm
Operator : mariceld
Sample : IC8558-100
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Feb 12 08:03:35 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

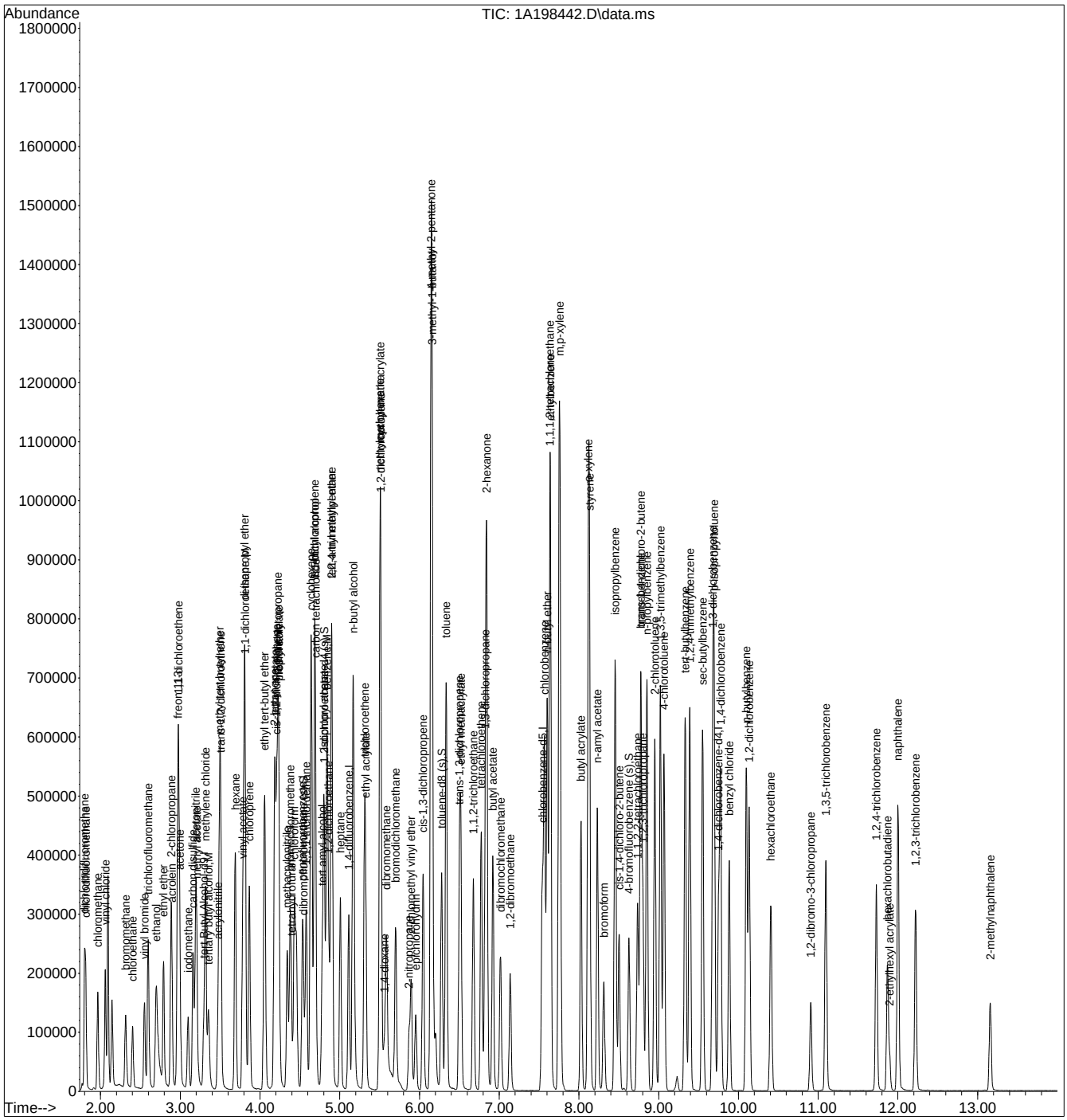
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.390	105	390245	101.82	ug/L	99
109) sec-butylbenzene	9.551	105	453036	103.98	ug/L	99
110) 1,3-dichlorobenzene	9.679	146	235339	101.51	ug/L	99
111) p-isopropyltoluene	9.695	119	381408	102.52	ug/L	99
112) 1,4-dichlorobenzene	9.775	146	235564	101.93	ug/L	97
113) 1,2-dichlorobenzene	10.135	146	220423	99.91	ug/L	98
114) n-butylbenzene	10.100	92	170946	103.53	ug/L	97
115) 1,2-dibromo-3-chloropr...	10.908	157	49449	106.61	ug/L	97
116) 1,3,5-trichlorobenzene	11.098	180	139064	102.41	ug/L	97
117) 1,2,4-trichlorobenzene	11.730	180	122243	105.09	ug/L	96
118) hexachlorobutadiene	11.868	225	47020	105.65	ug/L	97
119) naphthalene	11.999	128	419396	105.48	ug/L	99
120) 1,2,3-trichlorobenzene	12.221	180	111854	105.88	ug/L	98
121) hexachloroethane	10.404	119	65668	105.10	ug/L	97
122) benzyl chloride	9.885	91	295448	104.97	ug/L	98
123) 2-ethylhexyl acrylate	11.897	70	14412	21.65	ug/L	97
124) 2-methylnaphthalene	13.161	142	86854	58.00	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198442.D
Acq On : 11 Feb 2020 9:32 pm
Operator : mariceld
Sample : IC8558-100
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 15 Sample Multiplier: 1

Quant Time: Feb 12 08:03:35 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198443.D
Acq On : 11 Feb 2020 9:57 pm
Operator : mariceld
Sample : IC8558-200
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Feb 12 08:03:38 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.300	65	102348	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	133103	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	208189	50.00	ug/L	0.00
73) chlorobenzene-d5	7.542	117	197192	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.753	152	83430	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.542	113	57241	49.35	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 98.70%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	63534	50.48	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 100.96%			
74) toluene-d8 (s)	6.278	98	228459	48.27	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 96.54%			
98) 4-bromofluorobenzene (s)	8.626	95	82819	51.12	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 102.24%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.559	88	117397	4994.20	ug/L	99
3) ethanol	2.706	45	437326	18261.89	ug/L	97
4) tertiary butyl alcohol	3.357	59	244828	979.77	ug/L	98
6) chlorodifluoromethane	1.814	51	272067	200.26	ug/L	97
7) dichlorodifluoromethane	1.798	85	260459	194.31	ug/L	97
8) chloromethane	1.965	50	262113	192.74	ug/L	99
9) vinyl chloride	2.058	62	286929	189.87	ug/L	99
10) bromomethane	2.302	94	123987	178.58	ug/L	97
11) chloroethane	2.392	64	132463	174.82	ug/L	93
12) vinyl bromide	2.542	106	156799	188.20	ug/L	97
13) trichlorofluoromethane	2.594	101	321291	190.95	ug/L	98
14) ethyl ether	2.789	74	122703	196.73	ug/L	97
15) 2-chloropropane	2.883	43	336015	194.15	ug/L	99
16) acrolein	2.895	56	64837	187.10	ug/L	90
17) freon 113	2.966	151	172941	193.20	ug/L	99
18) 1,1-dichloroethene	2.976	96	196672	198.26	ug/L	95
19) acetone	2.992	58	124887	760.22	ug/L	100
20) acetonitrile	3.194	40	254441	1818.49	ug/L	89
21) iodomethane	3.094	142	226609	191.68	ug/L	100
22) iso-butyl alcohol	4.689	43	198864	1854.53	ug/L	97
23) carbon disulfide	3.155	76	505907	198.66	ug/L	98
24) methylene chloride	3.316	84	211049	196.47	ug/L	98
25) methyl acetate	3.203	74	58837	195.28	ug/L	95
26) methyl tert butyl ether	3.492	73	654817	193.41	ug/L	99
27) trans-1,2-dichloroethene	3.505	96	202642	195.85	ug/L	99
28) hexane	3.688	57	292952	195.88	ug/L	97
29) di-isopropyl ether	3.803	45	738628	190.22	ug/L	98
30) ethyl tert-butyl ether	4.057	59	708463	194.60	ug/L	99
31) 2-butanone	4.182	72	172983	751.62	ug/L	96
32) 1,1-dichloroethane	3.813	63	372110	191.47	ug/L	99
33) chloroprene	3.864	53	326078	192.23	ug/L	97
34) acrylonitrile	3.473	53	127365	196.15	ug/L	94
35) vinyl acetate	3.784	86	57883	197.99	ug/L	95
36) ethyl acetate	4.185	45	56176	199.21	ug/L	86
37) 2,2-dichloropropane	4.221	77	294106	190.61	ug/L	97
38) cis-1,2-dichloroethene	4.205	96	228868	192.43	ug/L	98
39) propionitrile	4.233	54	443445	1831.08	ug/L	93
40) methyl acrylate	4.233	85	48653	194.76	ug/L	99
41) bromochloromethane	4.378	128	111725	194.94	ug/L	95
42) tetrahydrofuran	4.391	72	49265	188.03	ug/L	99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198443.D
Acq On : 11 Feb 2020 9:57 pm
Operator : mariceld
Sample : IC8558-200
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Feb 12 08:03:38 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
43) chloroform	4.429	83	361981	195.51	ug/L		98
45) methacrylonitrile	4.343	67	127446	199.94	ug/L		99
46) 1,1,1-trichloroethane	4.577	97	334533	200.01	ug/L		98
47) cyclohexane	4.638	84	319662	185.36	ug/L		95
48) 1,1-dichloropropene	4.686	75	287962	199.33	ug/L		98
49) carbon tetrachloride	4.692	117	288357	198.15	ug/L		98
50) isopropyl acetate	4.801	87	69454	194.93	ug/L		96
51) tert amyl alcohol	4.785	55	82548	893.48	ug/L	#	91
54) tert-amyl methyl ether	4.898	73	673521	194.89	ug/L		99
55) 2,2,4-trimethylpentane	4.898	57	485478	195.19	ug/L		97
56) n-butyl alcohol	5.177	56	692308	9318.53	ug/L		99
57) benzene	4.837	78	826901	192.01	ug/L		98
58) heptane	5.007	57	118313	195.48	ug/L		98
59) 1,2-dichloroethane	4.862	62	283090	196.09	ug/L		99
60) trichloroethene	5.308	95	220133	200.81	ug/L		98
61) ethyl acrylate	5.324	55	410243	194.81	ug/L		99
62) 2-nitropropane	5.870	41	86028	206.53	ug/L		99
63) 2-chloroethyl vinyl ether	5.896	63	164505	1517.05	ug/L		92
64) methyl methacrylate	5.507	100	82330	196.06	ug/L	#	89
65) 1,2-dichloropropane	5.514	63	224792	202.13	ug/L		100
66) methylcyclohexane	5.504	83	318518	198.72	ug/L		100
67) dibromomethane	5.584	93	135125	195.08	ug/L		98
68) bromodichloromethane	5.700	83	298605	203.32	ug/L		97
69) cis-1,3-dichloropropene	6.047	75	376127	201.61	ug/L		97
70) epichlorohydrin	5.953	57	185681	961.52	ug/L		96
71) 4-methyl-2-pentanone	6.149	58	519386	754.02	ug/L		93
72) 3-methyl-1-butanol	6.165	70	255099	3691.90	ug/L		92
75) toluene	6.335	92	546078	193.92	ug/L		99
76) trans-1,3-dichloropropene	6.502	75	350313	194.97	ug/L		97
77) ethyl methacrylate	6.518	69	346477	192.61	ug/L		99
78) 1,1,2-trichloroethane	6.675	83	174100	190.92	ug/L		95
79) 2-hexanone	6.842	58	531728	707.55	ug/L		99
80) tetrachloroethene	6.775	166	254856	192.76	ug/L		98
81) 1,3-dichloropropane	6.823	76	345733	188.80	ug/L		98
82) butyl acetate	6.919	56	206763	184.67	ug/L		93
83) dibromochloromethane	7.016	129	241681	199.37	ug/L		97
84) 1,2-dibromoethane	7.138	107	256590	192.96	ug/L		99
85) n-butyl ether	7.603	57	964305	190.03	ug/L		100
86) chlorobenzene	7.568	112	623530	194.91	ug/L		98
87) 1,1,1,2-tetrachloroethane	7.635	131	220916	194.32	ug/L		98
88) ethylbenzene	7.641	91	1000265	189.32	ug/L		99
89) m,p-xylene	7.757	106	771109	382.11	ug/L		99
90) o-xylene	8.116	106	380851	190.29	ug/L		96
91) butyl acrylate	8.026	55	520254	186.06	ug/L		99
92) n-amyl acetate	8.232	70	190166	179.36	ug/L		99
93) styrene	8.132	104	653149	186.57	ug/L		97
94) bromoform	8.312	173	179381	197.78	ug/L		98
95) isopropylbenzene	8.453	105	961282	193.15	ug/L		99
96) cis-1,4-dichloro-2-butene	8.505	88	122228	195.27	ug/L		96
99) bromobenzene	8.777	156	262274	200.11	ug/L		99
100) 1,1,2,2-tetrachloroethane	8.736	83	297527	190.71	ug/L		97
101) trans-1,4-dichloro-2-b...	8.774	53	89338	200.72	ug/L		99
102) 1,2,3-trichloropropane	8.803	110	92753	193.18	ug/L		98
103) n-propylbenzene	8.854	91	1038683	197.60	ug/L		99
104) 2-chlorotoluene	8.954	126	230889	196.81	ug/L		99
105) 4-chlorotoluene	9.069	126	226646	195.21	ug/L		98
106) 1,3,5-trimethylbenzene	9.021	105	716752	196.73	ug/L		98
107) tert-butylbenzene	9.332	119	610494	197.11	ug/L		99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198443.D
Acq On : 11 Feb 2020 9:57 pm
Operator : mariceld
Sample : IC8558-200
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Feb 12 08:03:38 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration

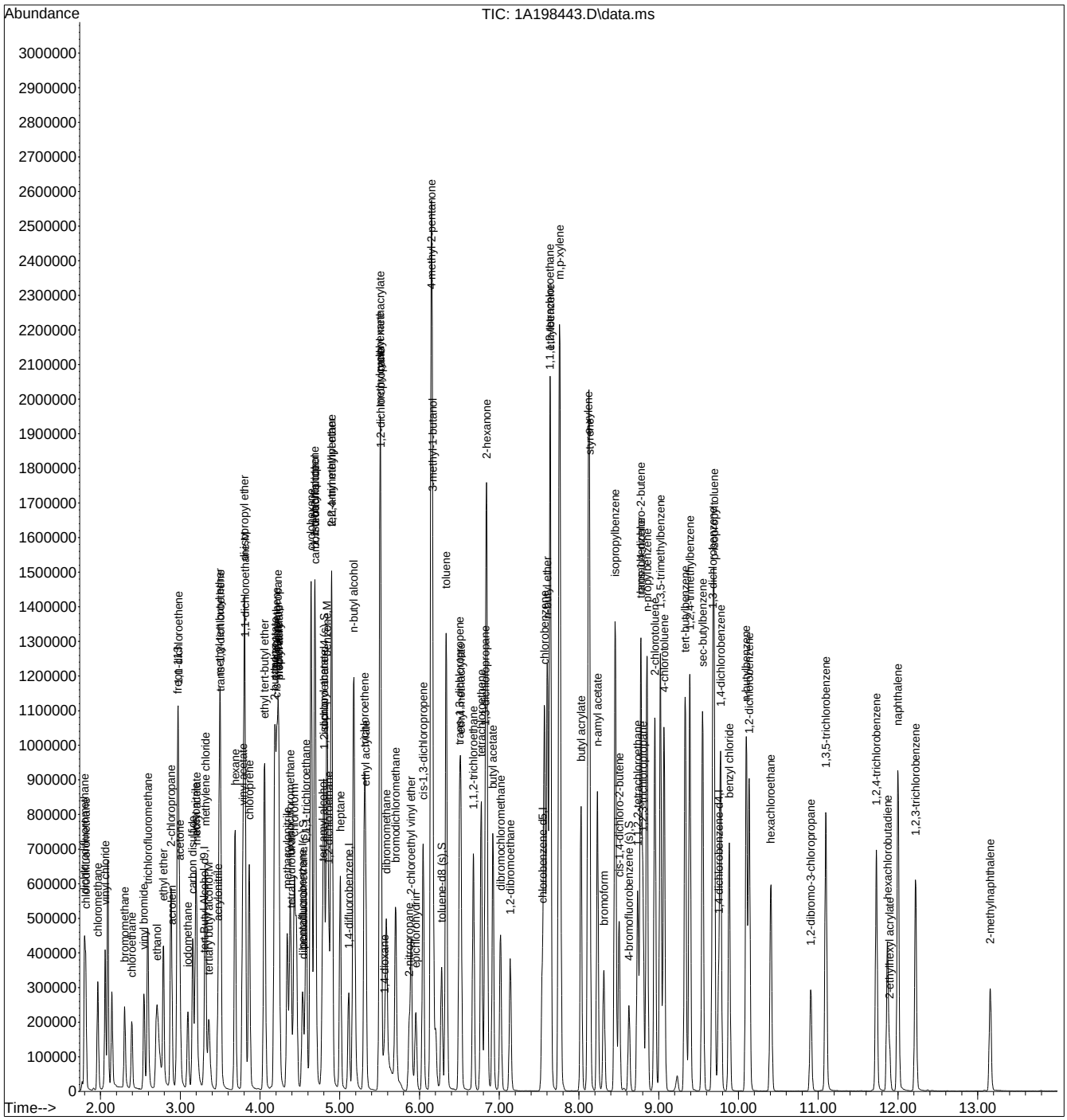
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.390	105	708047	192.86	ug/L	98
109) sec-butylbenzene	9.551	105	814438	195.15	ug/L	99
110) 1,3-dichlorobenzene	9.679	146	432495	194.76	ug/L	100
111) p-isopropyltoluene	9.695	119	685255	192.30	ug/L	99
112) 1,4-dichlorobenzene	9.775	146	433192	195.70	ug/L	98
113) 1,2-dichlorobenzene	10.135	146	412161	195.04	ug/L	99
114) n-butylbenzene	10.096	92	322650	204.01	ug/L	97
115) 1,2-dibromo-3-chloropr...	10.908	157	99504	223.97	ug/L	96
116) 1,3,5-trichlorobenzene	11.094	180	288310	221.65	ug/L	98
117) 1,2,4-trichlorobenzene	11.729	180	252536	226.65	ug/L	99
118) hexachlorobutadiene	11.871	225	93802	220.04	ug/L	95
119) naphthalene	11.999	128	825400	216.73	ug/L	100
120) 1,2,3-trichlorobenzene	12.220	180	221693	219.08	ug/L	97
121) hexachloroethane	10.404	119	125830	210.24	ug/L	98
122) benzyl chloride	9.884	91	554980	205.86	ug/L	98
123) 2-ethylhexyl acrylate	11.896	70	29656	46.50	ug/L	94
124) 2-methylnaphthalene	13.157	142	175044	122.03	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198443.D
Acq On : 11 Feb 2020 9:57 pm
Operator : mariceld
Sample : IC8558-200
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 16 Sample Multiplier: 1

Quant Time: Feb 12 08:03:38 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Wed Feb 12 08:02:40 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198446.D
Acq On : 11 Feb 2020 11:12 pm
Operator : mariceld
Sample : ICV8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Feb 14 16:52:27 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
Internal Standards							
1) tert Butyl Alcohol-d9	3.293	65	119929	500.00	ug/L		0.00
5) pentafluorobenzene	4.532	168	145166	50.00	ug/L		0.00
52) 1,4-difluorobenzene	5.113	114	225813	50.00	ug/L		0.00
73) chlorobenzene-d5	7.539	117	208330	50.00	ug/L		0.00
97) 1,4-dichlorobenzene-d4	9.753	152	92022	50.00	ug/L		0.00
System Monitoring Compounds							
44) dibromofluoromethane (s)	4.545	113	62741	50.14	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.28%				
53) 1,2-dichloroethane-d4 (s)	4.805	65	68159	48.33	ug/L		0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 96.66%				
74) toluene-d8 (s)	6.278	98	246973	48.76	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 97.52%				
98) 4-bromofluorobenzene (s)	8.623	95	90137	50.07	ug/L		0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.14%				
Target Compounds							Qvalue
2) 1,4-dioxane	5.552	88	36038	1379.09	ug/L		98
3) ethanol	2.696	45	148091	4907.71	ug/L		99
4) tertiary butyl alcohol	3.351	59	74608	252.86	ug/L		95
7) dichlorodifluoromethane	1.801	85	73699	53.65	ug/L		95
8) chloromethane	1.965	50	77130	52.41	ug/L		97
9) vinyl chloride	2.061	62	76364	50.61	ug/L		99
10) bromomethane	2.324	94	44663	66.34	ug/L		94
11) chloroethane	2.408	64	37363	49.78	ug/L		89
12) vinyl bromide	2.552	106	49528	58.24	ug/L		100
13) trichlorofluoromethane	2.600	101	94407	55.99	ug/L		93
14) ethyl ether	2.793	74	34308	49.67	ug/L		96
15) 2-chloropropane	2.889	43	94669	47.92	ug/L		97
16) acrolein	2.899	56	17928	46.25	ug/L		90
17) freon 113	2.969	151	48350	50.37	ug/L		95
18) 1,1-dichloroethene	2.979	96	51768	46.85	ug/L		98
19) acetone	2.992	58	37589	202.23	ug/L		98
21) iodomethane	3.101	142	73008	64.52	ug/L		99
22) iso-butyl alcohol	4.683	43	64109	527.91	ug/L		98
23) carbon disulfide	3.162	76	161363	56.21	ug/L		98
24) methylene chloride	3.316	84	59492	47.67	ug/L		96
25) methyl acetate	3.207	74	16051	48.35	ug/L	#	88
26) methyl tert butyl ether	3.495	73	360231	96.53	ug/L		99
27) trans-1,2-dichloroethene	3.508	96	56946	49.61	ug/L		92
28) hexane	3.691	57	93301	54.63	ug/L		97
29) di-isopropyl ether	3.803	45	202097	46.23	ug/L		95
30) ethyl tert-butyl ether	4.057	59	189662	46.99	ug/L		99
31) 2-butanone	4.182	72	51684	203.61	ug/L	#	86
32) 1,1-dichloroethane	3.813	63	107265	50.25	ug/L		98
33) chloroprene	3.868	53	92721	50.46	ug/L		97
35) vinyl acetate	3.784	86	15529	46.02	ug/L	#	94
36) ethyl acetate	4.185	45	16843	48.95	ug/L		91
37) 2,2-dichloropropane	4.224	77	80514	46.38	ug/L		97
38) cis-1,2-dichloroethene	4.208	96	64180	46.20	ug/L		97
39) propionitrile	4.233	54	156413	573.34	ug/L		92
40) methyl acrylate	4.233	85	14313	51.10	ug/L		96
41) bromochloromethane	4.381	128	32321	50.68	ug/L		99
42) tetrahydrofuran	4.394	72	14809	54.05	ug/L		88
43) chloroform	4.429	83	102940	48.99	ug/L		97
45) methacrylonitrile	4.343	67	36527	49.41	ug/L		97
46) 1,1,1-trichloroethane	4.580	97	92138	49.59	ug/L		99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198446.D
Acq On : 11 Feb 2020 11:12 pm
Operator : mariceld
Sample : ICV8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Feb 14 16:52:27 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
47) cyclohexane	4.641	84	87376	47.65	ug/L		87
48) 1,1-dichloropropene	4.686	75	80663	48.90	ug/L		98
49) carbon tetrachloride	4.696	117	80662	50.49	ug/L		99
50) isopropyl acetate	4.805	87	19086	48.89	ug/L	#	91
51) tert amyl alcohol	4.779	55	26929	248.90	ug/L		98
54) tert-amyl methyl ether	4.898	73	173987	44.41	ug/L		99
55) 2,2,4-trimethylpentane	4.901	57	135673	47.65	ug/L		98
56) n-butyl alcohol	5.167	56	206307	2546.94	ug/L		97
57) benzene	4.840	78	235957	48.93	ug/L		99
58) heptane	5.010	57	31960	44.02	ug/L		99
59) 1,2-dichloroethane	4.862	62	78417	45.53	ug/L		100
60) trichloroethene	5.312	95	61950	50.77	ug/L		98
61) ethyl acrylate	5.325	55	113236	48.11	ug/L		98
62) 2-nitropropane	5.867	41	25726	55.97	ug/L		95
63) 2-chloroethyl vinyl ether	5.896	63	33453	321.73	ug/L		94
64) methyl methacrylate	5.507	100	23826	51.55	ug/L		92
65) 1,2-dichloropropane	5.514	63	61129	49.11	ug/L		99
66) methylcyclohexane	5.504	83	88709	49.62	ug/L		98
67) dibromomethane	5.584	93	37702	50.97	ug/L		99
68) bromodichloromethane	5.700	83	80915	49.28	ug/L		99
69) cis-1,3-dichloropropene	6.043	75	104275	52.16	ug/L		97
70) epichlorohydrin	5.953	57	54697	255.89	ug/L		98
71) 4-methyl-2-pentanone	6.146	58	153407	200.81	ug/L		97
72) 3-methyl-1-butanol	6.156	70	76718	1039.00	ug/L		100
75) toluene	6.335	92	150818	49.52	ug/L		100
76) trans-1,3-dichloropropene	6.502	75	97341	51.94	ug/L		97
77) ethyl methacrylate	6.518	69	99352	49.72	ug/L		99
78) 1,1,2-trichloroethane	6.675	83	48511	49.26	ug/L		99
79) 2-hexanone	6.839	58	157697	191.89	ug/L		98
81) 1,3-dichloropropane	6.823	76	98716	49.41	ug/L		98
82) butyl acetate	6.919	56	59357	49.43	ug/L		94
83) dibromochloromethane	7.016	129	66450	51.68	ug/L		97
84) 1,2-dibromoethane	7.134	107	72426	51.30	ug/L		99
85) n-butyl ether	7.603	57	262521	47.94	ug/L		98
86) chlorobenzene	7.568	112	173565	49.97	ug/L		98
87) 1,1,1,2-tetrachloroethane	7.632	131	61537	49.53	ug/L		95
88) ethylbenzene	7.638	91	281203	48.45	ug/L		99
89) m,p-xylene	7.757	106	217371	98.22	ug/L		100
90) o-xylene	8.116	106	106759	48.29	ug/L		98
91) butyl acrylate	8.026	55	145561	49.29	ug/L		98
92) n-amyl acetate	8.232	70	53280	48.06	ug/L		97
93) styrene	8.132	104	185890	49.90	ug/L		99
94) bromoform	8.309	173	52192	56.11	ug/L		95
95) isopropylbenzene	8.453	105	270692	49.48	ug/L		99
96) cis-1,4-dichloro-2-butene	8.505	88	34627	56.01	ug/L		96
99) bromobenzene	8.774	156	75035	50.19	ug/L		97
100) 1,1,2,2-tetrachloroethane	8.736	83	87568	50.19	ug/L		97
101) trans-1,4-dichloro-2-b...	8.771	53	24428	51.35	ug/L		98
102) 1,2,3-trichloropropane	8.803	110	27222	50.40	ug/L		95
103) n-propylbenzene	8.851	91	303736	50.95	ug/L		98
104) 2-chlorotoluene	8.951	126	65447	49.94	ug/L		94
105) 4-chlorotoluene	9.066	126	67126	52.11	ug/L		94
106) 1,3,5-trimethylbenzene	9.018	105	207315	49.18	ug/L		98
107) tert-butylbenzene	9.332	119	181723	51.98	ug/L		97
108) 1,2,4-trimethylbenzene	9.387	105	212564	50.16	ug/L		96
109) sec-butylbenzene	9.547	105	239968	51.22	ug/L		98
110) 1,3-dichlorobenzene	9.679	146	129446	51.65	ug/L		98
111) p-isopropyltoluene	9.695	119	205195	51.45	ug/L		99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198446.D
Acq On : 11 Feb 2020 11:12 pm
Operator : mariceld
Sample : ICV8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Feb 14 16:52:27 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

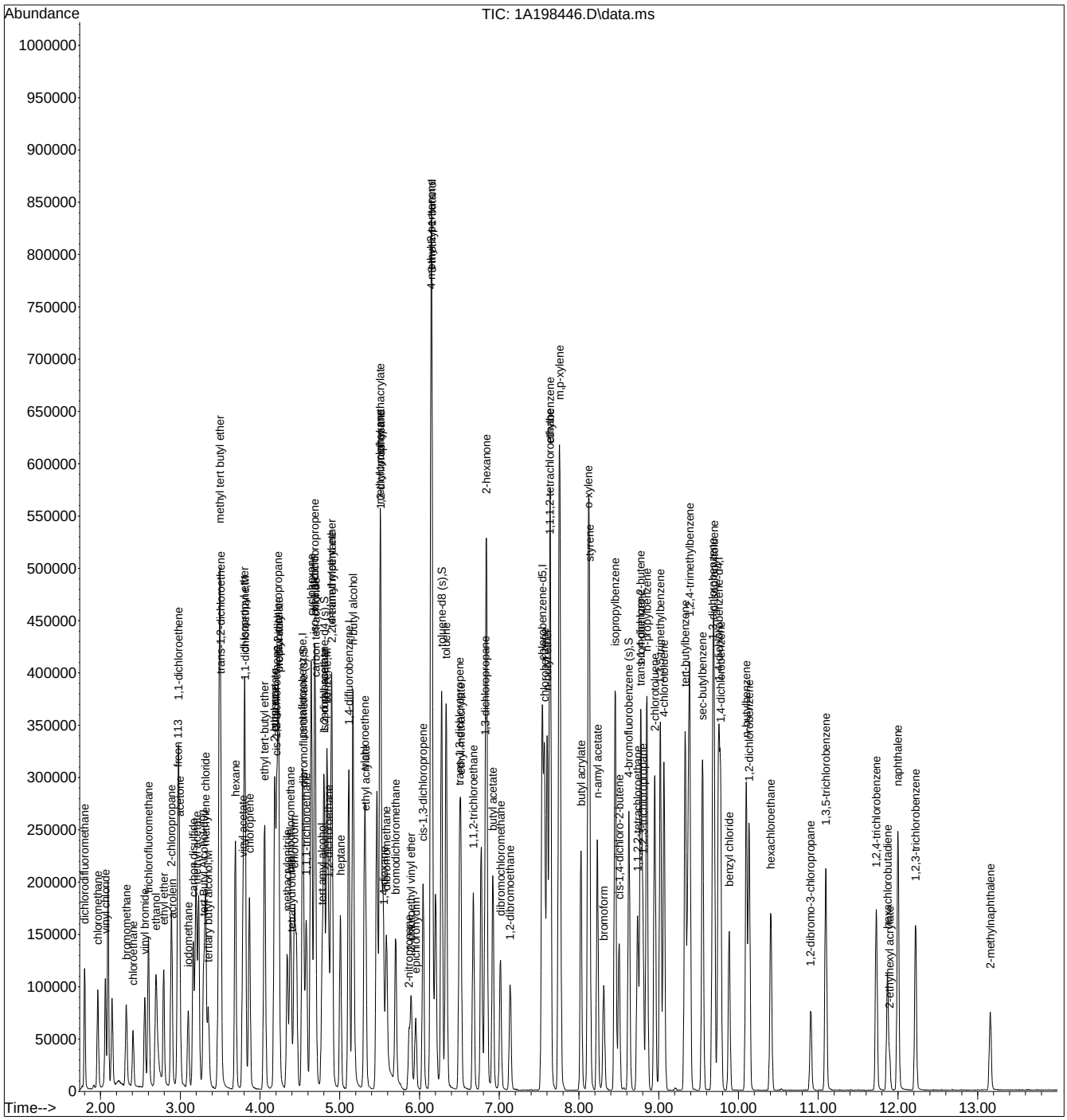
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
112) 1,4-dichlorobenzene	9.775	146	126220	49.55	ug/L	98
113) 1,2-dichlorobenzene	10.135	146	119512	50.96	ug/L	99
114) n-butylbenzene	10.099	92	90693	52.20	ug/L	98
115) 1,2-dibromo-3-chloropr...	10.905	157	25011	52.43	ug/L	96
116) 1,3,5-trichlorobenzene	11.097	180	75435	52.95	ug/L	93
117) 1,2,4-trichlorobenzene	11.726	180	63521	51.99	ug/L	94
118) hexachlorobutadiene	11.871	225	23916	48.91	ug/L	96
119) naphthalene	11.999	128	216744	53.08	ug/L	99
120) 1,2,3-trichlorobenzene	12.220	180	56945	51.24	ug/L	98
121) hexachloroethane	10.404	119	34570	55.04	ug/L	96
122) benzyl chloride	9.884	91	115501	41.79	ug/L	98
123) 2-ethylhexyl acrylate	11.896	70	7818	11.47	ug/L	99
124) 2-methylnaphthalene	13.161	142	42590	26.81	ug/L	96

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198446.D
Acq On : 11 Feb 2020 11:12 pm
Operator : mariceld
Sample : ICV8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 19 Sample Multiplier: 1

Quant Time: Feb 14 16:52:27 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198447.D
Acq On : 11 Feb 2020 11:37 pm
Operator : mariceld
Sample : ICV8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Feb 14 16:17:35 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

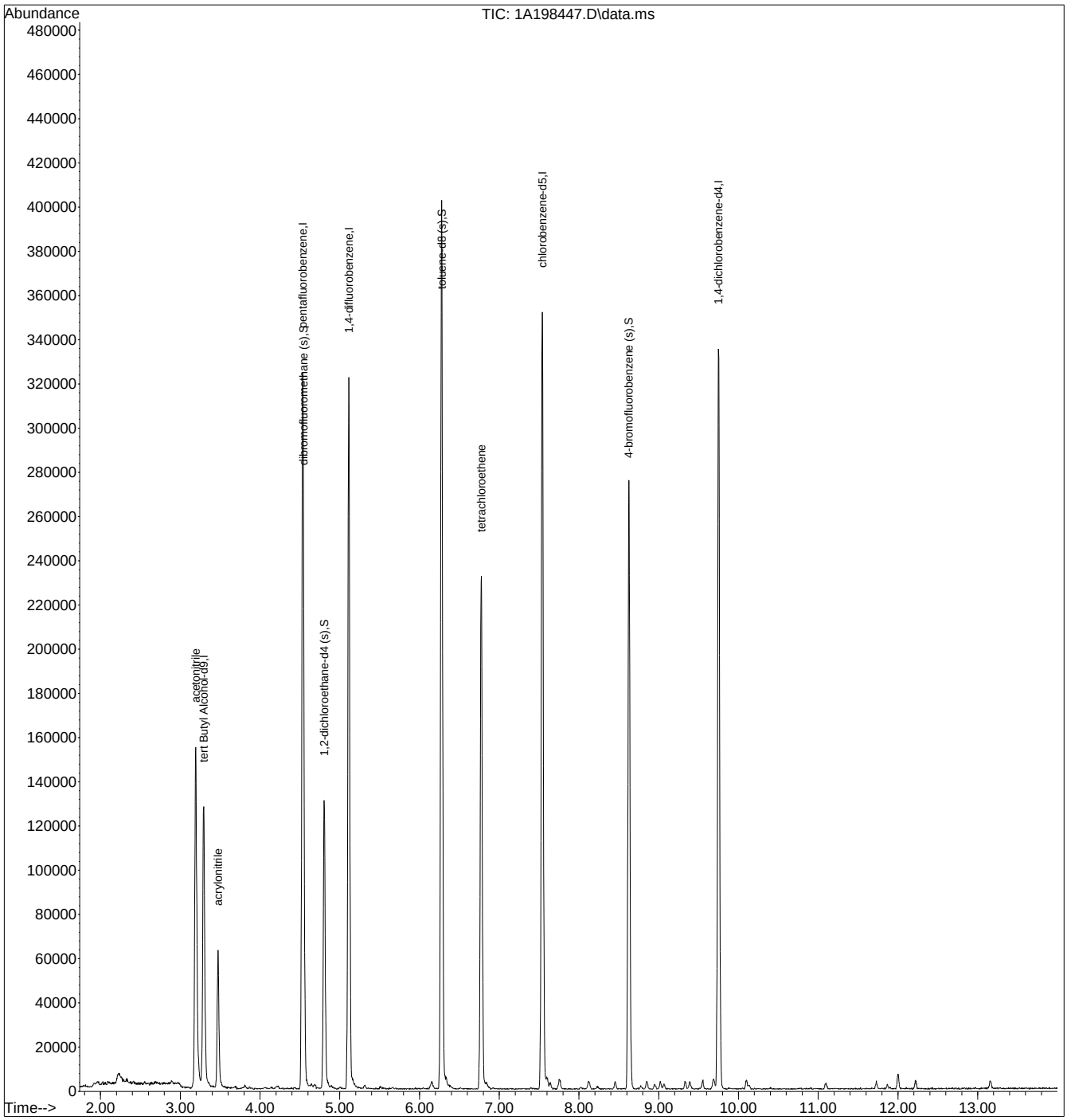
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.293	65	131703	500.00	ug/L	0.00
5) pentafluorobenzene	4.535	168	155076	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	238423	50.00	ug/L	0.00
73) chlorobenzene-d5	7.539	117	214021	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.750	152	95948	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	66579	49.81	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 99.62%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	75086	50.43	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 100.86%			
74) toluene-d8 (s)	6.278	98	264595	50.85	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 101.70%			
98) 4-bromofluorobenzene (s)	8.623	95	93991	50.08	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.16%			
Target Compounds						Qvalue
20) acetonitrile	3.194	40	82576	493.97	ug/L	89
34) acrylonitrile	3.473	53	39321	51.32	ug/L	93
80) tetrachloroethene	6.775	166	72879	48.98	ug/L	98

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198447.D
Acq On : 11 Feb 2020 11:37 pm
Operator : mariceld
Sample : ICV8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 20 Sample Multiplier: 1

Quant Time: Feb 14 16:17:35 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



M1A8558.M Mon Feb 17 11:53:03 2020 1A

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198450.D
Acq On : 12 Feb 2020 8:56 am
Operator : mariceld
Sample : icv8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Feb 14 16:21:27 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

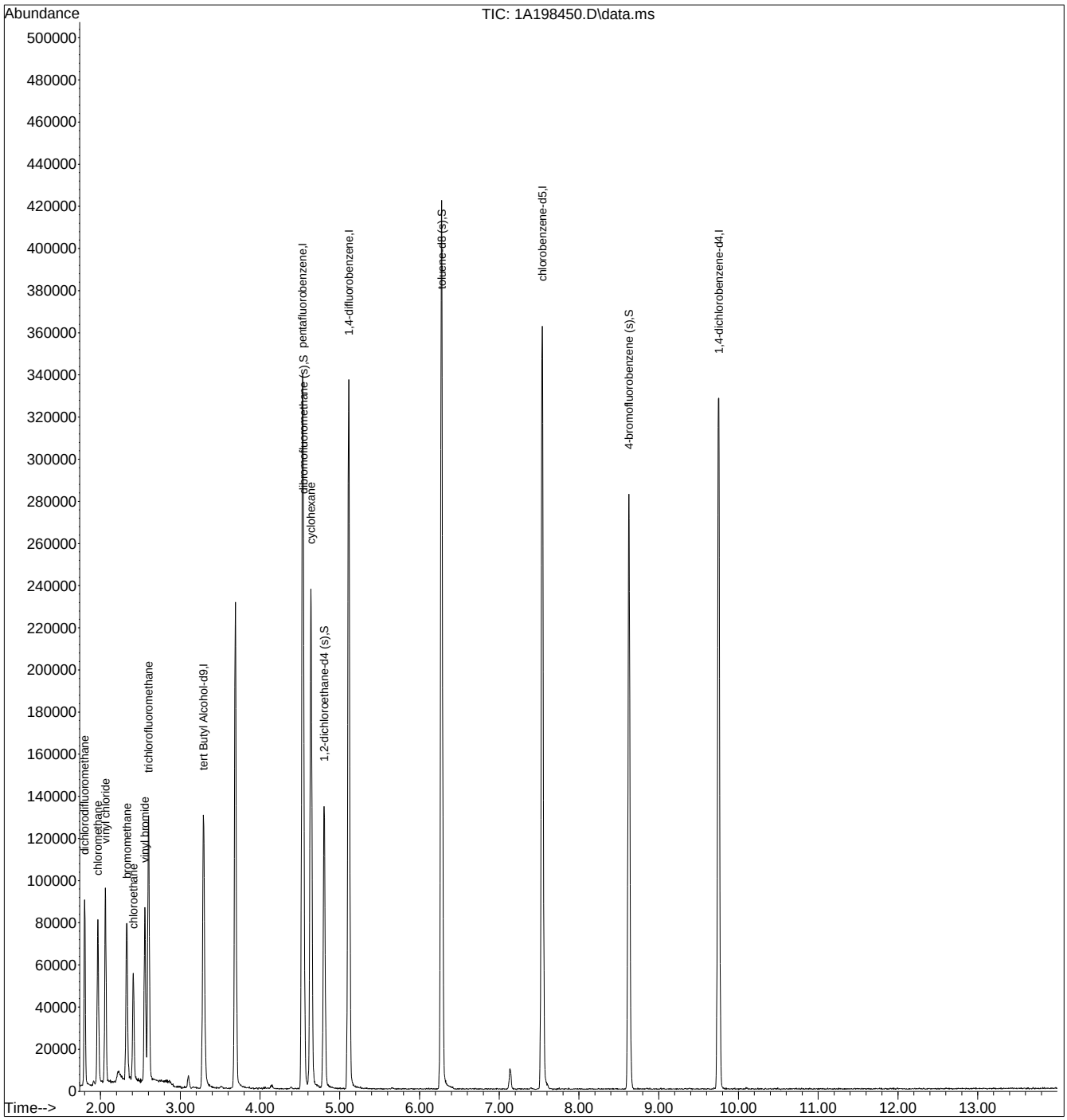
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	134291	500.00	ug/L	0.00
5) pentafluorobenzene	4.532	168	162750	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.113	114	250794	50.00	ug/L	0.00
73) chlorobenzene-d5	7.539	117	219156	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.753	152	97898	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.545	113	70551	50.29	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 100.58%			
53) 1,2-dichloroethane-d4 (s)	4.805	65	76855	49.07	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 98.14%			
74) toluene-d8 (s)	6.278	98	271869	51.02	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 102.04%			
98) 4-bromofluorobenzene (s)	8.627	95	95456	49.85	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 99.70%			
Target Compounds						Qvalue
7) dichlorodifluoromethane	1.801	85	56360	36.60	ug/L	93
8) chloromethane	1.965	50	65597	39.76	ug/L	99
9) vinyl chloride	2.061	62	68724	40.62	ug/L	99
10) bromomethane	2.331	94	41471	54.95	ug/L	96
11) chloroethane	2.411	64	34345	40.82	ug/L	91
12) vinyl bromide	2.555	106	46508	48.78	ug/L	98
13) trichlorofluoromethane	2.600	101	83389	44.11	ug/L	97
47) cyclohexane	4.638	84	81591	39.69	ug/L #	61

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\V1A8558\
Data File : 1A198450.D
Acq On : 12 Feb 2020 8:56 am
Operator : mariceld
Sample : icv8558-50
Misc : MS41024,V1A8558,w,,,,1
ALS Vial : 23 Sample Multiplier: 1

Quant Time: Feb 14 16:21:27 2020
Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



M1A8558.M Mon Feb 17 11:53:05 2020 1A

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200837.d
Acq On : 30 Apr 2020 10:01 am
Operator : edwardd
Sample : cc8558-20 Inst : MSDTEST1A
Misc : MS42840,V1A8656,w,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:26:38 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
Internal Standards						
1) tert Butyl Alcohol-d9	3.290	65	109519	500.00	ug/L	0.00
5) pentafluorobenzene	4.529	168	125992	50.00	ug/L	0.00
52) 1,4-difluorobenzene	5.110	114	198020	50.00	ug/L	0.00
73) chlorobenzene-d5	7.536	117	189398	50.00	ug/L	0.00
97) 1,4-dichlorobenzene-d4	9.747	152	90932	50.00	ug/L	0.00
System Monitoring Compounds						
44) dibromofluoromethane (s)	4.542	113	56070	51.63	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 103.26%			
53) 1,2-dichloroethane-d4 (s)	4.802	65	59419	48.05	ug/L	0.00
Spiked Amount 50.000	Range 81 - 124		Recovery = 96.10%			
74) toluene-d8 (s)	6.275	98	224345	48.72	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 97.44%			
98) 4-bromofluorobenzene (s)	8.620	95	82147	46.18	ug/L	0.00
Spiked Amount 50.000	Range 80 - 120		Recovery = 92.36%			
Target Compounds						Qvalue
2) 1,4-dioxane	5.553	88	11801	494.52	ug/L	96
3) ethanol	2.693	45	53861	1954.61	ug/L	99
4) tertiary butyl alcohol	3.348	59	28043	104.08	ug/L	90
7) dichlorodifluoromethane	1.805	85	28383	23.81	ug/L	97
8) chloromethane	1.965	50	25648	20.08	ug/L	97
9) vinyl chloride	2.064	62	27965	21.35	ug/L	97
10) bromomethane	2.328	94	7250	12.41	ug/L	98
11) chloroethane	2.414	64	15947	24.48	ug/L	97
12) vinyl bromide	2.559	106	15231	20.64	ug/L	100
13) trichlorofluoromethane	2.600	101	34068	23.28	ug/L	97
14) ethyl ether	2.793	74	13031	21.74	ug/L	89
16) acrolein	2.902	56	5859	17.42	ug/L	98
17) freon 113	2.973	151	16929	20.32	ug/L	97
18) 1,1-dichloroethene	2.982	96	21517	22.44	ug/L	96
19) acetone	2.992	58	13789	85.47	ug/L	98
20) acetonitrile	3.191	40	29685	218.57	ug/L	95
21) iodomethane	3.098	142	5353	5.45	ug/L	96
22) iso-butyl alcohol	4.677	43	21535	204.32	ug/L	96
23) carbon disulfide	3.165	76	55376	22.23	ug/L	98
24) methylene chloride	3.316	84	23900	22.06	ug/L	94
25) methyl acetate	3.204	74	6272	21.77	ug/L #	83
26) methyl tert butyl ether	3.492	73	69506	21.46	ug/L	99
27) trans-1,2-dichloroethene	3.508	96	23566	23.65	ug/L	98
28) hexane	3.691	57	33538	22.63	ug/L	98
29) di-isopropyl ether	3.800	45	84233	22.20	ug/L	95
30) ethyl tert-butyl ether	4.054	59	75979	21.69	ug/L	100
31) 2-butanone	4.176	72	18167	82.46	ug/L #	81
32) 1,1-dichloroethane	3.813	63	40727	21.98	ug/L	98
33) chloroprene	3.865	53	34315	21.52	ug/L	98
34) acrylonitrile	3.470	53	13673	21.96	ug/L	93
35) vinyl acetate	3.784	86	5689	19.43	ug/L #	92
36) ethyl acetate	4.186	45	6233	20.87	ug/L	91
37) 2,2-dichloropropane	4.221	77	34326	22.78	ug/L	97
38) cis-1,2-dichloroethene	4.208	96	26398	21.89	ug/L	91
39) propionitrile	4.230	54	57238	241.74	ug/L	85
40) methyl acrylate	4.230	85	5372	22.10	ug/L #	77
41) bromochloromethane	4.375	128	12895	23.30	ug/L	98
42) tetrahydrofuran	4.388	72	5524	23.23	ug/L	91
43) chloroform	4.426	83	40515	22.22	ug/L	95

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200837.d
Acq On : 30 Apr 2020 10:01 am
Operator : edwardd
Sample : cc8558-20 Inst : MSDTEST1A
Misc : MS42840,V1A8656,w,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:26:38 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units		Dev(Min)
45) methacrylonitrile	4.336	67	13182	20.54	ug/L		90
46) 1,1,1-trichloroethane	4.577	97	35394	21.95	ug/L		95
47) cyclohexane	4.641	84	31706	19.92	ug/L	#	84
48) 1,1-dichloropropene	4.683	75	30837	21.54	ug/L		98
49) carbon tetrachloride	4.696	117	32156	23.19	ug/L		98
50) isopropyl acetate	4.798	87	7170	21.16	ug/L		96
51) tert amyl alcohol	4.773	55	9989	106.38	ug/L	#	80
54) tert-amyl methyl ether	4.892	73	72064	20.97	ug/L		97
55) 2,2,4-trimethylpentane	4.898	57	67179	26.91	ug/L		96
56) n-butyl alcohol	5.161	56	72344	1018.47	ug/L		95
57) benzene	4.837	78	91939	21.74	ug/L		98
58) heptane	5.004	57	15576	24.47	ug/L		97
59) 1,2-dichloroethane	4.856	62	30888	20.45	ug/L		97
60) trichloroethene	5.305	95	23093	21.58	ug/L		94
61) ethyl acrylate	5.322	55	42007	20.35	ug/L		97
62) 2-nitropropane	5.867	41	11322	28.09	ug/L		85
63) 2-chloroethyl vinyl ether	5.889	63	88201	967.32	ug/L		91
64) methyl methacrylate	5.504	100	7940	19.59	ug/L	#	62
65) 1,2-dichloropropane	5.514	63	23441	21.48	ug/L		98
66) methylcyclohexane	5.501	83	36152	23.06	ug/L		97
67) dibromomethane	5.581	93	14517	22.38	ug/L		98
68) bromodichloromethane	5.697	83	31693	22.01	ug/L		94
69) cis-1,3-dichloropropene	6.040	75	36078	20.58	ug/L		99
70) epichlorohydrin	5.947	57	13771	73.47	ug/L		89
71) 4-methyl-2-pentanone	6.140	58	54983	82.08	ug/L		96
72) 3-methyl-1-butanol	6.153	70	24890	384.40	ug/L		97
75) toluene	6.329	92	58460	21.11	ug/L		100
76) trans-1,3-dichloropropene	6.496	75	34106	20.02	ug/L		97
77) ethyl methacrylate	6.512	69	34405	18.94	ug/L		97
78) 1,1,2-trichloroethane	6.669	83	18524	20.69	ug/L		96
79) 2-hexanone	6.833	58	58108	77.78	ug/L		94
80) tetrachloroethene	6.772	166	27001	20.51	ug/L		96
81) 1,3-dichloropropane	6.823	76	35848	19.74	ug/L		98
82) butyl acetate	6.916	56	21014	19.25	ug/L		94
83) dibromochloromethane	7.013	129	24689	21.12	ug/L		97
84) 1,2-dibromoethane	7.131	107	27454	21.39	ug/L		95
85) n-butyl ether	7.597	57	100774	20.24	ug/L		99
86) chlorobenzene	7.561	112	64230	20.34	ug/L		99
87) 1,1,1,2-tetrachloroethane	7.629	131	23250	20.58	ug/L		95
88) ethylbenzene	7.635	91	109578	20.77	ug/L		99
89) m,p-xylene	7.747	106	84545	42.02	ug/L		91
90) o-xylene	8.110	106	40684	20.24	ug/L		98
91) butyl acrylate	8.020	55	51832	19.31	ug/L		98
92) n-amyl acetate	8.222	70	19420	19.27	ug/L		94
93) styrene	8.126	104	70871	20.93	ug/L		97
94) bromoform	8.303	173	18007	21.29	ug/L		95
95) isopropylbenzene	8.447	105	104762	21.06	ug/L		97
96) cis-1,4-dichloro-2-butene	8.495	88	9565	17.02	ug/L		89
99) bromobenzene	8.768	156	27287	18.47	ug/L		97
100) 1,1,2,2-tetrachloroethane	8.733	83	31652	18.36	ug/L		98
101) trans-1,4-dichloro-2-b...	8.768	53	8781	18.68	ug/L		88
102) 1,2,3-trichloropropane	8.797	110	9865	18.48	ug/L		97
103) n-propylbenzene	8.845	91	118062	20.04	ug/L		99
104) 2-chlorotoluene	8.948	126	24363	18.81	ug/L		99
105) 4-chlorotoluene	9.057	126	25650	20.15	ug/L		96
106) 1,3,5-trimethylbenzene	9.015	105	80929	19.43	ug/L		100
107) tert-butylbenzene	9.329	119	70290	20.35	ug/L		99

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200837.d
Acq On : 30 Apr 2020 10:01 am
Operator : edwardd
Sample : cc8558-20 Inst : MSDTEST1A
Misc : MS42840,V1A8656,w,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:26:38 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration

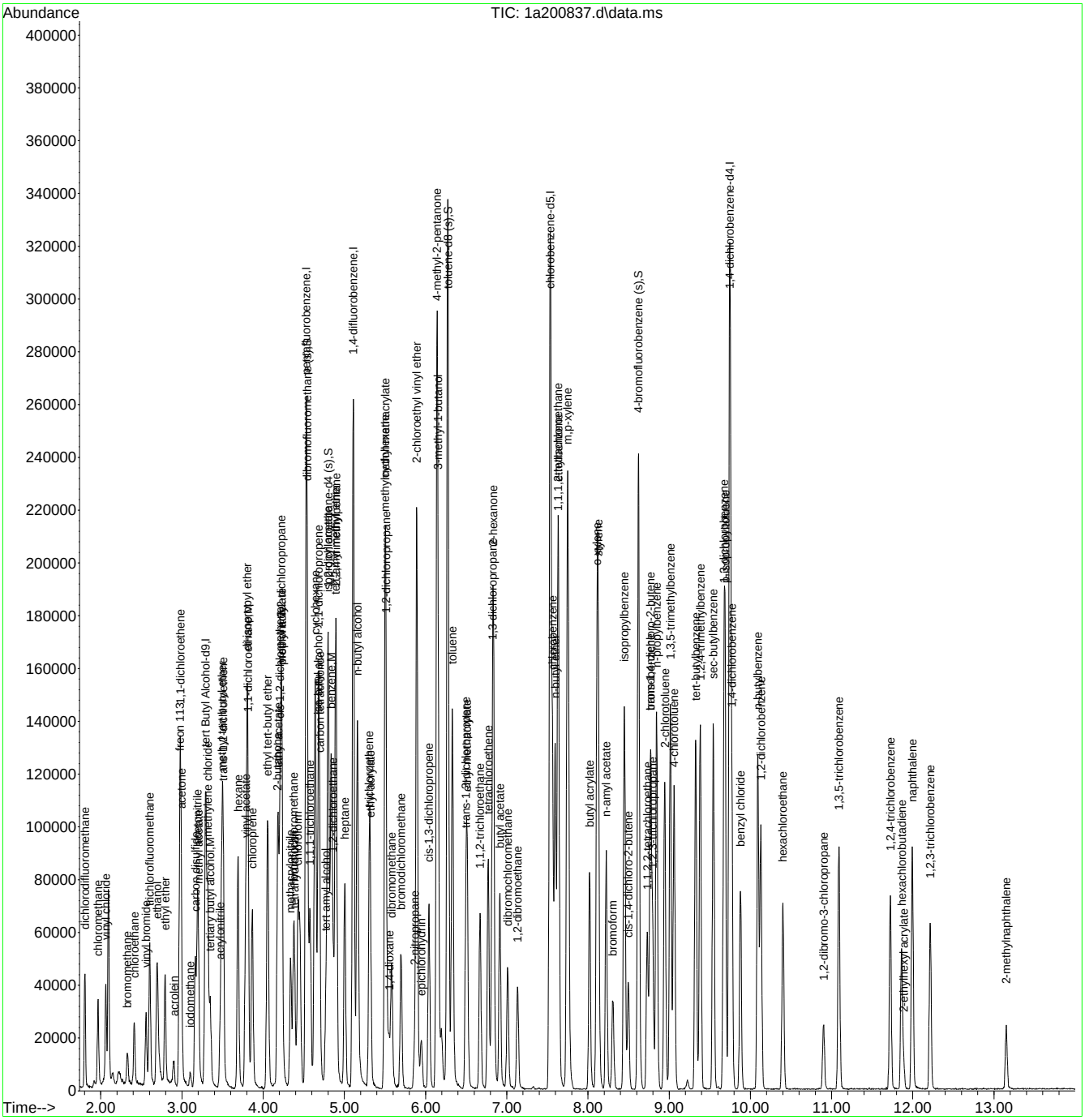
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
108) 1,2,4-trimethylbenzene	9.384	105	81839	19.54	ug/L	98
109) sec-butylbenzene	9.541	105	100528	21.72	ug/L	97
110) 1,3-dichlorobenzene	9.676	146	48053	19.40	ug/L	97
111) p-isopropyltoluene	9.689	119	85139	21.60	ug/L	97
112) 1,4-dichlorobenzene	9.772	146	49177	19.54	ug/L	99
113) 1,2-dichlorobenzene	10.128	146	45020	19.43	ug/L	96
114) n-butylbenzene	10.090	92	40004	23.30	ug/L	99
115) 1,2-dibromo-3-chloropr...	10.905	157	8229	17.46	ug/L	93
116) 1,3,5-trichlorobenzene	11.088	180	31411	22.31	ug/L	97
117) 1,2,4-trichlorobenzene	11.723	180	25238	20.90	ug/L	97
118) hexachlorobutadiene	11.864	225	11470	23.74	ug/L	92
119) naphthalene	11.993	128	80351	19.91	ug/L	98
120) 1,2,3-trichlorobenzene	12.214	180	22649	20.63	ug/L	96
121) hexachloroethane	10.398	119	14582	23.49	ug/L	86
122) benzyl chloride	9.878	91	57815	21.17	ug/L	99
123) 2-ethylhexyl acrylate	11.890	70	2741	4.07	ug/L	91
124) 2-methylnaphthalene	13.148	142	13089	8.34	ug/L	89

(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\data\davem1\05-01-20\v1a8656\
Data File : 1a200837.d
Acq On : 30 Apr 2020 10:01 am
Operator : edwardd
Sample : cc8558-20 Inst : MSDTEST1A
Misc : MS42840,V1A8656,w,,,,1
ALS Vial : 2 Sample Multiplier: 1

Quant Method : C:\MSDCHEM\1\METHODS\M1A8558.M
Quant Results File: M1A8558.RES
Quant Time: May 01 00:26:38 2020
Quant Title : SW846 Method V8260C, column Rxi-624 30m x 0.25mm x 1.4 um
QLast Update : Fri Feb 14 16:11:39 2020
Response via : Initial Calibration



GCMS Volatile Run Log

Standard / Reagents	Lot #					
Standards	ABK: V0192692-77.25	EC: V0192692-89.3	Acrolein: V0192692-88.1		Column	RXI624(30mx0.25mmx1.4um)
Standard Concentrations	100ppm-10,000ppm	100ppm	100ppm		Method	V8260C
Expiration Date	03/04/2020	02/17/2020	03/11/2020		Init Calib Date	2/11/2019
Standards	EXT ABK: V0192692-78.1	EXT EC: V0192692-86.8, -86.1	EXT Acrolein: V0192692-76.2	EXT PA: V0192692-91.2		
Standard Concentrations	100ppm-10,000ppm	100ppm	100ppm	100ppm	Analysis Date	2/11/2020
Expiration Date	03/04/2020	2/14/2020	03/02/2020	3/11/2020	Sequence loaded by	Devin Gomez
Internal Surrogate	V019-2692-84				Data processed by	Robert Szot
Internal Surrogate Concentration	50/500ppm				Batch ID	V1A8558
Expiration Date	03/04/2020				Matrix	AQ
					Approved By:	KANYAV
pH Paper wide range #221419	EXP. 08/01/2022		Initial Calibration Method	M1A8558	Approved Date:	2/17/2020 11:55:02 AM

Data File		Sample ID	Bot #	Dil	Workgroup #	Test	Purge Vol (ml)	CL	pH	ALS #	Status	Comments
1A	198433	IB		NA			5			1	OK	5:42 pm
1A	198434	IC8558-0.2		NA		Initial Calib.	5			2	OK	0.2uL ABK, EC, Acrolein/100mL
1A	198435	IC8558-0.5		NA		Initial Calib.	5			3	OK	0.5uL ABK, EC, Acrolein/100mL
1A	198436	IC8558-1		NA		Initial Calib.	5			4	OK	1uL ABK, EC, Acrolein/100mL
1A	198437	IC8558-2		NA		Initial Calib.	5			5	OK	2uL ABK, EC, Acrolein/100mL
1A	198438	IC8558-4		NA		Initial Calib.	5			6	OK	4uL ABK, EC, Acrolein/100mL
1A	198439	IC8558-8		NA		Initial Calib.	5			7	OK	8uL ABK, EC, Acrolein/100mL
1A	198440	IC8558-20		NA		Initial Calib.	5			8	OK	20uL ABK, EC, Acrolein/100mL
1A	198441	ICC8558-50		NA		Initial Calib.	5			9	OK	50uL ABK, EC, Acrolein/100mL
1A	198442	IC8558-100		NA		Initial Calib.	5			10	OK	100uL ABK, EC, Acrolein/100mL
1A	198443	IC8558-200		NA		Initial Calib.	5			11	OK	200uL ABK, EC, Acrolein/100mL

Data File		Sample ID	Bot #	Dil	Workgroup #	Test	Purge Vol (ml)	CL	pH	ALS #	Status	Comments
1A	198444	IB		NA			5			12	OK	
1A	198445	IB		NA			5			13	OK	
1A	198446	ICV8558-50		NA		Initial Calib.	5			14	OK	50uL EXT ABK, EC, Acrolein/100mL
1A	198447	ICV8558-50		NA		Initial Calib.	5			15	OK	50uL EXT PA/100mL
1A	198448	IB		NA			5			16	OK	
1A	198449	BFB2		NA			5			1	OK	
1A	198450	ICV8558-50		NA		Initial Calib.	5			2	OK	25 uL Ext EC (-86.1) / 50 mL DI H2O

GCMS Volatile Run Log

Standard / Reagents	Lot #					
Standard	ABK: V0202701-39.11	EC: V0202701-40.3	Acrolein: V0202701-12.48		Column	RXI624(30mx0.25mmx1.4um)
Standard Concentrations	100ppm-10,000ppm	100ppm	100ppm		Method	v8260c
Expiration Date	05/24/2020	05/01/2020	05/03/2020		Init Calib Date	2/11/2020
Internal Surrogate	v0202701-27				Analysis Date	4/30/2020
Internal Surrogate Concentration	50/500ppm				Sequence loaded by	Edward Durner
Expiration Date	05/14/2020				Data processed by	davem1
					Batch ID	V1A8656
					Matrix	AQ
					Approved By:	KANYAV
pH Paper wide range Lot# 221419	EXP. 08/01/2022		Initial Calibration Method	M1A8558	Approved Date:	5/1/2020 6:39:48 PM

Data File		Sample ID	Bot #	Dil	Workgroup #	Test	Purge Vol (ml)	CL	pH	ALS #	Status	Comments
1A	200836	IB		NA			5			1	OK	
1A	200837	BFB/CC8558-20		NA			5			2	OK/OK	20ul abk,ec,acrolein/100ml, 10:01 am BFB passed 5 scan (8.614:8.627)
1A	200838	CC8558-2		NA			5			3	OK	2ul abk,ec,acrolein/100ml
1A	200839	BS		NA			5			4	OK	50ul abk,ec,acrolein/100ml
1A	200840	IB		NA			5			5	OK	
1A	200841	MB		NA			5			6	OK	
1A	200842	JD6583-7	1	NA	MS42871	V8260TCL42, NAP	5		1	7	OK	
1A	200843	JD6583-1	1	NA	MS42871	V8260TCL42, NAP	5		1	8	OK	
1A	200844	JD6527-4	1	10x	MS42840	V8260VTAROM	5/50		1	9	OK	
1A	200845	JD6527-9	1	NA	MS42840	V8260VTAROM	5		1	10	OK	
1A	200846	JD6359-2	2	50x	MS42754	V8260PALGTMB, MTBE	1/50		1	11	OK/dL	

Data File		Sample ID	Bot #	Dil	Workgroup #	Test	Purge Vol (ml)	CL	pH	ALS #	Status	Comments
1A	200847	JD6583-7MS	2	NA	MS42871	V8260TCL42, NAP	5		1	12	OK	20ul abk,ec,acrolein/40ml
1A	200848	JD6583-7MSD	3	NA	MS42871	V8260TCL42, NAP	5		1	13	OK	20ul abk,ec,acrolein/40ml
1A	200849	JD6583-6	1	50x	MS42871	V8260TCL42, NAP	1/50		1	14	not need	screen
1A	200850	JD6583-8	1	NA	MS42871	V8260TCL42, NAP	5		1	15	OK	
1A	200851	JD6583-2	1	NA	MS42871	V8260TCL42, NAP	5		1	16	OK	
1A	200852	JD6583-3	1	NA	MS42871	V8260TCL42, NAP	5		1	17	OK	
1A	200853	JD6583-4	3	NA	MS42871	V8260TCL42, NAP	5		1	18	OK	
1A	200854	JD6583-5	1	NA	MS42871	V8260TCL42, NAP	5		1	19	OK	
1A	200855	JD6583-6	1	NA	MS42871	V8260TCL42, NAP	5		1	20	OK	
1A	200856	JD6600-2	1	NA	MS42875	V8260PCE, TCE, VC	5		1	21	OK	
1A	200857	JD6600-3	1	NA	MS42875	V8260PCE, TCE, VC	5		1	22	OK	
1A	200858	JD6600-4	4	NA	MS42875	V8260PCE, TCE, VC	5		1	23	OK	
1A	200859	JD6533-7	1	NA	MS42842	V8260TCL20+, TBA	5		1	24	OK/dL	rr 10x F/D
1A	200860	JD6600-1	4	100x	MS42875	V8260PCE, TCE, VC	0.5/50		1	25	OK/rr	rr 25x to push (07:42 PM)

APPENDIX

D LABORATORY ANALYTICAL REPORTS (MNA)

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 12, 2020

Dave Bouchard
WSP Environment & Energy
5 Sullivan Street
Cazenovia, NY 13035

RE: **31401203.42**

Pace Workorder: 33590

Dear Dave Bouchard:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, April 29, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 05/12/2020
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 14

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	State of Virginia
Accreditation ID:	460201
Scope:	Non-Potable Water
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
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SAMPLE SUMMARY

Workorder: 33590 31401203.42

Lab ID	Sample ID	Matrix	Date Collected	Date Received
335900001	P-8	Water	4/28/2020 11:30	4/29/2020 10:00
335900002	TRIP BLANK	Water		4/29/2020 10:00

Pace Analytical Energy Services LLC
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ANALYTICAL RESULTS

Workorder: 33590 31401203.42

Lab ID: **335900001** Date Received: 4/29/2020 10:00 Matrix: Water

Sample ID: **P-8** Date Collected: 4/28/2020 11:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**10000**	ug/l	0.50	0.023	1	5/7/2020 07:24	BW	n
Ethane	**17**	ug/l	0.10	0.010	1	5/7/2020 07:24	BW	n
Ethene	**9.5**	ug/l	0.10	0.0090	1	5/7/2020 07:24	BW	n
Wet Chemistry - PAES								
Analysis Desc: Standard Methods 5310C-2011		Analytical Method: Standard Methods 5310C-2011						
Dissolved Organic Carbon	**4.3**	mg/L	1.0	0.21	1	5/1/2020 11:28	MD	

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ANALYTICAL RESULTS

Workorder: 33590 31401203.42

Lab ID: **335900002** Date Received: 4/29/2020 10:00 Matrix: Water

Sample ID: **TRIP BLANK** Date Collected:

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
RISK - PAES								
Analysis Desc: AM20GAX		Analytical Method: AM20GAX						
Methane	**<0.50**	ug/l	0.50	0.023	1	5/7/2020 07:34	BW	n
Ethane	**<0.10**	ug/l	0.10	0.010	1	5/7/2020 07:34	BW	n
Ethene	**<0.10**	ug/l	0.10	0.0090	1	5/7/2020 07:34	BW	n

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ANALYTICAL RESULTS QUALIFIERS

Workorder: 33590 31401203.42

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
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Phone: (412) 826-5245
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QUALITY CONTROL DATA

Workorder: 33590 31401203.42

QC Batch: WET/2430 Analysis Method: Standard Methods 5310C-2011

QC Batch Method: Standard Methods 5310C-2011

Associated Lab Samples: 335900001

METHOD BLANK: 66987

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
Wet Chemistry				
Dissolved Organic Carbon	mg/L	<1.0	1.0	

LABORATORY CONTROL SAMPLE: 66988

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	13	14	104	70-130	

MATRIX SPIKE SAMPLE: 66990 Original: 335900001

Parameter	Units	Original Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Wet Chemistry							
Dissolved Organic Carbon	mg/L	4.3	20	24	99	70-130	

SAMPLE DUPLICATE: 66989 Original: 335900001

Parameter	Units	Original Result	DUP Result	RPD	Max RPD	Qualifiers
Wet Chemistry						
Dissolved Organic Carbon	mg/L	4.3	4.5	3.8	20	

Pace Analytical Energy Services LLC
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QUALITY CONTROL DATA

Workorder: 33590 31401203.42

QC Batch: DISG/8239 Analysis Method: AM20GAX

QC Batch Method: AM20GAX

Associated Lab Samples: 335900001, 335900002

METHOD BLANK: 67029

Parameter	Units	Blank Result	Reporting Limit	Qualifiers
RISK				
Methane	ug/l	<0.50	0.50	n
Ethane	ug/l	<0.10	0.10	n
Ethene	ug/l	<0.10	0.10	n

LABORATORY CONTROL SAMPLE & LCSD: 67030 67031

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limit	RPD	Max RPD	Qualifiers
Methane	ug/l	750	750	750	101	100	80-120	0.19	20	n
Ethane	ug/l	38	35	35	92	92	80-120	0.54	20	n
Ethene	ug/l	35	33	33	94	93	80-120	1.1	20	n

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QUALITY CONTROL DATA QUALIFIERS

Workorder: 33590 31401203.42

QUALITY CONTROL PARAMETER QUALIFIERS

n	The laboratory does not hold NELAP/TNI accreditation for this method or analyte.

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 33590 31401203.42

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
335900001	P-8			Standard Methods 5310C-2011	WET/2430
335900001	P-8			AM20GAX	DISG/8239
335900002	TRIP BLANK			AM20GAX	DISG/8239

wsp

33590

Chain of Custody Form

Page ___ of ___

WSP Office Address	7000 East Genesee Street, Building D, 2nd Floor Fayetteville, NY 13066
Project Name	Former General Instrument Corporation
WSP Contact Name	DAVID BOUCHARD
Project Location	Sherburne, NY
WSP Contact E-mail	DAVID.BOUCHARD@wsp.com
Project Number & Task	31401203.42
WSP Contact Phone	
Sampler(s) Name(s)	Nate Winston
Sampler(s) Signature(s)	

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Requested Analyses & Preservatives: Dissolved gasses ethane, ethene, and methane (Method AM20GAX)	Dissolved Organic Carbon (U.S. EPA Method 9060)	CSIA for vinyl chloride, cis-1,2-dichloroethene, trichloroethene, tetrachloroethene.	8260 VOCs	Sample Comments
P-8	AQ	—	—	4/28/20	1130	16	X	X	X	X	

No.	
Laboratory Name & Location	Pace Analytical Services, Inc.
Laboratory Project Manager	Ruth Welsh
Requested Turn-Around-Time	☒ Standard ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ ___ HR

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
	4/28/20	1500	Dan PACE	4.29.2020 1000		Fedex	
Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Cooler Receipt Form

Client Name: WSP **Project:** 31401203.42 **Lab Work Order:** 33590

A. **Shipping/Container Information** (circle appropriate response)

Courier: (FedEx) UPS USPS Client Other:_____ **Air bill Present:** (Yes) No

Tracking Number: 176618356 09

Custody Seal on Cooler/Box Present: (Yes) No **Seals Intact:** (Yes) No

Cooler/Box Packing Material: (Bubble Wrap) Absorbent (Foam) Other:_____

Type of Ice: (Wet) Blue None **Ice Intact:** (Yes) Melted

Cooler Temperature: 2.1°C **Radiation Screened:** Yes (No) **Chain of Custody Present:** (Yes) No

Comments:_____

B. **Laboratory Assignment/Log-in** (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC	✓			
Containers intact	✓			
Were samples in separate bags	✓			
Sample container labels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform	✓			If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	
Headspace present?		✓		

Comments:_____

_____

Cooler contents examined/received by : LJ **Date:** 4.29.2020

Project Manager Review : JW **Date:** 4.30.2020

NON-CONFORMANCE FORM

PAES Work Order #: 33590

Date: 4.29.2020 Time of Receipt: 10:50 Receiver: LY

Client: WSP

REASON FOR NON-CONFORMANCE:

Also received 2 TSP vials of TRIPBLANK.

ACTION TAKEN:

Client name: _____ Date: _____ Time: _____

Assign trip blank for mee analyses

Customer Service Initials: _____ Date: _____

pH SCREENING FORM

Client WSP-C

Client Project 31401203.42
PAES WO# 33590
Completed by LY
Date 4.29.2020
Page 1 of 1

No.	Sample	Preservative							pH	pH strip lot number
		HNO_3	H_2SO_4	HCl	None	BAK	NaOH	NaOH+ ZnAc		
1.	P-8		X						<2.0	HC421754

ENV-FRM-PITTS-0007 Rev 00

APPENDIX

E LABORATORY ANALYTICAL REPORTS (CSIA)

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

May 8, 2020

Dave Bouchard
WSP Environment & Energy
5 Sullivan Street
Cazenovia, NY 13035

RE: **31401203.42**

Pace Workorder: 33591

Dear Dave Bouchard:

Enclosed are the analytical results for sample(s) received by the laboratory on Wednesday, April 29, 2020. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

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

Sincerely,

Ruth Welsh 05/08/2020
Ruth.Welsh@pacelabs.com

Customer Service Representative

Enclosures

As a valued client we would appreciate your comments on our service.
Please email PAESfeedback@pacelabs.com.

Total Number of Pages 9

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

LABORATORY ACCREDITATIONS & CERTIFICATIONS

Accreditor:	Pennsylvania Department of Environmental Protection, Bureau of Laboratories
Accreditation ID:	02-00538
Scope:	NELAP Non-Potable Water
Accreditor:	West Virginia Department of Environmental Protection, Division of Water and Waste Management
Accreditation ID:	395
Scope:	Non-Potable Water
Accreditor:	South Carolina Department of Health and Environmental Control, Office of Environmental Laboratory Certification
Accreditation ID:	89009003
Scope:	Clean Water Act (CWA); Resource Conservation and Recovery Act (RCRA)
Accreditor:	State of Virginia
Accreditation ID:	460201
Scope:	Non-Potable Water
Accreditor:	NELAP: New Jersey, Department of Environmental Protection
Accreditation ID:	PA026
Scope:	Non-Potable Water
Accreditor:	NELAP: New York, Department of Health Wadsworth Center
Accreditation ID:	11815
Scope:	Non-Potable Water
Accreditor:	State of Connecticut, Department of Public Health, Division of Environmental Health
Accreditation ID:	PH-0263
Scope:	Clean Water Act (CWA) Resource Conservation and Recovery Act (RCRA)
Accreditor:	NELAP: Texas, Commission on Environmental Quality
Accreditation ID:	T104704453-09-TX
Scope:	Non-Potable Water
Accreditor:	State of New Hampshire
Accreditation ID:	299409
Scope:	Non-potable water
Accreditor:	State of Georgia
Accreditation ID:	Chapter 391-3-26
Scope:	As per the Georgia EPD Rules and Regulations for Commercial Laboratories, PAES is accredited by the Pennsylvania Department of Environmental Protection Bureau of Laboratories under the National Environmental Laboratory Approval Program (NELAC).

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

SAMPLE SUMMARY

Workorder: 33591 31401203.42

Lab ID	Sample ID	Matrix	Date Collected	Date Received
335910001	P-8	Water	4/28/2020 11:30	4/29/2020 10:00

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS

Workorder: 33591 31401203.42

Lab ID: **335910001** Date Received: 4/29/2020 10:00 Matrix: Water

Sample ID: **P-8** Date Collected: 4/28/2020 11:30

Parameters	Results	Units	PQL	MDL	DF	Analyzed	By	Qualifiers
Compound Specific Isotopic - PAES								
Analysis Desc: AM24		Analytical Method: AM24						
Carbon 13 Isotope	**Complete**				1	5/8/2020 00:00	JT	
Subcontracted Work - SCPG								G
Analysis Desc: SW-846 8260B		Analytical Method: SW-846 8260B						
Acetone	**0.0**	ug/L	0.0	0.0	1	5/7/2020 00:00	PAS	s

CERTIFICATE OF ANALYSIS

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

ANALYTICAL RESULTS QUALIFIERS

Workorder: 33591 31401203.42

DEFINITIONS/QUALIFIERS

MDL	Method Detection Limit. Can be used synonymously with LOD; Limit Of Detection.
PQL	Practical Quanitation Limit. Can be used synonymously with LOQ; Limit Of Quantitation.
ND	Not detected at or above reporting limit.
DF	Dilution Factor.
S	Surrogate.
RPD	Relative Percent Difference.
% Rec	Percent Recovery.
U	Indicates the compound was analyzed for, but not detected at or above the noted concentration.
J	Estimated concentration greater than the set method detection limit (MDL) and less than the set reporting limit (PQL).
G	Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282
s	Subcontracted; for any related quality nonconformance see additional report(s)

Pace Analytical Energy Services LLC
220 William Pitt Way
Pittsburgh, PA 15238
Phone: (412) 826-5245
Fax: (412) 826-3433

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Workorder: 33591 31401203.42

Lab ID	Sample ID	Prep Method	Prep Batch	Analysis Method	Analysis Batch
335910001	P-8			AM24	CSIA/2090
335910001	P-8			SW-846 8260B	SCPG/3891

Subcontracted to Pace Greensburg under NELAC Certification Number - PA65-00282

Client:	WSP USA	Pace Analytical Energy Services	
	512 Seventh Ave, 13th Floor	220 William Pitt Way	
	New York, NY 10018	Pittsburgh, PA 15238	
Project:	Former GIC		
Project #	31401203.42	Pace Work Order	33591
Report to:	David Bouchard	412-826-5245	
	david.bouchard@wspgroup.com		

Report of Isotope Analysis

Samples for δ13C (per mil, PDB) isotopic ratios

Lab Sample Number	Client's Sample ID	$\delta^{13}C$ VC	$\delta^{13}C$ cDCE	$\delta^{13}C$ TCE	$\delta^{13}C$ PCE
335910001	P-8	-12.97	-3.68	ND	ND

ND: Ratio Not Determined
N/A: Sample Not Analyzed

Vinyl Chloride
cis-Dichloroethene
Trichloroethene
Tetrachloroethene

Method: Compound Specific Isotope Analysis for ^{13}C and ^{2}H by GC-IRMS, for ^{37}Cl by GC-qMS

Quality Control STDs	$\delta^{13}C$ VC	$\delta^{13}C$ cDCE	$\delta^{13}C$ TCE	$\delta^{13}C$ PCE
QC-1	-27.39	-13.17	-28.51	-29.72
QC-2	-27.53	-12.76	-28.28	-29.77
Mean	-27.46	-12.97	-28.40	-29.74
Analytical Precision (1σ)	0.10	0.29	0.16	0.03

wsp 33591

Chain of Custody Form

WSP Office Address: 7000 East Genesee Street, Building D, 2nd Floor Fayetteville, NY 13066

Project Name: Former General Instrument Corporation

WSP Contact Name: DAVID BOUCHARD

Project Location: Sherburne, NY

WSP Contact E-mail: DAVID.BOUCHARD @wsp.com

Project Number & Task: 31401203.42

WSP Contact Phone:

Sampler(s) Name(s): Nate Winston

Sampler(s) Signature(s): [signature]

No.

Laboratory Name & Location: Pace Analytical Services, Inc.

Laboratory Project Manager: Ruth Welsh

Requested Turn-Around-Time: [X] Standard [ ] 24 HR [ ] 48 HR [ ] 72 HR [ ] ___ HR

Requested Analyses & Preservatives

Sample Identification	Matrix	Collection Start* Date	Collection Start* Time	Collection Stop* Date	Collection Stop* Time	Number of Containers	Dissolved gasses ethane, ethene, and methane (Method AM20GAX)	Dissolved Organic Carbon (U.S. EPA Method 9060)	CSIA for vinyl chloride, cis-1,2-dichloroethene, trichloroethene, tetrachloroethene.	8260 VOCs							Sample Comments
P-8	AQ	—	—	4/28/20	1130	16	X	X	X	X							

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Shipment Method	Tracking Number(s)
[signature]	4/28/20	1500	[signature] PACE	4.29.2020	1000	FedEx	

Relinquished By (Signature)	Date	Time	Received By (Signature)	Date	Time	Number of Packages	Custody Seal Number(s)
						1	

*Use stop time/date for composite and/or air samples; use only start time/date for all other samples.

Matrix: AQ = Aqueous, S = Soil, SE = Sediment, A = Air, W = Wipe, B = Bulk, O = Other (detail in comments)

Cooler Receipt Form

Client Name: WSP **Project:** 31401203.42 **Lab Work Order:** 33591

A. Shipping/Container Information (circle appropriate response)

Courier: (FedEx) UPS USPS Client Other:_____ **Air bill Present:** (Yes) No

Tracking Number: 1766 6183 5809

Custody Seal on Cooler/Box Present: (Yes) No **Seals Intact:** (Yes) No

Cooler/Box Packing Material: (Bubble Wrap) Absorbent (Foam) Other:_____

Type of Ice: (Wet) Blue None **Ice Intact:** (Yes) Melted

Cooler Temperature: 2.1°C **Radiation Screened:** Yes (No) **Chain of Custody Present:** (Yes) No

Comments:_____

B. Laboratory Assignment/Log-in (check appropriate response)

	YES	NO	N/A	Comment Reference non-Conformance
Chain of Custody properly filled out	✓			
Chain of Custody relinquished	✓			
Sampler Name & Signature on COC	✓			
Containers intact	✓			
Were samples in separate bags	✓			
Sample container !abels match COC Sample name/date and time collected	✓			
Sufficient volume provided	✓			
PAES containers used	✓			
Are containers properly preserved for the requested testing? (as labeled)	✓			
If an unknown preservation state, were containers checked? Exception: VOA's coliform	✓			If yes, see pH form.
Was volume for dissolved testing field filtered, as noted on the COC? Was volume received in a preserved container?			✓	
Headspace present?		✓		

Comments:_____

_____

Cooler contents examined/received by : LG **Date:** 4.29.2020

Project Manager Review : JM **Date:** 4.30.2020

APPENDIX

F LABORATORY ANALYTICAL REPORTS (MICROBIAL ECOLOGY)

10515 Research Drive
Knoxville, TN 37932
Phone: (865) 573-8188
Fax: (865) 573-8133

Client: David Bouchard
WSP USA Buildings Inc.
75 Arlington Street
4th Floor
Boston, MA 02116

Phone: 774-413-5109

Fax:

Identifier: 087RD **Date Rec:** 04/29/2020 **Report Date:** 05/05/2020

Client Project #: 31401203.419 **Client Project Name:** Former General Instrument Corp

Purchase Order #:

Analysis Requested: CENSUS

Reviewed By:

MICROBIAL INSIGHTS, INC.

10515 Research Dr., Knoxville, TN 37932
Tel. (865) 573-8188 Fax. (865) 573-8133

CENSUS

Client: **WSP USA Buildings Inc.**
Project: Former General Instrument Corp

MI Project Number: **087RD**
Date Received: 04/29/2020

Sample Information

Client Sample ID:	**P-8**
Sample Date:	04/28/2020
Units:	cells/mL
Analyst/Reviewer:	HT

Dechlorinating Bacteria

Dehalococcoides	*DHC*	**4.24E+03**
tceA Reductase	TCE	**5.60E+00**
BAV1 Vinyl Chloride Reductase	BVC	**1.10E+00**
Vinyl Chloride Reductase	VCR	<5.00E-01
Dehalobacter spp.	*DHBt*	<5.00E+00

Functional Genes

Methanogens	MGN	**2.09E+04**

Phylogenetic Group

Total Eubacteria	EBAC	**6.12E+06**

Legend:
NA = Not Analyzed NS = Not Sampled J = Estimated gene copies below PQL but above LQL I = Inhibited
< = Result not detected

Quality Assurance/Quality Control Data

Samples Received **4/29/2020**

Component	Date Prepared	Date Analyzed	Arrival Temperature	Positive Control	Extraction Blank	Negative Control
DHC	04/29/2020	05/05/2020	0 °C	96%	non-detect	non-detect
EBAC	04/29/2020	05/05/2020	0 °C	102%	non-detect	non-detect
BVC	04/29/2020	05/05/2020	0 °C	101%	non-detect	non-detect
TCE	04/29/2020	05/05/2020	0 °C	102%	non-detect	non-detect
VCR	04/29/2020	05/05/2020	0 °C	102%	non-detect	non-detect
DHBt	04/29/2020	05/05/2020	0 °C	118%	non-detect	non-detect
MGN	04/29/2020	05/05/2020	0 °C	110%	non-detect	non-detect

APPENDIX

G DATA VALIDATION (VOCS)

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

WSP Group
5 Sullivan Street,
Cazenovia, NY 13035
ATTN: Mr. Erik S. Reinert
erik.reinert@wspgroup.com

June 23, 2020

SUBJECT: Former General Instrument Site, Sherburne, NY, Data Validation

Dear Mr. Reinert,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on May 28, 2020. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #48168:

SDG #	Fraction
JD6583 33590	Volatiles, Dissolved Organic Carbons, Methane, Ethane & Ethene

The data validation was performed under Category B guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA Region 2 Standard Operating Procedure for Validating Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry, SOP HW-24, Revision 4; October 2014
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA 540-R-2017-002, January 2017
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review, EPA 540-R-2017-001; January 2017
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007; update V, July 2014

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink

Christina Rink
crink@lab-data.com
Project Manager/Senior Chemist

43 pages-EM

Attachment 1

Category B **EDD/DUSR** **LDC #48168 (WSP Group- Cazenovia, NY/ Former General Instrument, Sherburne, NY)** **Project 31401203.420 Task 1**

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260C)		Methane Ethane Ethene		DOC (5310C)																													
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	JD6583	05/28/20	06/18/20	8	0	-	-	-	-																												
B	33590	05/28/20	06/18/20	-	-	2	0	1	0																												
Total	T/CR			8	0	2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11

Shaded cells indicate Category B validation (all other cells are Category A validation). These sample counts do not include MS/MSD, and DUPs

L:\WSP\General Instrument Sherburne\48168ST.wpd

Site: Former General Instrument Site, Sherburne, NY
Laboratory: SGS North America, Inc.
Report No.: JD6583
Reviewer: Josephine Go and Christina Rink/Laboratory Data Consultants for WSP Group - Cazenovia, NY
Date: June 15, 2020

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
MW-32	JD6583-1	VOC
MW-31	JD6583-2	VOC
MW-22	JD6583-3	VOC
MW-34	JD6583-4	VOC
MW-17	JD6583-5	VOC
MW-0420	JD6583-6	VOC
P-8	JD6583-7	VOC
TRIP BLANK	JD6583-8	VOC
P-8MS	JD6583-7MS	VOC
P-8MSD	JD6583-7MSD	VOC

Associated QC Samples(s):
Field/Trip Blanks: TRIP BLANK
Field Duplicate pair: MW-17 and MW-0420

The above-listed water samples were collected on April 28, 2020 and were analyzed for volatile organic compounds (VOC) by SW-846 method 8260C. The data validation was performed in accordance with the USEPA Region 2 *Standard Operating Procedure for Validating Volatile Organic Compounds By Gas Chromatography/Mass Spectrometry,* SOP HW-24, Revision 4 (October 2014) and the USEPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* EPA 540-R-2017-002 (January 2017), modified as necessary to accommodate the non-CLP methodologies used.

The organic data were evaluated based on the following parameters:

- Data Completeness
- Holding Times and Sample Preservation
- Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
- Initial and Continuing Calibrations
- Blanks
- Surrogate Recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
- Laboratory Control Sample (LCS) Results
- Internal Standards
- Field Duplicate Results
- Quantitation Limits and Data Assessment
- Sample Quantitation and Compound Identification

Overall Evaluation of Data and Potential Usability Issues

All results are usable as reported or usable with minor qualification due to sample matrix or laboratory quality control outliers.

The validation findings were based on the following information.

Data Completeness

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

Holding Times and Sample Preservation

All criteria were met.

GC/MS Tunes

All criteria were met.

Initial and Continuing Calibrations

Initial calibration:

All criteria were met.

Continuing calibration:

Compounds that did not meet criteria are summarized in the following table.

Date	Instrument ID	Compound	CC %D	Associated Samples		Validation Action
04/30/20	1a200837	Bromomethane	37.9	MW-32	XX	UJ nondetects
		Chloroethane	22.0	MW-31		UJ nondetects
				MW-22		
				MW-34		
				MW-17		
				MW-0420		
				P-8		
				TRIP BLANK		

X = Initial calibration (IC) relative standard deviation (%RSD) > 20; estimate (J/UJ) positive and nondetect results.
XX = Continuing calibration (CC) percent difference (%D) > 20; estimate (J/UJ) positive and nondetect results.
SS = Second source verification percent difference (%D) > 30; estimate (J/UJ) positive and nondetect results.
+ = Response factor (RRF) < validation criteria; estimate (J/UJ) positive and nondetect results.

The bromomethane and chloroethane results were estimated due to continuing calibration exceedances. The bias cannot be determined. The results can be used for project objectives as nondetects with estimated quantitation limits (UJ) which may have a minor impact on the data usability.

Blanks

Contamination was not detected in the method blanks.

No positive results were found in the trip blank sample TRIP BLANK for VOC analysis.

Surrogate Recoveries

All criteria were met.

MS/MSD Results

MS/MSD analyses were performed on sample P-8 for VOC analysis. The following table lists the MS/MSD percent recoveries (%R) outside of control limits in the VOC analysis and the resulting validation actions.

MS ID	Compound	MS %R (Limits)	MS/D %R (Limits)	Affected Sample	Validation Action
P-8MS/MSD	Bromomethane	52 (53-142)	-	P-8	UJ nondetects

- Within control limits

The bromomethane result may be biased low due to low MS/MSD percent recoveries. The result can be used for project objectives as nondetects with estimated quantitation limits (UJ) which may have a minor impact on the data usability.

The following table lists the MS/MSD relative percent differences (RPD) outside of control limits in the VOC analysis and the resulting validation actions.

MS ID	Compound	RPD (Limits)	Affected Sample	Validation Action
P-8MS/MSD	Bromomethane	25 (≤14)	P-8	None

Validation action was not required for bromomethane due to MS/MSD relative percent difference exceedances as positive results only are affected and this compound was not detected in the associated sample.

LCS Results

All criteria were met.

Internal Standards

All criteria were met.

Field Duplicate Results

Samples MW-17 and MW-0420 were submitted as the field duplicate pair with this sample group. The following table summarizes the concentrations.

Compound	Concentration (ug/L)		RPD
	MW-17	MW-0420	
cis-1,2-Dichloroethene	1.5	1.6	6

Quantitation Limits and Data Assessment

No results were reported below the reporting limit (RL) and above the method detection limit (MDL) in the VOC analysis.

Dilutions were not required for VOC analysis.

Sample Quantitation and Compound Identification

Calculations were spot-checked; no discrepancies were noted.

DATA VALIDATION QUALIFIERS

U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.

UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.

JN - The analysis indicates the presence of a compound that has been "tentatively identified" (N) and the associated numerical value represents its approximate (J) concentration.

R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

LDC #: 48168A1a **VALIDATION COMPLETENESS WORKSHEET** Date: 06/04/20
SDG #: JD6583 Category B Page: 1 of 1
Laboratory: SGS North America, Inc. Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A / A	ICAL ≤ 20 % ICV ≤ 30 %
IV.	Continuing calibration	SW	CCV ≤ 20 %
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 8
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	A	LCS
X.	Field duplicates	SW	D = 5/6
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

	Client ID	Lab ID	Matrix	Date
1	MW-32	JD6583-1	Water	04/28/20
2	MW-31	JD6583-2	Water	04/28/20
3	MW-22	JD6583-3	Water	04/28/20
4	MW-34	JD6583-4	Water	04/28/20
5	MW-17 D	JD6583-5	Water	04/28/20
6	MW-0420 D	JD6583-6	Water	04/28/20
7	P-8	JD6583-7	Water	04/28/20
8	TRIP BLANK	JD6583-8	Water	04/28/20
9	P-8MS	JD6583-7MS	Water	04/28/20
10	P-8MSD	JD6583-7MSD	Water	04/28/20
11				
12				
13				
14	VI A 8656			

LDC #: 48168 A1a

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Method: Volatiles (EPA SW 846 Method 8260C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ 20% and relative response factors (RRF) within method criteria?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of > 0.990?			✓	
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ 30%?	✓			
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?		✓		
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?			✓	
Was there contamination in the laboratory blanks?			✓	
VI. Field blanks				
Were field blanks were identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		

Validation Area	Yes	No	NA	Findings/Comments
IX. Laboratory control samples				
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			
X. Field duplicates				
Were field duplicate pairs identified in this SDG?	✓			
Were target compounds detected in the field duplicates?	✓			
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	✓			
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene	A2.
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane	B2.
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane	C2.
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene	D2.
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11	E2.
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12	F2.
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113	G2.
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114	H2.
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane	I2.
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide	J2.
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane	K2.
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane	L2.
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane	M2.
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane	N2.
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane	O2.
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane	P2.
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane	Q2.
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane	R2.
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane	S2.
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methylcyclohexane	T1. 2-Methylhexane	T2.
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal	U2.
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene	V2.
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol	W2.
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene	X2.
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.	Y2.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.	Z2.

LDC #: 48168A1a

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?

Y N N/A Were percent differences (%D) ≤20 % and relative response factors (RRF) within the method criteria?

#	Date	Standard ID	Compound	Finding %D (Limit: <20.0%)	Finding RRF (Limit)	Associated Samples	Qualifications
	04/30/20	LA200837	B	37.9		All (ND)	J/UJ/A
			A D	22.0			

Note: * = Ave RRF failed method criteria but within validation criteria

LDC #: 48168A1a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

[✓ Y] N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

[✓ Y] N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y [✓ N] N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		9/10	B	52 (53-142)	6 ( )	( )	7 (ND)	J/UJ/A
			B	( )	( )	25 (14)	↓ ↓	J dets/A
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
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				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 48168A1a

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

(Y) N NA Were field duplicate pairs identified in this SDG?
(Y) N NA Were target compounds identified in the field duplicate pairs?

Compound	Concentration (ug/L)		RPD
	5	6	
QQQ	1.5	1.6	6

V:\Josephine\FIELD DUPLICATES\48168A1a wsp gen instrument.wpd

LDC #: 48168 A1a

VALIDATION FINDINGS WORKSHEET

Surrogate Results Verification

Page: 1 of 1
Reviewer: JVG
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: # 1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	50.0	53.38	107	107	0
1,2-Dichloroethane-d4		49.60	99	99	
Toluene-d8		48.58	97	97	
Bromofluorobenzene		47.15	94	94	

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 48168 A1a

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC) MSC = Matrix spike concentration MSDC = Matrix spike duplicate concentration

MS/MSD sample: 9 10

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	50.0	50.0	0	50.6	51.2	101	101	107	107	1	1
Trichloroethene				53.9	53.7	108	108	107	107	0	0
Benzene				52.9	52.2	106	106	104	104	1	1
Toluene				50.6	50.1	101	101	100	100	1	1
Chlorobenzene	↓	↓	↓	49.2	49.3	98	99	99	99	0	0

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 48168 A1a

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: VLA8656-BS

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	50.0	NA	50.8	NA	102	102				
Trichloroethene			53.8		108	108				
Benzene			54.8		110	110				
Toluene			50.3		101	101				
Chlorobenzene			50.2		100	100				

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 48168A1a

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: JVG
2nd reviewer:

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x = Area of the characteristic ion (EICP) for the compound to be measured

A_{is} = Area of the characteristic ion (EICP) for the specific internal standard

I_s = Amount of internal standard added in nanograms (ng)

RRF = Relative response factor of the calibration standard.

V_o = Volume or weight of sample pruged in milliliters (ml) or grams (g).

Df = Dilution factor.

%S = Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. 1, QQQ

Conc. = $\frac{(23358)(50.0)(\quad)}{(122793)(0.478)(\quad)(\quad)}$

= 19.9 ug/L

#	Sample ID	Compound	Reported Concentration (ug/L)	Calculated Concentration (ug/L)	Qualification
	1	QQQ	19.9	19.9	-

Site:	Former General Instrument Site, Sherburne, NY
Laboratory:	Pace Analytical Services, LLC
Report No.:	33590
Reviewer:	An Le and Christina Rink/Laboratory Data Consultants for WSP Group - Cazenovia, NY
Date:	June 15, 2020

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
P-8	335900001	Dissolved Organic Carbon
P-8MS	335900001MS	Dissolved Organic Carbon
P-8DUP	335900001DUP	Dissolved Organic Carbon

Associated QC Samples(s):

Field/Trip Blanks: None Associated
Field Duplicate pair: None Associated

The above-listed water samples were collected on April 28, 2020 and were analyzed for dissolved organic carbon by standard method 5310C. The data validation was performed in accordance with the *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review,* EPA 540-R-2017-001 (January 2017), modified as necessary to accommodate the non-CLP methodologies used.

The inorganic data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
- Data Completeness
- Holding Times and Sample Preservation
- Initial Calibration and Calibration Verification
- Blank Analysis Results
- Matrix Spike (MS) Results
- Laboratory Duplicate Results
- Field Duplicate Results
- Laboratory Control Sample (LCS) Results
- Detection Limits Results
- Sample Quantitation Results

Overall Evaluation of Data and Potential Usability Issues

All results are usable as reported.

The validation findings were based on the following information.

Data Completeness

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

Holding Times and Sample Preservation

All criteria were met.

Initial Calibration and Calibration Verification

All criteria were met.

Blank Results

Contamination was not detected in the laboratory blank samples.

A field blank was not associated with this sample set. Validation action was not required on this basis.

MS Results

MS analyses were performed on sample P-8 for dissolved organic carbon analysis. All criteria were met.

Laboratory Duplicate Results

Laboratory duplicates were performed on sample P-8 for dissolved organic carbon analysis. All criteria were met.

LCS Results

All criteria were met.

Field Duplicate Results

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

Detection Limits Results

No results were reported below the reporting limit (RL) and above the method detection limit (MDL) in the dissolved organic carbon analysis.

Dilutions were not required for dissolved organic carbon analysis.

Sample Quantitation Results

Calculations were spot-checked; no discrepancies were noted.

DATA VALIDATION QUALIFIERS

U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.

UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.

R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

LDC #: 48168B6 **VALIDATION COMPLETENESS WORKSHEET** Date: 6/10/20
SDG #: 33590 Category B Page: 1 of 1
Laboratory: Pace Analytical Services, LLC Reviewer: ATV
2nd Reviewer:

METHOD: (Analyte) DOC (SM5310C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A / A	
II	Initial calibration	A	
III.	Calibration verification	A	
IV	Laboratory Blanks	A	
V	Field blanks	N	
VI.	Matrix Spike/Matrix Spike Duplicates	A	2
VII.	Duplicate sample analysis	A	3
VIII.	Laboratory control samples	A	LCS
IX.	Field duplicates	N	
X.	Sample result verification	A	
XI	Overall assessment of data	A	

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet
ND = No compounds detected
R = Rinsate
FB = Field blank
D = Duplicate
TB = Trip blank
EB = Equipment blank
SB=Source blank
OTHER:

	Client ID	Lab ID	Matrix	Date
1	P-8	335900001	Water	04/28/20
2	P-8MS	335900001MS	Water	04/28/20
3	P-8DUP	335900001DUP	Water	04/28/20
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

Notes:

LDC #: 48168BC

VALIDATION FINDINGS CHECKLIST

Reviewer: AIC
2nd Reviewer:

Method: Inorganics (EPA Method See cover)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% QC limits?	✓			
Were titrant checks performed as required? (Level IV only)			✓	
Were balance checks performed as required? (Level IV only)			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. Matrix spike/Matrix spike duplicates and Duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and ≤ 35% for soil samples? A control limit of ≤ CRDL(≤ 2X CRDL for soil) was used for samples that were ≤ 5X the CRDL, including when only one of the duplicate sample values were ≤ 5X the CRDL.	✓			
V. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% (85-115% for Method 300.0) QC limits?	✓			
VI. Regional Quality Assurance and Quality Control				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	

Validation Area	Yes	No	NA	Findings/Comments
VII. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
Were detection limits < RL?	✓			
VIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
IX. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
X. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 48168B6

Validation Findings Worksheet
Initial and Continuing Calibration Calculation Verification

Reviewer: ATL
2nd Reviewer: [signature]

Method: Inorganics, Method See Cover

The correlation coefficient (r) for the calibration of DOC was recalculated. Calibration date: 4/3/20

An initial or continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found X 100 / True

Where, Found = concentration of each analyte measured in the analysis of the ICV or CCV solution

True = concentration of each analyte in the ICV or CCV source

Type of analysis	Analyte	Standard	Conc. (mg/L)	Area	Recalculated r or r^2	Reported r or r^2	Acceptable (Y/N)
Initial calibration	DOC	s1	0.2	8450	*0.99988*	*0.99980*	Y
		s2	0.5	11850			
		s3	1	20390			
		s4	5	77401			
		s5	20	282920			
		s6	40	549609			
ICV Calibration verification	DOC	FOUND 26.357	TRUE 25.000		105	106	Y
CCV Calibration verification	DOC	25.599	25.000		102	103	Y
CCV Calibration verification	DOC	24.886	25.000		99.5	99.9	Y

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 48168B6

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: ATL
2nd Reviewer:

METHOD: Inorganics, Method See cover

Percent recoveries (%R) for a laboratory control sample and a matrix spike sample were recalculated using the following formula:

$\%R = \frac{Found}{True} \times 100$ Where, Found = concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$ Where, S = Original sample concentration
D = Duplicate sample concentration

Sample ID	Type of Analysis	Element	mg/L Found / S (units)	mg/L True / D (units)	Recalculated %R / RPD	Reported %R / RPD	Acceptable (Y/N)
LCS	Laboratory control sample	DOC	13.529	13	104	104	Y
2	Matrix spike sample	DOC	(SSR-SR) 19.789	20	99	99	Y
3	Duplicate sample	DOC	4.5	4.3	3.8	3.8	Y

Comments: _____

LDC #: 48168BC6

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: ATV
2nd reviewer:

METHOD: Inorganics, Method See cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments?
(Y) N N/A Are all detection limits below the CRQL?

Compound (analyte) results for DOC reported with a positive detect were recalculated and verified using the following equation:

Concentration = Recalculation:

$$\frac{(65127 - 6514) \times \frac{0.2934}{1000}}{4} = 4.29926 \simeq 4.3$$

#	Sample ID	Analyte	Reported Concentration (mg/L)	Calculated Concentration (mg/L)	Acceptable (Y/N)
	1	DOC	4.3	4.3	Y

Site: Former General Instrument Site, Sherburne, NY
Laboratory: Pace Analytical Services, LLC
Report No.: 33590
Reviewer: Josephine Go and Christina Rink/Laboratory Data Consultants for WSP Group - Cazenovia, NY
Date: June 15, 2020

Samples Reviewed and Evaluation Summary

FIELD ID	LAB ID	FRACTIONS VALIDATED
P-8	335900001	Methane, Ethane, and Ethene
TRIP BLANK	335900002	Methane, Ethane, and Ethene

Associated QC Samples(s):
Field/Trip Blanks: TRIP BLANK
Field Duplicate pair: None Associated

The above-listed water samples were collected on April 28, 2020 and were analyzed for methane, ethane, and ethene by AM20GAX. The data validation was performed in accordance with the USEPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* EPA 540-R-2017-002 (January 2017), modified as necessary to accommodate the non-CLP methodologies used.

The organic data were evaluated based on the following parameters:

- Data Completeness
- Holding Times and Sample Preservation
- Initial and Continuing Calibrations
- Blanks
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
- Laboratory Control Sample (LCS) Results
- Field Duplicate Results
- Quantitation Limits and Data Assessment
- Sample Quantitation and Compound Identification

Overall Evaluation of Data and Potential Usability Issues

All results are usable as reported.

The validation findings were based on the following information.

Data Completeness

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

Holding Times and Sample Preservation

All criteria were met.

Initial and Continuing Calibrations

All criteria were met.

Blanks

Contamination was not detected in the method blanks.

No positive results were found in the trip blank sample TRIP BLANK for methane, ethane, and ethene analysis.

MS/MSD Results

MS/MSD analyses were not associated with this sample set. Validation action was not required on this basis.

LCS/LCSD Results

All criteria were met.

Field Duplicate Results

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

Quantitation Limits and Data Assessment

No results were reported below the reporting limit (RL) and above the method detection limit (MDL) in the methane, ethane, and ethene analysis.

Dilutions were not required for methane, ethane, and ethene analysis.

Sample Quantitation and Compound Identification

Calculations were spot-checked; no discrepancies were noted.

DATA VALIDATION QUALIFIERS

U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.

UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.

JN - The analysis indicates the presence of a compound that has been "tentatively identified" (N) and the associated numerical value represents its approximate (J) concentration.

R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

LDC #: 48168B51 **VALIDATION COMPLETENESS WORKSHEET** Date: 06/09/20
SDG #: 33590 Category B Page: 1 of 1
Laboratory: Pace Analytical Services, LLC Reviewer: JVG
2nd Reviewer:

METHOD: GC Methane-Ethane-Ethene (AM20GAX)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A/A	
II.	Initial calibration/ICV	A/A	r² IAV ≤ 20.
III.	Continuing calibration	A	CAV ≤ 20%
IV.	Laboratory Blanks	A	
V.	Field blanks	ND	TB = 2
VI.	Matrix spike/Matrix spike duplicates	N	
VII.	Laboratory control samples	A	LCS/D
VIII.	Field duplicates	N	
IX.	Compound quantitation RL/LOQ/LODs	A	
X.	Target compound identification	A	
XI.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	P-8	335900001	Water	04/28/20
2	TRIP BLANK	335900002	Water	04/28/20
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				

Notes:

LDC #: 48168B51

VALIDATION FINDINGS CHECKLIST

Reviewer: JVG
2nd Reviewer:

Method: ✓ GC ___ HPLC

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
IIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?				
Were all percent relative standard deviations (%RSD) ≤ 20%?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?				
Were the RT windows properly established?				
IIb. Initial calibration verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 20%?				
III. Continuing calibration				
Was a continuing calibration analyzed daily?				
Were all percent differences (%D) ≤ 20%?				
Were all the retention times within the acceptance windows?				
IV. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks?		✓		
V. Field Blanks				
Were field blanks identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VI. Surrogate spikes				
Were all surrogate percent recovery (%R) within the QC limits?			✓	
If the percent recovery (%R) of one or more surrogates was outside QC limits, was a reanalysis performed to confirm %R?			✓	
If any %R was less than 10 percent, was a reanalysis performed to confirm %R?			✓	
VII. Matrix spike/Matrix spike duplicates				
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?	✓	✓		
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?			✓	
VIII. Laboratory control samples				
Was an LCS analyzed per analytical or extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?	✓			

Validation Area	Yes	No	NA	Findings/Comments
IX. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
X. Compound quantitation				
Did the laboratory LOQs/RLs meet the QAPP LOQs/RLs?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XI. Target compound identification				
Were the retention times of reported detects within the RT windows?	✓			
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

LDC#: 48168B51

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

Method: Dissolved Gases (AM20GAX)

Calibration Date	Instrument	Compound	Standard	(Y) Response (Area)	(X) Concentration
3/10/2020	BIOREM12	Methane	1	0.109	96.23
			2	0.539	481.14
			3	2.77	2405.70
			4	13.778	12028.50
			5	27.264	24057.00

Regression Output		*Calculated*	*Reported*
Constant	b =	*0.028805*	*0.000000*
R Squared	r2 =	*0.999970*	*0.999985*
X Coefficient(s)	m =	*0.0011*	*0.0011*
Correlation Coefficient		*0.999985*	
Coefficient of Determination (r^2)		*0.999970*	*0.999985*

LDC#: 48168B51

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Calculation Verification

Reviewer: JVG
2nd Reviewer:

Method: Dissolved Gases (AM20GAX)

The percent difference (%D) of the initial calibration average Calibration Factors (CF) and the continuing calibration percent difference (%D) values were recalculated for the compounds identified below using the following calculation:

Percent difference (%D) = 100 * (N - C)/N

Where:
N = Initial Calibration Factor or Nominal Amount
C = Calibration Factor from Continuing Calibration Standard or Calculated Amount

#	Standard ID	Calibration Date	Compound	CCV Conc	Reported Conc	Recalculated Conc	Reported %R	Recalculated %R
1	CCV1-988	5/7/2020	Methane	2445.00	2404.00	2406.74	98	98

LDC #: 48168B51

VALIDATION FINDINGS WORKSHEET

Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Reviewer: JVG
2nd Reviewer:

METHOD: / GC __HPLC

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

%Recovery = 100 * (SSC/SA)
RPD =(({SSCLCS - SSCLCSD} * 2) / (SSCLCS + SSCLCSD))*100

Where SSC = Spiked sample concentration; SA = Spike added
LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample duplicate

LCS/LCSD samples: 670301 LCS/D

Compound	Spike Added (ug/L)		Spike Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalc.
Gasoline (8015)										
Diesel (8015)										
Benzene (8021B)										
Methane AM20GAX (~~RSK-175~~)	750	750	752	751	101	101	100	100	0.19	0.13
2,4-D (8151)										
Dinoseb (8151)										
Naphthalene (8310)										
Anthracene (8310)										
HMX (8330)										
2,4,6-Trinitrotoluene (8330)										
Phorate (8141A)										
Malathion (8141A)										
Formaldehyde (8315A)										

Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicate findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 48168 B51

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: JVG
2nd Reviewer:

METHOD: /GC __ HPLC

Y N N/A Were all reported results recalculated and verified for all level IV samples?
Y N N/A Were all recalculated results for detected target compounds within 10% of the reported results?

Concentration= $\frac{(A)(Fv)(Df)}{(RF)(Vs \text{ or } Ws)(\%S/100)}$

A= Area or height of the compound to be measured
Fv= Final Volume of extract
Df= Dilution Factor
RF= Average response factor of the compound In the initial calibration
Vs= Initial volume of the sample
Ws= Initial weight of the sample
%S= Percent Solid

Example:

Sample ID. 1 Compound Name Methane

Concentration = $\frac{(11.999)}{(0.00113)}$ = 10578.2

≈ 10000 ug/L

#	Sample ID	Compound	Reported Concentrations (ug/L)	Recalculated Results Concentrations (ug/L)	Qualifications
	1	Methane	10000	10000	—
		on-col	10563.8	10578.2	—

Comments:

SAMPCALCnew.wpd