GE Global Operations - EHS

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February 1, 2016

Mr. Richard Fisher (OSRR07-1)
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Re: GE-Pittsfield/Housatonic River Site
Groundwater Management Area 4 (GECD340)
Long-Term Trend Evaluation Report – Fall 2015

Dear Mr. Fisher:

Enclosed (in hard copy and on a compact disc) is the General Electric Company's (GE's) *Long-Term Trend Evaluation Report – Fall 2015* for Groundwater Management Area (GMA) 4 (also known as the Plant Site 3 GMA). This report was prepared pursuant to Attachment H to the *Statement of Work for Removal Actions Outside the River* and in accordance with GE's March 2012 *Baseline Assessment Final Report and Long-Term Monitoring Program Proposal for Groundwater Management Area 4*, as approved by EPA.

The enclosed report summarizes the activities performed at GMA 4 during Fall 2015, excluding the activities performed under the post-closure groundwater monitoring program for the On-Plant Consolidation Areas (OPCAs). It includes the results of the latest round of sampling and analysis of groundwater from the GMA 4 monitoring wells and an assessment of those results, including a statistical evaluation of potential groundwater trends relating to groundwater quality in the GMA 4 monitoring wells. A separate report was submitted on the Fall 2015 activities under the OPCA post-closure groundwater monitoring program.

Please feel free to contact me with any questions or comments.

Sincerely yours,

Richard Gates 4/0 2H

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Enclosure

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Prepared for:
General Electric
Pittsfield, MA

Prepared by:
AECOM
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February 1, 2016

Groundwater Management Area 4 Long-Term Trend Evaluation Report Fall 2015

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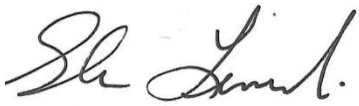

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List of Acronyms and Abbreviations

AMSL	Above mean sea level
bgs	Below ground surface
BMP	Below Measuring Point
CD	Consent Decree
EPA	Environmental Protection Agency
FSP	Field Sampling Plan
GE	General Electric Company
GMA	Groundwater Management Area
LNAPL	Light non-aqueous phase liquid
MCP	Massachusetts Contingency Plan
MDEP	Massachusetts Department of Environmental Protection
µg/L	Micrograms per liter
NAPL	Non-aqueous-phase liquid
OPCA	On-Plant Consolidation Area
PCB	Polychlorinated biphenyl
PCE	Tetrachloroethylene
PDB	Passive diffusion bag
PGC	Pittsfield Generating Company
QAPP	Quality Assurance Project Plan
RAA	Removal Action Area
SGS	SGS Environmental Services, Inc.
SOW	Statement of Work
TCE	Trichloroethylene
UCL	Upper Concentration Limit
USGS	United States Geological Survey
VOC	Volatile organic compound

1.0 Introduction

On October 27, 2000, a Consent Decree (CD) executed in 1999 by the General Electric Company (GE), the United States Environmental Protection Agency (EPA), the Massachusetts Department of Environmental Protection (MDEP), and several other government agencies was entered by the United States District Court for the District of Massachusetts. The CD governs (among other things) the performance of response actions to address polychlorinated biphenyls (PCBs) and other hazardous constituents in soil, sediment, and groundwater in several Removal Action Areas (RAAs) located in or near Pittsfield, Massachusetts that collectively comprise the GE-Pittsfield/Housatonic River Site (the Site).

For groundwater and non-aqueous-phase liquid (NAPL), the RAAs at and near the GE Pittsfield facility have been divided into five separate Groundwater Management Areas (GMAs). These GMAs are described, together with the Performance Standards established for the response actions at and related to them, in Section 2.7 of the *Statement of Work for Removal Actions Outside the River* (SOW) (Appendix E to the CD), with further details presented in Attachment H to the SOW (Groundwater/ NAPL Monitoring, Assessment, and Response Programs). This report relates to the Plant Site 4 Groundwater Management Area, also known as and referred to herein as GMA 4, excluding the groundwater sampling activities associated with the Hill 78 and Building 71 On-Plant Consolidation Areas (OPCAs), which are located within the boundary of GMA 4, but are subject to a separate groundwater monitoring program.

In accordance with the CD and Attachment H of the SOW, baseline groundwater monitoring within GMA 4 began in 2000 and continued with extended baseline monitoring (known as the interim monitoring program) from Spring 2002 through Fall 2011, ending after closure of the OPCAs and the completion of the soil-related remediation work at the areas within GMA 4. In March 2012, GE submitted a *Baseline Assessment Final Report and Long-Term Monitoring Program Proposal for Groundwater Management Area 4* (GMA 4 Long-Term Monitoring Proposal), which was conditionally approved by EPA on May 11, 2012. The long-term monitoring program proposed in that report was initiated in Spring 2012. The last prior report submitted under this program, the *Long-Term Monitoring Program Monitoring Event Evaluation Report, Spring 2015* (GMA 4 Spring 2015 Report), was submitted on July 24, 2015 and conditionally approved by EPA on October 27, 2015.

GE conducted the most recent round of the required long-term groundwater elevation monitoring and sampling activities in Fall 2015. This report describes the groundwater monitoring conducted during the Fall 2015 monitoring period (July through December 2015), presents the results obtained, and provides GE's assessment of those results. In accordance with the GMA 4 Long-Term Monitoring Proposal, this report also constitutes the second biennial trend evaluation report under the post-closure program, including a detailed statistical analysis of long-term trends in the data for selected wells and parameters in the GMA 4 area.

1.1 GMA 4 Description

GMA 4 is located within the mid-eastern portion of the GE Plant Area and encompasses the Hill 78 and Building 71 OPCAs. It includes the Hill 78 Area-Remainder RAA and the portion of the Unkamet Brook Area RAA located to the west of Plastics Avenue. GMA 4 occupies an area of approximately 68 acres, generally bounded by Tyler Street/Tyler Street Extension to the north, Merrill Road to the south, Plastics Avenue to the east, and New York Avenue to the west, as illustrated on **Figure 1**. The

Hill 78 and Building 71 OPCAs (subject to a separate groundwater monitoring program) are located within the central portion of this GMA, which also contains a power generating facility operated by Pittsfield Generating Company (PGC) under a ground lease from GE. The eastern portion of this GMA is mostly paved or covered by Buildings OP-1 and OP-2, which contain operations of General Dynamics Corporation conducted under contract with the U.S. Department of the Navy. (GE continues to own the land beneath those buildings.)

The Removal Action performed by GE at the Hill 78 Area-Remainder RAA generally included site preparation, soil removal/replacement, and property restoration. These activities were conducted in phases between October 2007 and December 2008, with certain additional restoration activities conducted in April 2010. A *Final Completion Report for the Hill 78 Area-Remainder Removal Action* was submitted to EPA on August 30, 2011 and EPA issued a Certificate of Completion for this RAA on September 6, 2011.

With respect to the portion of the Unkamet Brook Area RAA that is located within GMA 4 (i.e., the portion west of Plastics Avenue), GE's April 2011 *Revised Final Removal Design/Removal Action Work Plan for Unkamet Brook Area-West*, as approved by EPA, demonstrates that no soil remediation is necessary in that portion of this RAA.

Small amounts of light non-aqueous-phase liquid (LNAPL) were occasionally detected at former GMA 4 well H78B-8R from May 1999 to May 2001 and from June 2002 to June 2003, when that well was decommissioned as part of the OPCA construction. Measurable LNAPL has never been recorded in any adjacent or downgradient locations. Since the decommissioning of well H78B-8R in 2003, LNAPL has not been observed at any wells within GMA 4.

Very few constituents have been consistently detected in groundwater at GMA 4, and the observed detections were sporadic, resulting in an apparent scattered distribution of occasionally detected constituents throughout the baseline groundwater monitoring program. The sampling program was optimized based on the analytical results obtained throughout the program, concluding in the need for further analysis of volatile organic compounds (VOCs) only. In accordance with EPA's May 8, 2014 conditional approval of the GMA 4 Fall 2013 Trend Evaluation Report and an April 3, 2014 communication between EPA and GE, passive diffusion bags (PDBs) are now utilized for this groundwater quality monitoring.

1.2 Format of Document

This report consists of seven sections. A basic description of each section follows.

Section 1. Presents an introduction and background to the long-term monitoring program.

Section 2. Describes the groundwater-related activities performed at GMA 4 in Fall 2015.

Section 3. Presents the analytical results obtained during the Fall 2015 sampling event, a summary of the applicable groundwater quality Performance Standards identified in the CD and SOW, and a comparison of the Fall 2015 results to those Performance Standards.

Section 4. Provides an overall assessment of groundwater quality at GMA 4, including an evaluation of the analytical dataset for the wells that were sampled as part of the Fall 2015 sampling event, and an assessment of the need for follow-up investigations or response actions.

Section 5. Evaluates potential groundwater trends relating to groundwater quality at GMA 4.
Section 6. Evaluates the need for modifications to the long-term monitoring program for GMA 4 and presents the schedule for future field and reporting activities related to groundwater quality at GMA 4.

Section 7. References previous reports and documents.

Additional supporting information is provided in tables, figures, and appendices.

2.0 Groundwater Monitoring Activities

The activities conducted as part of the long-term groundwater monitoring program in Fall 2015 involved measurement of groundwater levels and the collection and analysis of groundwater samples at select monitoring wells within and downgradient of GMA 4, as summarized in **Tables 1** and **2**. **Table 1** presents the long-term groundwater quality sampling program and **Table 2** summarizes the long-term groundwater elevation monitoring program. The groundwater elevation monitoring program summarized in **Table 2** also includes several adjacent monitoring wells in the OPCA area and GMA 1 as well as wells monitored by EPA at the Allendale School property**.** The monitoring wells in these programs are shown on **Figure 2**, and a summary of monitoring well construction details for each such well is provided in **Table 3**. GE also performed inspections of the monitoring wells, as summarized in **Appendix A**. Groundwater elevation monitoring and well inspections were performed on October 1, 2015, and the collection of groundwater samples for analysis was conducted on October 19, 2015. This section discusses the field procedures used to perform the activities listed above, as well as the methods used to analyze the groundwater samples. All activities were performed in accordance with GE's approved *Field Sampling Plan/Quality Assurance Project Plan* (FSP/QAPP), dated July 2013, and the EPA-approved 2013 GMA 4 Long-Term Monitoring Program Proposal.

2.1 Monitoring Well Inspections and Repairs

Routine monitoring well inspections were performed on October 1, 2015. A summary of those inspections, including information regarding any potential sediment deposition and the need for any maintenance, is provided as Table A-1 in **Appendix A**. As shown in that table, no maintenance issues requiring repairs were noted during the Fall 2015 monitoring period.

2.2 Groundwater Elevation Monitoring

In October 2015, groundwater elevations were recorded in 12 monitoring wells in GMA 4, along with several adjacent monitoring wells at GMA 1 and the OPCA area and at wells monitored by EPA at the Allendale School property. Groundwater elevations measured in Fall 2015 are provided in **Table 4**. A Fall 2015 groundwater contour map is included as **Figure 3.**

Consistent with prior monitoring results, no NAPL was observed in any of the GMA 4 monitoring wells during the groundwater elevation and sampling activities conducted in Fall 2015.

As shown on **Figure 3**, the groundwater flow directions are generally consistent with those observed during previous seasonal monitoring events. A comparison of the groundwater elevation contours with the top-of-till contours presented in the *Long-Term Monitoring Program Monitoring Event Evaluation Report for Spring 2014* (approved by EPA on September 11, 2014) continues to show, as stated in that report, that groundwater elevations are generally correlated with changes in the elevation of the glacial till interface. Specifically, groundwater generally flows from north to south, although variations exist corresponding to changes in the topography of the ground surface and/or the glacial till interface, including a prominent groundwater depression across the western portion of the GMA.

The EPA monitoring data from the Allendale School property are generally consistent with the groundwater contours presented in the GMA 4 and OPCA semi-annual reports since Spring 2008.

Groundwater elevations are highest at the locations adjacent to the school and decrease to the south (i.e., groundwater flows from the Allendale School property toward the OPCAs), providing confirmation that the OPCAs are downgradient from the Allendale School property.

In addition, at EPA's direction, GE reviewed the Housatonic River flow data collected at the U.S. Geological Survey (USGS) gauging station in Coltsville, Massachusetts during the groundwater elevation monitoring and sampling events. The peak daily river flow data ranged from 20 to 341 cubic feet per second (cfs) during the groundwater elevation monitoring and sampling period from October 1 through 19, 2015.

2.3 Groundwater Sampling and Analysis

Long-term groundwater sampling was completed at the four monitoring wells in the long-term sampling program on October 19, 2015. These wells are listed in **Table 1** and shown on **Figure 2**. Each well was sampled via PDB in accordance with EPA's May 8, 2014 conditional approval of the GMA 4 Fall 2013 Trend Evaluation Report and an April 3, 2014 communication between EPA and GE.

Per the FSP/QAPP, PDBs were deployed in each well on October 1, 2015, remained in the well at the screen interval for 14 days, and were removed on October 19, 2015 for VOC sampling. PDBs do not require low-flow purging; however, field parameters (including depth to water, temperature, pH, specific conductivity, turbidity, dissolved oxygen, and, oxidation-reduction potential) were measured, utilizing a peristaltic pump to retrieve a water sample and YSI Professional Plus® and Hach 2100P® to make the measurements. Sampling information was recorded on the Groundwater Sampling Log provided in Attachment AA-1 (PDB sampling) of the FSP/QAPP. Groundwater sampling logs are provided in **Appendix A** and field parameter measurements are listed in **Table 5**.

The collected groundwater samples were submitted to SGS Environmental Services Inc. (SGS), located in Wilmington, North Carolina, for laboratory analysis. The samples collected during this event were submitted for analysis of VOCs via EPA Method 8260.

Following receipt of the analytical data from the laboratories, the preliminary results were reviewed for completeness, validated, and compared to the applicable Performance Standards, which are based on the Massachusetts Contingency Plan (MCP) Method 1 GW-2 and GW-3 standards, and to the MCP Upper Concentration Limits (UCLs) for groundwater, as summarized in **Table 6** and discussed in Section 3.1.

3.0 Groundwater Analytical Results

This section summarizes the laboratory analytical results for the groundwater samples collected in Fall 2015 and compares them to the applicable GW-2 and GW-3 Performance Standards and to the MCP UCLs for groundwater. It also summarizes the data quality assessment of those data. A further assessment of those results is presented in Section 4.

3.1 Summary of Results and Comparison to Performance Standards

The analytical results for the groundwater samples collected in Fall 2015 are summarized in **Table 6**. That table also compares the results to the applicable GW-2 and GW-3 Performance Standards and to the MCP groundwater UCLs. The laboratory analytical reports are provided in **Appendix B**.

The Performance Standards applicable to groundwater at GMA 4 are specified in Section 2.7 and Attachment H (Section 4.1) of the SOW. In general, the Performance Standards for groundwater quality are based on the groundwater classification categories designated in the MCP. The MCP identifies three potential groundwater categories that may be applicable to a given site. GW-1 groundwater applies to groundwater that is a current or potential source of potable drinking water. None of the groundwater at any of the GMAs at the Site is classified as GW-1. However, the remaining MCP groundwater categories are applicable to GMA 4 and are described below:

- GW-2 groundwater is defined as groundwater that is a potential source of vapors to the indoor air of buildings. Groundwater is classified as GW-2 if it is located within 30 feet of an existing occupied building and has an average annual depth below ground surface (bgs) of 15 feet or less.[1]
- GW-3 groundwater is defined as groundwater that discharges to surface water. By MCP definition, all groundwater at a site is classified as GW-3 since it is considered to ultimately discharge to surface water.

The four monitoring wells sampled within GMA 4 during Fall 2015 (GMA4-7S, GMA4-8, GMA4-9, and H78B-16) do not meet the definitional requirements for GW-2 wells. However, as required by EPA, the analytical results from those wells are compared to the MCP Method 1 GW-2 standards as benchmarks for informational purposes only. In addition, the results from these four wells are compared with the MCP Method 1 GW-3 standards (for long-term compliance) and to the MCP UCLs for groundwater.

Based on laboratory analytical results from the Fall 2015 long-term monitoring event, VOCs were not reported or estimated (J-flagged)[2] at concentrations exceeding laboratory reporting limits with the following exceptions:

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[1] In addition, the SOW specifies a concentration of 5 parts per million (ppm), equivalent to 5,000 micrograms per liter (µg/L), of total VOCs as a notification level for GW-2 wells located within 30 feet of a school or occupied residential structure and as a trigger level in GW-2 wells (if associated with an exceedance of a GW-2 standard) for the proposal of interim response actions.

[2] J-flagged indicates an estimated value.

- Acetone was estimated in the samples collected from all four wells sampled (GMA4-7S, GMA4-8, GMA4-9 and H78B-16) at concentrations ranging from 10.4 J micrograms per liter (µg/L) to 47.2 J µg/L. These results are well below the GW-2 benchmark level of 50,000 µg/L and the GW-3 standard at the same level.
- 2-Butanone (also known as methyl ethyl ketone) in the samples collected from wells GMA4-7S, GMA4-8, and GMA4-9 at concentrations of 1.37 J µg/L, 1.44 J µg/L and 1.55 J µg/L, respectively. These results are well below the GW-2 benchmark level of 50,000 µg/L and the GW-3 standard at the same level.
- Chloroform was detected or estimated in the samples collected from GMA4-7S and GMA4-9 at concentrations of 0.580 J µg/L and 3.87 µg/L, respectively, which are below the GW-2 benchmark level of 50 µg/L and the GW-3 standard of 20,000 µg/L.
- Methylene chloride was estimated in the sample collected from GMA4-9 at a concentration of 0.160 J µg/L, which is well below the GW-2 benchmark level of 2,000 µg/L and the GW-3 standard of 50,000 µg/L.
- Tetrachloroethylene (PCE) was detected in the sample from well GMA4-9 at a concentration of 2.43 µg/L, which is below the GW-2 benchmark level of 50 µg/L and the GW-3 standard of 30,000 µg/L.
- Trichloroethylene (TCE) was detected or estimated in samples collected from wells GMA4-9 and H78B-16 at concentrations of 0.120 J µg/L and 119 µg/L, respectively. The concentration detected at H78B-16 exceeded the GW-2 benchmark level of 5 µg/L, but is well below the GW-3 Performance Standard of 5,000 µg/L.
- Total VOC concentrations ranged from 18.16 µg/L detected in the sample collected from GMA4-7S to 166.2 µg/L in the sample collected from H78B-16. None of the samples exhibited total VOC concentrations above the notification level of 5,000 µg/L for examined GW-2 wells.

In summary, the only constituent that exceeded the GW-2 benchmark level was TCE in well H78B-16, which previously exceeded the GW-2 benchmark at approximately the same concentration as Spring 2015; and no compounds were detected in any sample collected during the Fall 2015 monitoring event above their corresponding MCP Method 1 GW-3 standards or above the MCP UCLs for groundwater.

3.2 Data Quality Assessment

The laboratory data were validated in accordance with the approved FSP/QAPP, with the Data Validation Report provided as **Appendix C**. As shown in that memo, 96.4% of the Fall 2015 groundwater quality data are considered to be useable, which is greater than the minimum required usability of 90% as specified in the FSP/QAPP.

4.0 Assessment of Groundwater Quality

An overall assessment of the groundwater quality data at GMA 4 has been conducted based on the laboratory results obtained during the Fall 2015 groundwater sampling event, supplemented with historical groundwater analytical data obtained during the course of the GMA 4 baseline, interim, and long-term groundwater monitoring programs, when applicable to evaluate variations and/or potential trends in constituent concentrations in GMA 4 groundwater.

The following sections present the results of that overall assessment of groundwater quality and an evaluation of the need for follow-up investigations, assessments, or interim response actions.

4.1 General Assessment of Groundwater Quality Data

As noted above, the analytical results for the groundwater samples collected in Fall 2015 are summarized in **Table 6**, which compares results to the MCP Method 1 GW-2 standards (for benchmark purposes only) and GW-3 standards (for compliance) and to the MCP UCLs for groundwater. These results are discussed below in the context of the historical analytical dataset for these wells. Graphs of concentrations over time for the two wells sampled during Fall 2015 that have historically shown exceedances of the GW-2 benchmark levels for PCE (well GMA4-9) or TCE (well H78B-16) are provided in **Appendix D**. Summary statistics of the historical results at the four wells in the long-term sampling program are provided in **Appendix E**[3].

As shown in Table 6, 2-butanone, a common laboratory contaminant, was estimated in monitoring wells GMA4-7S, GMA4-8, and GMA4-9 at concentrations of 1.37 J µg/L, 1.44 J µg/L and 1.55 J µg/L, respectively, which are far below the GW-2 and GW-3 standards of 50,000 µg/L. 2-butanone was first detected within GMA 4 in Spring 2015 (in monitoring well GMA4-8 at a concentration of 3.12 J µg/L), but Fall 2015 is the first occurrence of 2-butanone in samples collected from wells GMA4-7S and GMA4-9. The concentration of 2-butanone detected in well GMA4-8 (1.44 J µg/L) in Fall 2015 is lower than what was previous detected in Spring 2015 (3.12 J µg/L). GE will continue to monitor 2-butanone (along with other VOCs) in GMA 4 to evaluate if the occurrence of 2-butanone in wells GMA4-7S and GMA4-9 is an anomaly.

Methylene chloride, another laboratory contaminant, was estimated for the first time in Fall 2015 in well GMA4-9 at a concentration of 0.160 J µg/L, which is far below the GW-2 standard of 2,000 µg/L. Methylene chloride has also been historically detected in well H78B-16, with a maximum detection of 1.48 µg/L in Spring of 2010. GE will continue to monitor methylene chloride (along with other VOCs) in GMA 4 to evaluate if the occurrence of this contaminant in wells GMA4-9 and H78B-16 is an anomaly.

Of the monitoring wells sampled during Fall 2015 (GMA4-7S, GMA4-8, GMA4-9 and H78B-16), no constituent has ever been detected at a concentration greater than its respective GW-3 standard or UCL. Only three VOCs have ever been detected above GW-2 benchmark levels in samples collected

[3] Arithmetic averages are calculated by treating the arithmetic average of paired duplicate results, split samples and primary samples each as a single result. One half of the associated reporting limit is used for any non-detected results in the summary statistics presented. The use of this convention can result in a calculated average greater than the maximum detected concentration.

from these four monitored wells: TCE and vinyl chloride in well H78B-16 and PCE in well GMA4-9. The results for these constituents in these wells are discussed further below. Total VOC concentrations have not been measured above the GW-2 notification level of 5,000 µg/L in any well sampled.

TCE has been detected during all 21 sampling events at well H78B-16, with an average concentration of 64.6 µg/L, which is above the current GW-2 benchmark level of 5 µg/L, but well below the GW-3 Performance Standard of 5,000 µg/L (see graph for this well in Appendix D). In the Fall 2015 sampling event, TCE was detected in this well at a concentration of 119 µg/L, which is above the GW-2 benchmark level and above the average concentration of TCE in well H78B-16; but is less than the peak concentrations in 2003 and 2004 (160-180 µg/L). Over the last five years, concentrations of TCE in well H78B-16 have fluctuated between 15 and 119 µg/L and have shown no clear trend.

Vinyl chloride historically has been detected in the majority of the samples collected from well H78B-16 (14 of 21 sampling events), with an average concentration of 4.19 µg/L (above the GW-2 benchmark level of 2 µg/L). However, as in Fall 2014 and Spring 2015, that constituent was not detected in Fall 2015.

PCE has been detected in all sampling rounds at well GMA4-9, with an average concentration of 85.6 µg/L, which is above the GW-2 benchmark level of 50 µg/L, but well below the GW-3 Performance Standard of 30,000 µg/L (see graph for this well in Appendix D). In the Fall 2015 sampling round, PCE was detected in this well at a concentration of 2.43 µg/L, which is below the GW-2 benchmark level, below the average concentration of PCE in well GMA4-9, and well below the peak concentrations in 2009-2011 (175 to 356 µg/L). In the more recent years, there is no clear trend in PCE concentrations in this well, with concentrations periodically exceeding the GW-2 benchmark level.

As part of the GMA 4 long-term monitoring program, GE conducted additional trend evaluations, including an additional statistical trend assessment following the Fall 2015 sampling round, which is discussed in Section 5.0 and presented in **Appendix F**.

4.2 Evaluation of Need for Further Assessment or Other Response Action

As summarized above, VOCs within GMA 4 were not detected or estimated above the GW-3 Performance Standards or UCLs. One compound, TCE, was detected above the associated GW-2 benchmark level in monitoring well H78B-16.

As indicated above, TCE was detected in well H78B-16 at a concentration of 119 µg/L, which is above the GW-2 benchmark level and above the average concentration of TCE in this well; but is less than the peak concentrations in 2003 and 2004 (160-180 µg/L).

Recent PCE concentrations detected in monitoring well GMA4-9 have decreased below peak levels detected in 2009 through 2011 (175-356 µg/L), with concentrations fluctuating from a low of 1.41 µg/L (in Fall 2014) to 97.80 µg/L (in Spring 2014). In Fall 2015, PCE was detected in well GMA4-9 at a concentration of 2.43 µg/L.GE is further addressing VOCs in this area by sampling downgradient location GMA4-7S as part of the long-term monitoring program. Well GMA4-7S is upgradient of occupied buildings along and to the south of East Street and is more relevant to the assessment of GW-2 compliance. No constituents have ever been detected at levels above their respective GW-2 benchmark levels at this location. In addition, as part of its OPCA post-closure groundwater monitoring program, GE is performing GW -2 monitoring at several monitoring wells upgradient of well H78B-16, including three GW-2 compliance wells (i.e., wells H78B-15, OPCA-MW-4, and OPCA-MW-5R) located near the Pittsfield Generating Company (PGC) facility building. As discussed in more

detail in GE's *OPCA Post-Closure Groundwater Monitoring Event Evaluation Report – Fall 2015*, the results from those three GW-2 compliance wells showed no constituent concentrations above applicable GW-2 standards in Spring or Fall 2014 or again in Spring or Fall 2015.

GE proposes to continue sampling wells GMA4-7S, GMA4-8, GMA4-9, and H78B-16 for VOCs analysis under the current long-term monitoring program for GMA 4; however, as required by EPA in its conditional approval letter dated October 27, 2015 for GE's *OPCA Post-Closure Groundwater Monitoring Trend Evaluation Report – Spring 2015*, well GMA4-8 will additionally be sampled for dissolved cadmium analysis in order to further evaluate cadmium exceedance in well OPCA-MW-1RR, located upgradient of well GMA4-8 and sampled separately as part of the OPCA groundwater monitoring program. Dissolved cadmium sampling at GMA4-8 will begin during the next semi-annual sampling event in Spring 2016. Cadmium results from well GMA4-8 will be reported in the *GMA 4 Long-Term Monitoring Program Monitoring Event Evaluation Report for Spring 2016* and referenced for comparison to well OPCA-MW-1RR in the *OPCA Post-Closure Groundwater Monitoring Event Evaluation Report for Spring 2016.*

Based on the results from the Fall 2015 sampling round, no consistent increasing trends in constituent concentrations are evident, and there have been no wells at which any detected concentration suggests the need for an interim response action. If any exceedances of the groundwater-related Performance Standards are observed at GMA 4, GE will evaluate the need for appropriate response actions and will propose necessary actions for EPA approval.

5.0 Statistical Evaluation of Long-Term Trends in Groundwater Quality

5.1 General

Since this report is the biennial trend evaluation report, GE has conducted a statistical assessment of potential trends in groundwater constituent concentrations over time and during different seasons. Factors that may contribute to trends and cycles include hydrogeological characteristics, groundwater movement, natural attenuation, and changes in the original source(s) of the constituent. This section presents GE's evaluation of trends in the data collected from the GMA 4 monitoring wells. This section utilizes the summary statistics for the GMA 4 wells where long-term monitoring is being conducted, which are contained in **Appendix E** and were discussed in Section 4.0. In addition to the summary statistics, certain constituents at certain well locations were selected for detailed trend analyses. Specifically, GE reviewed the results from the four GMA 4 monitoring program wells and conducted trend analyses on the constituents and locations selected by the following screening process:

- Initially, the database from each GMA 4 monitoring well was reviewed and any locations/constituents where maximum historical concentrations greater than 50 percent of applicable groundwater standards, benchmark levels, or the notification level for total VOCs[4] had been recorded were selected for additional screening.
- Trend analyses were performed at the selected locations if any of the following additional criteria were met:
    1) The maximum detected concentration of the constituent is greater than the lowest applicable groundwater standard or benchmark level or, for total VOCs, the notification level;
    2) The average concentration of the constituent is greater than 50% of the lowest applicable groundwater standard or benchmark level or, for total VOCs, the notification level;
    3) The current (Fall 2015) concentration is greater than 50% of the lowest applicable groundwater standard or benchmark level or, for total VOCs, the notification level; and/or,
    4) The constituent is a commonly detected breakdown product of one of the above-selected constituents.

Based on these criteria, the following constituents and locations were selected for detailed statistical trend analysis: PCE at well GMA4-9; TCE at wells GMA4-9 and H78B-16; cis 1,2-dichloroethylene at wells GMA4-9 and H78B-16; trans 1,2-dichloroethylene at well H78B-16; 1,1-dichloroethylene at well H78B-16; and vinyl chloride at well H78B-16.

[4] Since total VOCs have no applicable MCP Method 1 GW-2 or GW-3 standards, those results were initially screened against the 5 ppm level specified in the SOW as a notification level for GW-2 wells located within 30 feet of a school or occupied residential structure and as a trigger level in GW-2 wells for the proposal of interim response actions.

As described in the GMA 4 Long-Term Monitoring Proposal, three statistical techniques were utilized to evaluate temporal trends in groundwater near GMA 4 and to determine the statistical significance of any potential trends that were identified: (1) Mann-Kendall Test (MK); (2) Sen's Estimator for Slope (SSE); and (3) Seasonal Kendall Tau Estimator Test (SK). Trend analyses were performed over the entire analytical database for the relevant constituent at each location, and, to identify the existence of any recent trends, over the last eight sampling rounds (i.e., four years), if a sufficient number of detected results were available over that time period. While linear regression analyses were not performed due to the number of non-detects, a coefficient of determination (R^2) was calculated and utilized to further evaluate identified trends. In general, R^2 values greater than 0.5 indicate a moderate fit to a regression line. The statistical methods and procedures used and the results of the statistical analyses are described in **Appendix F**, and the results are also summarized below.

Summary statistics for VOC data from all four GMA 4 monitoring wells are contained in Tables E-1 through E-4 in **Appendix E**. As seen in those tables, the GMA 4 wells have been analyzed for VOCs between 10 and 21 times, and VOCs has been detected in each well during at least five of those sampling events

5.2 Evaluation of Groundwater Quality Trends for Tetrachloroethylene

PCE data from monitoring well GMA4-9 were subjected to more detailed statistical trend analyses based on the maximum detected result exceeding the GW-2 standard, as well as the average PCE concentrations exceeding 50% of that level. That well has been analyzed for PCE on 12 occasions, and PCE has been detected during each of those sampling events (see Table E-3 in **Appendix E**). The results of the statistical trend analyses conducted for the PCE dataset from this well, as well as for the data from the past four years, are presented in **Appendix F**.

As shown in **Appendix F**, the MK and SSE tests identified a significant decreasing trend over the entire available dataset. However, the SK test did not identify an overall seasonal trend. No trends were observed in the most recent eight events. Based on application of the MK test to the seasonal data, a decreasing trend was identified in the fall for the entire available dataset, but not in the spring for the entire available dataset, in the four most recent spring events or in the four most recent fall events. While linear regression was not performed, the R^2 was 0.525 over the entire available dataset and 0.033 over the last eight events indicating moderate and low correlations with time, respectively.

5.3 Evaluation of Groundwater Quality Trends for Trichloroethylene

Two GMA 4 wells (GMA4-9 and H78B-16) were subjected to more detailed statistical trend analyses for TCE based on the maximum detected results exceeding the GW-2 standard at both GMA4-9 and H78B-16 and the average and Fall 2015 concentration exceeding 50 percent of the GW-2 standard at H78B-16. Statistical summaries of the historical TCE data for those wells are provided in Tables E-3 and E-4 in **Appendix E**. As seen in those tables, GMA 4 has been analyzed for TCE on 12 occasions over which concentrations have been detected 10 times and H78B-16 has been analyzed on 21 occasions over which concentrations have been detected 21 times. The results of the statistical analyses conducted for the TCE dataset from these wells are presented in **Appendix F**.

As shown in **Appendix F**, for GMA4-9, the MK and SK tests identified a significant decreasing trend. In addition, the SK test identified an overall decreasing seasonal trend for GMA4-9. No trends were observed in the most recent eight events for GMA4-9. Based on application of the MK test to the seasonal data from GMA4-9, a decreasing trend was identified in the fall for the entire available dataset and four most recent fall events, but not in the spring for the entire available dataset or in the four most recent spring events. While linear regression was not performed, the R^2 was 0.529 over the

entire available dataset and 0.032 over the last eight events indicating moderate and low correlations with time, respectively.

For H78B-16 no trends were observed in the entire available dataset or over the last eight rounds. Based on application of the MK test to the seasonal data from H78B-16, no trends were observed for the entire available dataset or over the last four rounds. While linear regression was not performed, the R^2 was 0.069 over the entire available dataset and 0.048 over the last eight events indicating low correlations with time.

5.4 Evaluation of Groundwater Quality Trends for cis 1,2-Dichloroethylene

Two GMA 4 wells (GMA4-9 and H78B-16) were subjected to more detailed statistical trend analyses for cis 1,2-dichloroethylene. Despite there only being one detection of cis 1,2-dichloroethylene at H78B-16, that detection (26.8 µg/L) exceeds the GW-2 standard (20 µg/L). Trend analyses were also completed on parent chemicals at GMA4-9. Statistical summaries of the historical cis 1,2-dichloroethlene data for those wells are provided in Tables E-3 and E-4 in **Appendix E**. As seen in those tables, GMA 4 has been analyzed for cis1,2- dichloroethylene on two occasions over which concentrations have been detected one time and H78B-16 has been analyzed on one occasion over which the concentration was detected. Given that GMA4-9 and H78B-16 have been analyzed for cis 1,2-dichloroethylene less than four times no further analyses were conducted.

5.4.1 Evaluation of Groundwater Quality Trends for trans 1,2-Dichloroethylene

Trans 1,2-dichloroethylene data from monitoring well H78B-16 were subjected to more detailed statistical trend analyses on the basis that trend analysis was completed on parent chemicals. That well has been analyzed for trans 1,2-dichloroethylene on 21 occasions, and trans 1,2-dichloroethylene has been detected eight of those sampling events (see Table E-4 in **Appendix E**). The results of the statistical trend analyses conducted for the trans 1,2-dichloroethylene dataset from this well, as well as for the data from the past four years, are presented in **Appendix F**.

As shown in **Appendix F**, no trends were observed in the entire available dataset or over the last eight rounds. Based on application of the MK test to H78B-16 seasonal data, no trends were observed for the entire available dataset or over the last four rounds. While linear regression was not performed, the R^2 was 0.222 over the entire available dataset and 0.222 over the last eight events indicating low correlations with time.

5.5 Evaluation of Groundwater Quality Trends for 1,1-Dichloroethylene

1,1-Dichloroethylene data from monitoring well H78B-16 were subjected to more detailed statistical trend analyses on the basis that trend analysis was completed on parent chemicals. That well has been analyzed for 1,1-dichloroethylene on 21 occasions, and 1,1-dichloroethylene has been detected one of those sampling events (see Table E-4 in **Appendix E**). The results of the statistical trend analyses conducted for the 1,1-dichloroethylene dataset from this well, as well as for the data from the past four years, are presented in **Appendix F**.

As shown in **Appendix F**, no trends were observed in the entire available dataset or over the last eight rounds. Based on application of the MK test to H78B-16 fall data, no trends were observed for the entire available dataset or over the last four rounds. The MK test was not applied to H78-16 spring data which are all non detect. While linear regression was not performed, the R^2 was 0.029 over the entire available dataset and 0.176 over the last eight events indicating low correlations with time.

5.6 Evaluation of Groundwater Quality Trends for Vinyl Chloride

Vinyl chloride data from monitoring well H78B-16 were subjected to more detailed statistical trend analyses based on the maximum detected result exceeding the GW-2 standard and the average concentration exceeding 50 percent of the GW-2 standard at H78B-16. That well has been analyzed for vinyl chloride on 21 occasions, and vinyl chloride has been detected 14 of those sampling events (see Table E-4 in **Appendix E**). The results of the statistical trend analyses conducted for the vinyl chloride dataset from this well, as well as for the data from the past four years, are presented in **Appendix F**.

As shown in **Appendix F**, the MK and SK tests identified a significant decreasing trend. In addition, the SK test identified an overall decreasing seasonal trend. Based on application of the MK test to H78B-16 seasonal data, a decreasing trend was identified in the fall and spring for the entire available dataset, but not in the four most recent spring or fall events. While linear regression was not performed, the R^2 was 0.399 over the entire available dataset and 0.362 over the last eight events indicating low correlations with time.

6.0 Future Activities

GE has reviewed the results of its groundwater-related activities conducted at GMA 4 in Fall 2015, including the groundwater analytical data from the Fall 2015 sampling event and prior analyses, for results that would indicate the need to modify the long-term monitoring program. The results of the evaluation of the need for program modifications are discussed in Section 6.2 below. This section also summarizes the approved activities and schedule for upcoming long-term monitoring events and associated reporting activities.

6.1 Summary of Long-Term Statistical Trend Analysis

A long-term statistical trend analysis was performed following the Fall 2015 sampling event to assess potential increasing trends in groundwater constituent concentrations over time (i.e., historical long-term or more recent increasing concentrations) as well as increasing trends in seasonal results. The data for each of the four monitoring wells in the GMA 4 long-term monitoring program were reviewed as part of this trend evaluation; GMA4-7S, GMA4-8, GMA4-9, and H78B-16. Trend analyses were conducted for constituents in any of these wells that met the criteria required in the EPA-approved GMA 4 Long Term Monitoring Proposal. These constituents included PCE, TCE, cis 1,2-dichloroethylene, trans 1,2-dichloroethylene,1-dichloroethylene, and vinyl chloride. Based on the results of this statistical analysis, no increasing trends were identified. The statistical methods and results are discussed in Section 5 and **Appendix E**.

6.2 Evaluation of Need for Program Modifications

Based on the results of the Fall 2015 sampling round and the evaluation of data relative to the applicable Performance Standards (further detailed in Section 4), GE does not propose to make any modifications to the locations to be sampled or analyses to be performed as part of the long-term monitoring program; however, as discussed in Section 4.2, EPA requires that well GMA4-8 be sampled for dissolved cadmium in future sampling events to evaluate cadmium in upgradient well OPCA-MW-1RR. The need for modifications will be evaluated further in the Long-Term Trend Evaluation Report for GMA 4 following the Fall 2017 sampling event.

6.3 Field Activities Schedule

GE anticipates that the Spring 2016 semi-annual long-term monitoring event for GMA 4 will take place in April 2016. A round of groundwater elevation monitoring at the GMA 4 wells (and adjacent areas) where such monitoring is required will be performed at that time, followed by PDB deployment. PDBs will be retrieved and sampled at least two weeks after deployment. Following retrieval of the PDB from well GMA4-8, a groundwater sample will be collected from this well using low-flow sampling methods and submitted for dissolved cadmium analysis. Prior to performance of these field activities, GE will provide EPA with 7 days advance notice to allow the assignment of oversight personnel.

6.4 Reporting Schedule

In accordance with the previously approved reporting schedule for this monitoring program, GE will submit the next Monitoring Event Evaluation Report at the completion of the Spring 2016 sampling round. That report will be submitted within 60 days following receipt of the final analytical data packages from the Spring 2016 sampling event. The report will present the final, validated Spring

2016 sampling results and a discussion of the results, including the evaluations of the current data and any proposals to further modify the long-term monitoring program, if necessary.

Subsequent Long-Term Trend Evaluation Reports for GMA 4 will be prepared at two-year intervals over the duration of the long-term monitoring program, unless an alternate schedule is proposed by GE and approved by EPA. The next Long-Term Trend Evaluation Report for GMA 4 is scheduled to be submitted in place of the Fall 2017 Monitoring Event Evaluation Report. That report will be submitted within 75 days following receipt of the final analytical data packages from the Fall 2017 sampling event.

7.0 References

AECOM, *Groundwater Management Area 4 Long-Term Monitoring Program Monitoring Event Evaluation Report, Spring 2015*, July 2015.

AECOM, *OPCA Post-Closure Groundwater Monitoring Event Evaluation Report*, *Fall 2015,* January 2016.

AECOM, *OPCA Post-Closure Groundwater Monitoring Event Evaluation Report*, *Spring 2015,* August 2015.

ARCADIS, *Groundwater Management Area 4 Long-Term Monitoring Program Monitoring Event Evaluation Report for Spring 2014*, July 2014.

ARCADIS, *Groundwater Management Area 4 Long-Term Monitoring Long-Tern Trend Evaluation Report for Fall 2013*, March 2014.

ARCADIS, *Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP),* General Electric Company, Pittsfield, Massachusetts, Revision 5, July 2013.

ARCADIS, *Baseline Assessment Final Report and Long-Term Monitoring Program Proposal for Groundwater Management Area 4*, March 2012.

EPA, Letter from Fisher (EPA) to Gates (GE), EPA Conditional Approval of General Electric's July 24, 2015 submittal titled Groundwater Management Area 4, Monitoring Event Evaluation Report – Spring 2015, GE-Pittsfield/Housatonic River Site, October 27, 2015.

EPA, Letter from Fisher (EPA) to Gates (GE), EPA Conditional Approval of General Electric's August 21, 2015 submittal titled On-Plant Consolidation Areas, Post-Closure Groundwater Monitoring Event Evaluation Report–Spring 2015, GE-Pittsfield/Housatonic River Site, October 27, 2015.

EPA, Letter from Fisher (EPA) to Gates (GE), EPA Conditional Approval of General Electric's February 23, 2015 submittal titled Groundwater Management Area 4, Monitoring Event Evaluation Report – Fall 2014, GE-Pittsfield/Housatonic River Site, May 1, 2015.

EPA, Letter from Fisher (EPA) to Gates (GE), EPA Conditional Approval of General Electric's March 7, 2014 submittal titled Groundwater Management Area 4, Long-Term Trend Evaluation Report for Fall 2013, GE-Pittsfield/Housatonic River Site, May 8, 2014.

EPA, Letter from Fisher (EPA) to Gates (GE), EPA Conditional Approval of General Electric's March 5, 2012 submittal titled Groundwater Management Area 4, Baseline Assessment Final Report and Long-Term Monitoring Program Proposal for Groundwater Management Area 4, GE-Pittsfield/Housatonic River Site, May 11, 2012.

EPA, Letter from Fisher (EPA) to Gates (GE), EPA Approval of, and Certificates of Completion for, General Electric's submittal entitled Final Completion Report for the Hill 78 Area-Remainder Removal Action, September 6, 2011.

Tables

Table 1
Groundwater Sampling Program Summary
Long-Term Groundwater Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts

Well ID	Monitoring Well Usage	Monitoring Frequency	Analysis
			VOCs
GMA4-8	GW-2 Sentinel, GW-3 General/Source Area Sentinel	Semi-Annual	X
GMA4-9	GW-2 Sentinel, GW-3 Perimeter (Downgradient)	Semi-Annual	X
H78B-16	GW-2 Sentinel, GW-3 General/Source Area Sentinel	Semi-Annual	X
GMA4-7S	GW-2 Sentinel, GW-3 General/Source Area Sentinel	Semi-Annual	X

Notes:
All samples collected using passive diffusion bags.
VOCs = Volatile organic compounds analyzed by EPA method 8260.

Table 2
Groundwater Elevation Monitoring Program Summary
Long-Term Groundwater Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts

Well ID	Monitoring Frequency
GMA 4 Monitoring Wells	
060B-R	Semi-Annual
GMA4-2	Semi-Annual
GMA4-3	Semi-Annual
H78B-16	Semi-Annual
NY-3	Semi-Annual
RF-14	Semi-Annual
RF-15	Semi-Annual
UB-MW-5	Semi-Annual
GMA4-5	Semi-Annual
GMA4-8	Semi-Annual
GMA4-9	Semi-Annual
GMA4-7S	Semi-Annual
Allendale School (see Note 1)	
PZ-1	Semi-Annual
PZ-2	Semi-Annual
PZ-3	Semi-Annual
PZ-4	Semi-Annual
SCH-1	Semi-Annual
OPCA Monitoring Wells	
78-1	Semi-Annual
78-6R	Semi-Annual
GMA4-6	Semi-Annual
H78B-15	Semi-Annual
OPCA-MW-1RR	Semi-Annual
OPCA-MW-2R	Semi-Annual
OPCA-MW-3	Semi-Annual
OPCA-MW-4	Semi-Annual
OPCA-MW-5R	Semi-Annual
OPCA-MW-6	Semi-Annual
OPCA-MW-7	Semi-Annual
OPCA-MW-8R	Semi-Annual
78-2	Semi-Annual
78-3	Semi-Annual
GMA4-1	Semi-Annual
GMA4-4	Semi-Annual
H78B-13R	Semi-Annual
H78B-17R	Semi-Annual
NY-2	Semi-Annual
NY-4	Semi-Annual
UB-MW-6	Semi-Annual
GMA 1 Monitoring Wells	
ESI-05	Semi-Annual
ESI-20	Semi-Annual

Notes:
1. Allendale School Wells Gauged by EPA.

Table 3
Monitoring Well Construction Summary
Long-Term Groundwater Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts

Well ID	Survey Coordinates		Well Diameter (Inches)	Ground Surface Elevation (Feet AMSL)	Measuring Point Elevation (Feet AMSL)	Depth to Top of Screen (Feet BGS)	Screen Length (Feet)	Top of Screen Elevation (Feet AMSL)	Base of Screen Elevation (Feet AMSL)
	Northing	Easting							
GMA 4 Monitoring Wells									
060B-R	534740.20	135328.00	2.00	1,003.04	1,002.79	12.00	10.00	991.04	981.04
78-4	535014.00	136554.90	4.00	998.81	998.52	5.31	15.00	993.50	978.50
78-5R	534944.00	136219.20	2.00	997.96	997.36	4.00	15.00	993.96	978.96
GMA4-2	536218.10	137516.30	2.00	1,006.56	1,006.30	9.93	10.00	996.63	986.63
GMA4-3	536289.20	137999.50	2.00	1,004.64	1,004.36	16.59	10.00	988.05	978.05
H78B-16	535040.80	136495.50	1.00	995.60	999.16	3.60	10.00	992.00	982.00
NY-3	535508.40	135077.10	2.00	1,005.79	1,005.30	10.12	15.00	995.67	980.67
RF-14	536833.60	137753.70	4.00	1,002.23	1,001.91	7.33	15.00	994.90	979.90
RF-15	535638.20	137803.00	2.00	1,012.61	1,012.18	9.43	15.00	1,003.18	988.18
SCH-4	535975.46	136030.74	2.00	1,012.27	1,014.05	7.90	10.00	1,004.37	994.37
UB-MW-5	536364.60	137001.00	2.00	1,006.70	1,006.48	7.42	10.00	999.28	989.28
Wells Downgradient of GMA 4									
GMA4-7S	534591.50	136528.70	2.00	999.90	1,001.64	10.00	15.00	989.90	974.90
Commercial Street Site Monitoring Well									
GMA4-5	534525.10	136816.60	2.00	993.28	993.16	7.72	10.00	985.56	975.56
Additional Nearby Wells Monitored In Spring 2015 (see Note 3)									
OPCA Sampling Wells									
78-1	536143.00	136345.00	4.00	1,026.56	1,026.32	7.16	15.00	1,019.40	1,004.40
78-6R	535909.40	135904.70	4.00	1,012.08	1,011.70	3.21	15.00	1,008.87	994.22
GMA4-6	535774.20	135658.40	2.00	1,009.63	1,009.13	3.01	10.00	1,006.62	996.62
H78B-15	535408.90	136705.20	0.75	1,010.30	1,012.68	6.50	10.00	1,003.80	993.80
OPCA-MW-1RR	535367.60	135561.10	2.00	1,016.63	1,016.42	18.00	10.00	998.63	988.63
OPCA-MW-2R	535176.60	135892.10	2.00	1,016.80	1,018.84	10.00	15.00	1,006.80	991.80
OPCA-MW-3	535299.60	136188.90	2.00	1,015.27	1,014.83	17.97	10.00	997.30	987.30
OPCA-MW-4	535570.50	136222.30	2.00	1,019.27	1,018.67	12.07	10.00	1,007.20	997.20
OPCA-MW-5R	535630.00	136477.40	2.00	1,016.61	1,016.29	11.22	10.00	1,005.39	995.39
OPCA-MW-6	535449.70	136901.20	2.00	1,022.82	1,022.24	15.12	10.00	1,007.70	997.70
OPCA-MW-7	535673.70	136835.80	2.00	1,027.26	1,026.54	14.36	10.00	1,012.90	1,002.90
OPCA-MW-8R	535981.60	136687.00	3.00	1,028.80	1,030.70	5.10	20.00	1,023.70	1,003.70
Additional Wells Monitored Under Post-Closure Program for the OPCAs									
78-2	536411.70	136892.70	4.00	1,034.44	1,033.94	5.54	15.00	1,028.90	1,013.90
78-3	535126.60	137132.70	3.00	1,007.28	1,006.87	9.18	15.00	998.10	983.10
GMA4-1	535134.40	136407.20	2.00	1,012.35	1,012.01	13.30	15.00	999.05	984.05
GMA4-4	535332.20	135149.40	2.00	996.55	999.64	4.95	15.00	991.60	976.60
GMA4-8	535107.40	135562.70	2.00	1,020.90	1,020.42	10.00	22.00	1,010.90	988.90
GMA4-9	535004.40	136153.10	2.00	1,000.00	1,002.28	3.00	12.00	997.00	985.00
H78B-13R	534740.20	135327.90	2.00	993.23	992.93	5.00	15.00	988.23	973.23
H78B-17R	534996.00	136659.20	4.00	999.20	1,000.31	14.30	9.30	984.90	975.60
NY-2	534802.40	135675.80	4.00	993.70	996.54	9.50	15.00	984.20	969.20
NY-4	535669.20	135360.10	2.00	1,024.54	1,024.69	17.00	15.00	1,007.54	992.54
UB-MW-6	535541.50	137463.00	2.00	1,021.09	1,020.12	26.54	10.00	994.55	984.55
Allendale School Property Monitoring Wells/Piezometers (see Note 4)									
Allendale-PZ-1	535900.23	135753.22	1.25	NR	1,005.60	NR	1.50	1,002.10	1,000.60
Allendale-PZ-2	536112.14	135563.58	1.25	NR	1,009.89	NR	1.50	1,006.39	1,004.89
Allendale-PZ-3	536396.28	135728.63	1.25	NR	1,010.43	NR	1.50	1,006.93	1,005.43
Allendale-PZ-4	536116.06	136119.15	1.25	NR	1,007.96	NR	1.50	1,004.46	1,002.96
SCH-1	536574.57	135606.24	2.00	1,017.59	1,017.11	9.20	10.00	1,008.39	998.39
GMA 1 Monitoring Wells									
ES1-05	534749.31	135063.74	2.00	1,023.25	1,022.75	34.86	10.00	988.39	978.39
ES1-20	535314.82	134924.90	0.75	997.82	1,001.56	6.00	10.00	991.82	981.82

Notes:

1. AMSL - Above mean sea level.
2. BGS - Below ground surface.
3. NR - Not Recorded.
4. These additional wells (and piezometers) were monitored by GE or EPA as part of groundwater monitoring programs at groundwater management areas adjacent to GMA 4. The data obtained at these wells were utilized to supplement monitoring results from GMA 4 sampling wells and additional monitoring locations in the preparation of groundwater elevation contour mapping.
5. The Allendale School property monitoring wells/piezometers are monitored by EPA.
6. Certain monitoring wells were modified and re-surveyed during Spring 2012. Current well specification and elevation data are provided above. Monitoring data presented elsewhere in this report are based on measuring point elevations at the time of measurement.

Table 4
Groundwater Elevation Data - Fall 2015
Long-Term Groundwater Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts

Well Number	Date	Ground Surface Elevation (Feet AMSL)	Measuring Point Elevation (Feet AMSL)	Fall 2015 Depth to Water (Feet BGS)	Fall 2015 Groundwater Elevation (Feet AMSL)
GMA 4 Long-Term Monitoring Program Wells Sampled In Fall 2015					
GMA4-7S	10/1/2015	999.90	1,001.64	17.50	984.14
GMA4-8	10/1/2015	1,020.90	1,020.42	25.41	995.01
GMA4-9	10/1/2015	1,000.00	1,002.28	10.19	992.09
H78B-16	10/1/2015	995.60	999.16	12.62	986.54
Other GMA 4 Wells Monitored In Fall 2015					
060B-R	10/1/2015	1,003.04	1,002.79	16.30	986.49
GMA4-2	10/1/2015	1,006.56	1,006.30	12.79	993.51
GMA4-3	10/1/2015	1,004.64	1,004.36	20.28	984.08
NY-3	10/1/2015	1,005.79	1,005.30	15.88	989.42
RF-14	10/1/2015	1,002.23	1,001.91	10.42	991.49
RF-15	10/1/2015	1,012.61	1,012.18	15.26	996.92
UB-MW-5	10/1/2015	1,006.70	1,006.48	Dry	-
Wells Monitored and Sampled Under Post-Closure Program For The OPCAs					
78-1	10/1/2015	1,026.56	1,026.32	11.96	1,014.36
78-6R	10/1/2015	1,012.08	1,011.70	8.87	1,002.83
GMA4-6	10/1/2015	1,009.63	1,009.13	10.49	998.64
H78B-15	10/1/2015	1,010.30	1,012.68	15.63	997.05
OPCA-MW-1RR	10/1/2015	1,016.63	1,016.42	17.40	999.02
OPCA-MW-2R	10/1/2015	1,016.80	1,018.84	23.69	995.15
OPCA-MW-3	10/1/2015	1,015.27	1,014.83	21.43	993.40
OPCA-MW-4	10/1/2015	1,019.27	1,018.67	13.00	1,005.67
OPCA-MW-5R	10/1/2015	1,016.61	1,016.29	12.74	1,003.55
OPCA-MW-6	10/1/2015	1,022.82	1,022.24	15.52	1,006.72
OPCA-MW-7	10/1/2015	1,027.26	1,026.54	18.51	1,008.03
OPCA-MW-8R	10/1/2015	1,028.80	1,030.70	17.63	1,013.07
Additional Wells Monitored Under Post-Closure Program For The OPCAs					
78-2	10/1/2015	1,034.44	1,033.94	9.84	1,024.10
78-3	10/1/2015	1,007.28	1,006.87	17.15	989.72
GMA4-1	10/1/2015	1,012.35	1,012.01	23.36	988.65
GMA4-4	10/1/2015	996.55	999.64	13.78	985.86
H78B-13R	10/1/2015	993.23	992.93	11.92	981.01
H78B-17R	10/1/2015	999.20	1,000.31	13.60	986.71
NY-2	10/1/2015	993.70	996.54	17.71	978.83
NY-4	10/1/2015	1,024.54	1,024.69	14.80	1,009.89
UB-MW-6	10/1/2015	1,021.09	1,020.12	19.19	1,000.93
Allendale School Property Monitoring Wells / Piezometers North of GMA 4 (Monitored by EPA)					
PZ-1	10/1/2015	NR	1,005.60	Dry	-
PZ-2	10/1/2015	NR	1,009.89	Dry	-
PZ-3	10/1/2015	NR	1,010.43	3.65	1,006.78
PZ-4	10/1/2015	NR	1,007.96	0.75	1,007.21
SCH-1	10/1/2015	1,017.59	1,017.11	9.08	1,008.03
GMA 1 Monitoring Wells					
ES1-05	10/12/2015	1,023.25	1,022.75	40.64	982.11
ES1-20	10/12/2015	997.82	1,001.56	15.74	985.82
Commercial Street Site Monitoring Well					
GMA4-5	10/1/2015	993.28	993.16	11.94	981.22

Notes:
1. AMSL - Above mean sea level.
2. BGS - Below ground surface.
3. NR - Not Recorded.

Table 5
Field Parameter Measurements - Fall 2015
Long-Term Groundwater Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts

Well ID	Temperature (Degrees Celsius)	pH (Standard Units)	Specific Conductivity ($\mu S/cm^2$)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Oxidation-Reduction Potential (mV)
GMA4-7S	13.3	7.40	271.6	56	2.18	164.6
GMA4-8	12.1	6.70	1,495	33	0.67	205.1
GMA4-9	14.2	8.00	221.6	35	2.24	143.7
H78B-16	14.0	7.31	240.2	15	1.13	113.2

Notes:

1. Field parameters collected with a peristaltic pump to assess water quality just after the passive diffusion bags were removed.

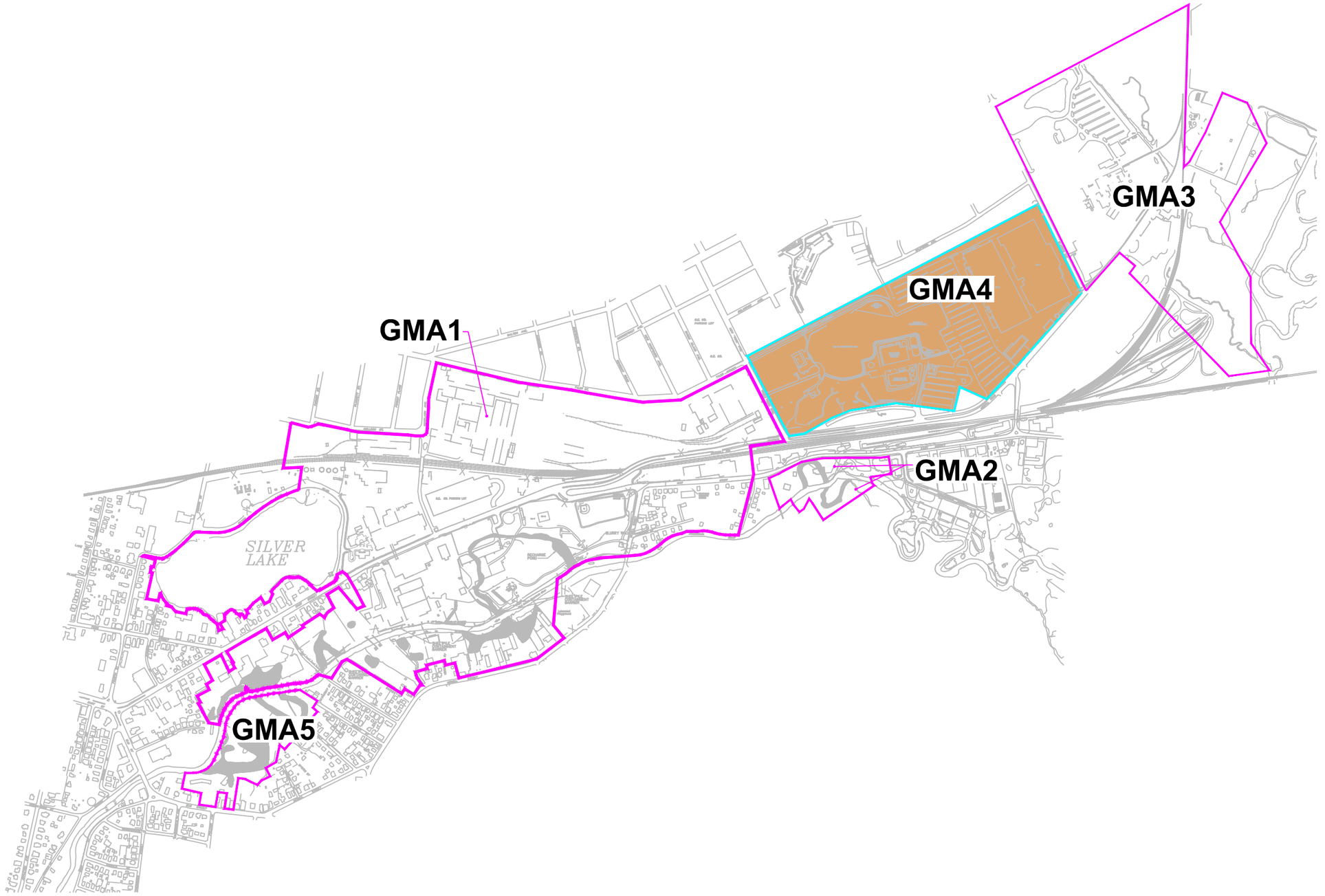
Table 6
Groundwater Analytical Results - Fall 2015
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts

Sample ID:	MCP METHOD 1 GW-2 STANDARD	MCP METHOD 1 GW-3 STANDARD	MCP UCL FOR GROUNDWATER	GMA4-7S	GMA4-8	GMA4-9	H78B-16
Date Collected:				10/19/2015	10/19/2015	10/19/2015	10/19/2015
SDG:				31501928	31501928	31501928	31501928
Parameter							
Volatile Organics (µg/L)							
2-Butanone	50,000	50,000	100,000	1.37 J [1.04 J]	1.44 J	1.55 J	ND(500)
Acetone	50,000	50,000	100,000	19.8 J [16.6 J]	20.3 J+	10.4 J	47.2 J
Chloroform	50	20,000	100,000	0.580 J [0.520 J]	ND(1.00)	3.87	ND(20.0)
Methylene Chloride	2,000	50,000	100,000	ND(5.00) [ND(5.00)]	ND(5.00)	0.160 J	ND(100)
Tetrachloroethylene	50	30,000	100,000	ND(1.00) [ND(1.00)]	ND(1.00)	2.43	ND(20.0)
Trichloroethylene	5	5,000	50,000	ND(1.00) [ND(1.00)]	ND(1.00)	0.120 J	119
Total VOCs	Not Listed	Not Listed	Not Listed	21.75 [18.16]	21.74	18.53	166.2

Notes:
1. Samples were collected by AECOM and submitted to SGS Environmental Services, Inc. for laboratory analysis.
2. Although MCP Method 1 GW-2 standards are listed, none of these wells is a GW-2 compliance well; concentrations are compared to the GW-2 standards solely for benchmark purposes.
3. ND = Analyte was not detected. The number in parentheses is the associated reporting limit.
4. Only those constituents detected in one or more samples are summarized.
5. Field duplicate sample results are presented in brackets.
6. The listed MCP numerical standards are as published April 25, 2014.

Data Qualifiers:
J - Indicates an estimated value.
J+ - Indicates an estimated value with a potential high bias.

Figures



GMA 4

GMA1	GMA1-PLANT SITE 1
GMA3	GMA 3-PLANT SITE 2
GMA4	GMA 4-PLANT SITE 3
GMA5	GMA 5-FORMER OXBOWS A&C

N

500 0 1,000

GRAPHIC SCALE IN FEET

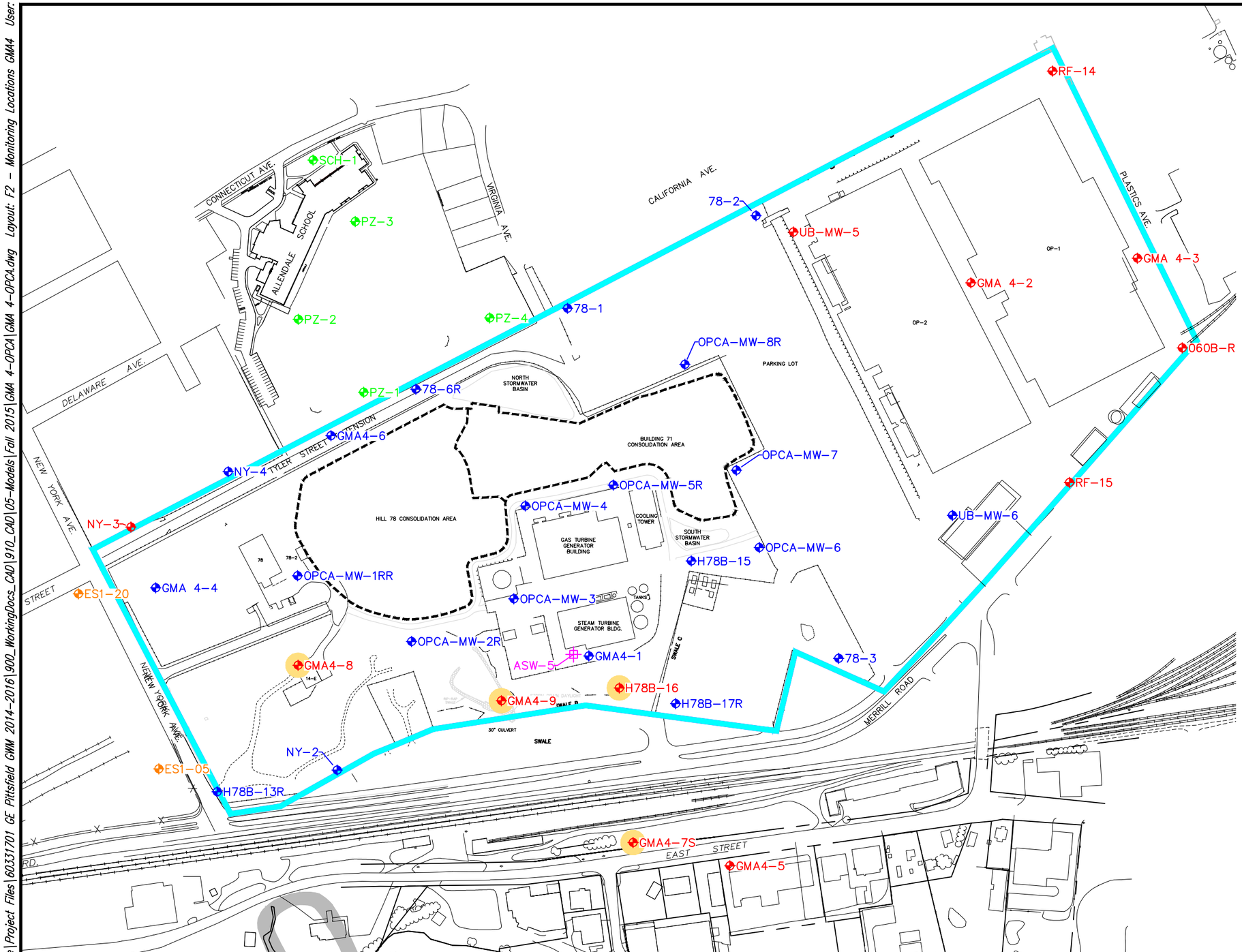
AECOM

GENERAL ELECTRIC COMPANY
PITTSFIELD/HOUSATONIC RIVER SITE
PITTSFIELD, MASSACHUSETTS

GMA 4
□ITE O□ER□IEW

DATE: 12/04/2015 | DRWN: | **FIGURE 1**

File: P:\Jobs\Indl_Service\Project Files\60331701 GE Pittsfield GMM 2014-2016\900_WorkingDocs_CAD\910_CAD\05-Models\Fall 2015\GMA 4-OPCA\GMA 4-OPCA.dwg Layout: F1 - Site Overview GMA4 User: Lambertt



LEGEND

- APPROXIMATE GROUNDWATER MANAGEMENT AREA 4 BOUNDARY
- GMA4-2 — GMA4 MONITORING WELL
- PZ-1 — EXISTING MONITORING WELL/PIEZOMETER MONITORED BY EPA
- H78B-15 — OPCA MONITORING WELL
- ASW-5 — INDUSTRIAL WELL SUPPLY
- ES1-20 — GMA1 MONITORING WELL
- WELL SAMPLED IN FALL 2015 AS PART OF THE GMA 4 PROGRAM

NOTES

1. MAPPING IS BASED ON AUTOCAD DRAWING FILE (PLANT3.CAD) AS PROVIDED BY GE AND ADDITIONAL INFORMATION FROM THE MCP PHASE II SCOPE OF WORK AND PROPOSAL FOR THE RCRA FACILITY INVESTIGATION O'BRIEN & GERE ENGINEERS, INC., FEBRUARY 1996) AS WELL AS SUPPLEMENTAL SITE SURVEY INFORMATION OBTAINED BY HILL ENGINEERS, PLANNERS & ARCHITECTS (WEEK OF MAY 29,1997). LOCATIONS EAST OF THE PARKING LOT DIGITIZED FROM MARCH 2000 AIR PHOTO AND ARE APPROXIMATE.
2. NOT ALL PHYSICAL FEATURES SHOWN.
3. SITE BOUNDARY IS APPROXIMATE.
4. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE.

AECOM

N

150 0 300

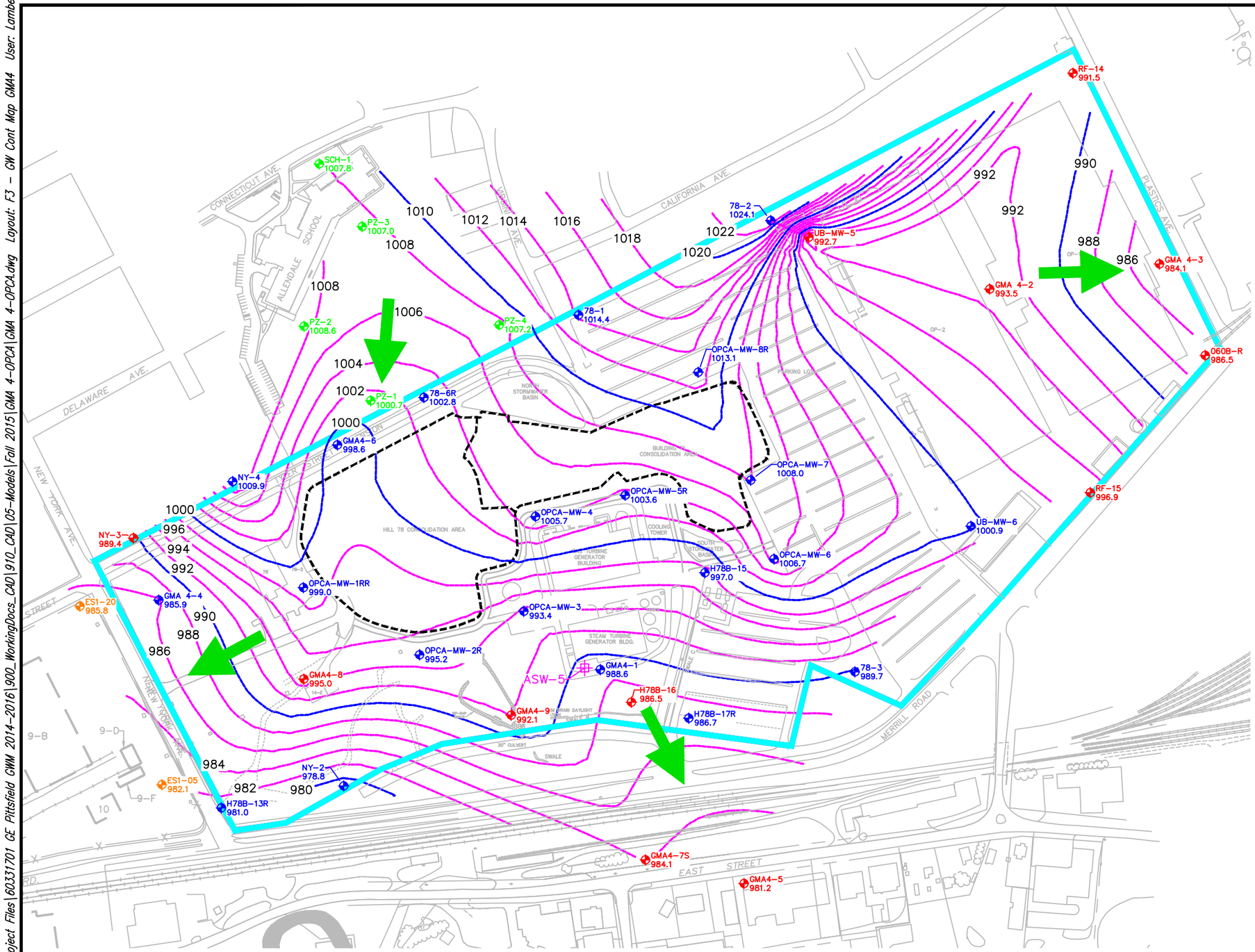
GRAPHIC SCALE IN FEET

GENERAL ELECTRIC COMPANY
PITTSFIELD\HOUSATONIC RIVER SITE
PITTSFIELD, MASSACHUSETTS

GMA4
MONITORING WELL LOCATION
FALL 2015

DATE: 01/19/2016 | DRWN: CCD | **FIGURE 2**

File: P:\Jobs\IndL_Service\Project Files\60331701 GE Pittsfield GWM 2014-2016\900_WorkingDocs_CAD\910_CAD\05-Models\Fall 2015\GMA 4-OPCA\GMA 4-OPCA.dwg Layout: F2 - Monitoring Locations GMA4 User: lamb



LEGEND

APPROXIMATE GROUNDWATER MANAGEMENT AREA 4 BOUNDARY

BOUNDARY OF BUILDING 71 AND HILL 78 ON-PLANT CONSOLIDATION AREAS REMOVAL ACTION AREA

NY-3 986.84 — GROUNDWATER ELEVATION GMA4 MONITORING WELL

PZ-3 1010.01 — GROUNDWATER ELEVATION WELL/PIEZOMETER MONITORED BY EPA

NY-2 1024.77 — GROUNDWATER ELEVATION OPCA MONITORING WELL

ES1-20 1024.77 — GROUNDWATER ELEVATION GMA1 MONITORING WELL

1020 / 1018 — WATER TABLE ELEVATION CONTOURS IN FEET, 2-FOOT INTERVAL

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

973 — MEASURED FEET ABOVE MEAN SEA LEVEL ON OCTOBER 1, 2015

NOTES

1. MAPPING IS BASED ON AUTOCAD DRAWING FILE (PLANT3.CAD) AS PROVIDED BY GE AND ADDITIONAL INFORMATION FROM THE MCP PHASE II SCOPE OF WORK AND PROPOSAL FOR THE RCRA FACILITY INVESTIGATION O'BRIEN & GERE ENGINEERS, INC., FEBRUARY 1996) AS WELL AS SUPPLEMENTAL SITE SURVEY INFORMATION OBTAINED BY HILL ENGINEERS, PLANNERS & ARCHITECTS (WEEK OF MAY 29,1997). LOCATIONS EAST OF THE PARKING LOT DIGITIZED FROM MARCH 2000 AIR PHOTO AND ARE APPROXIMATE.
2. NOT ALL PHYSICAL FEATURES SHOWN.
3. SITE BOUNDARY IS APPROXIMATE.
4. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE.

AECOM

N

150 0 300

GRAPHIC SCALE IN FEET

GENERAL ELECTRIC COMPANY
PITTSFIELD\HOUSATONIC RIVER SITE
PITTSFIELD, MASSACHUSETTS

GMA4
WATER TABLE CONTOUR MAP
FALL 2015

DATE: 01/19/2016 | DRWN: CCD | **FIGURE 3**

File: P:\Jobs\Indl_Service\Project Files\60331701 GE Pittsfield GWM 2014-2016\900_WorkingDocs_CAD\910_CAD\05-Models\Fall 2015\GMA 4-OPCA\GMA 4-OPCA.dwg Layout: F3 - GW Cont Map GMA4 User: Lambertt

Appendix A

Well Maintenance and Groundwater Sampling Logs

Table A-1
Monitoring Well Maintenance Table - Fall 2015
Post-Closure Monitoring Program
On Plant Consolidation Area
General Electric Company
Pittsfield, Massachusetts

Well Name	Inspection Date	Base of Well Elevation (Feet AMSL)	Spring 2015 Measured Base of Well Elevation (Feet AMSL)	Fall 2015 Measured Base of Well Elevation (Feet AMSL)	Fall 2015 Difference From Base of Well Elevation (Feet)	Maintenance Completed July 2015 through December 2015
GMA 4 Monitoring Wells						
060B-R	10/1/2015	980.63 *	980.76	980.54	-0.09	
GMA4-2	10/1/2015	986.63	987.10	986.98	0.35	
GMA4-3	10/1/2015	978.05	978.29	978.19	0.14	
H78B-16	10/1/2015	982.00	982.46	982.26	0.26	
NY-3	10/1/2015	980.67	980.98	980.83	0.16	
RF-14	10/1/2015	979.90	979.51	979.40	-0.50	
RF-15	10/1/2015	991.42 *	992.22	992.19	0.77	
UB-MW-5	10/1/2015	992.25 *	992.57	991.97	-0.28	
GMA4-8	10/1/2015	988.60	988.62	987.71	-0.89	
GMA4-9	10/1/2015	984.50	984.30	984.39	-0.11	
GMA4-7S	10/1/2015	974.60	975.27	975.12	0.52	
Commercial Street Site Monitoring Well						
GMA4-5	10/1/2015	975.38	975.55	975.56	0.18	
OPCA Sampling Wells						
78-1	10/1/2015	1004.40	1004.16	1004.08	-0.32	
78-6R	10/1/2015	993.28 *	993.97	993.90	0.62	
GMA4-6	10/1/2015	996.62	996.68	996.93	0.31	
H78B-15	10/1/2015	993.80	994.74	994.61	0.81	
OPCA-MW-1RR	10/1/2015	988.33	988.46	988.40	0.07	
OPCA-MW-2R	10/1/2015	991.50	991.89	991.74	0.24	
OPCA-MW-3	10/1/2015	987.30	987.66	987.40	0.10	
OPCA-MW-4	10/1/2015	997.20	997.42	997.31	0.11	
OPCA-MW-5R	10/1/2015	995.39	994.89	994.77	-0.62	
OPCA-MW-6	10/1/2015	997.70	998.30	998.15	0.45	
OPCA-MW-7	10/1/2015	1002.90	1002.12	1003.01	0.11	
OPCA-MW-8R	10/1/2015	1003.20	1004.11	1004.01	0.81	
Additional Wells Monitored Under Post-Closure Program for the OPCAs						
78-2	10/1/2015	1013.90	1013.54	1013.44	-0.46	
78-3	10/1/2015	983.10	982.55	982.52	-0.58	
GMA4-1	10/1/2015	984.00	984.29	984.05	0.05	
GMA4-4	10/1/2015	976.60	976.74	976.62	0.02	
H78B-13R	10/1/2015	973.23	973.24	973.16	-0.07	
H78B-17R	10/1/2015	975.60	975.38	975.06	-0.54	
NY-2	10/1/2015	970.42 *	970.27	969.84	-0.58	
NY-4	10/1/2015	992.80 *	993.44	993.34	0.54	
UB-MW-6	10/1/2015	984.55	985.53	985.40	0.85	

Notes:

1. “Base of Well Elevation” represents either the measured base of well elevation at construction or, for wells marked with asterisks (which were recently re-developed), the base of well elevation measured following re-development.
2. "Fall 2015 Difference From Base of Well Elevation" should be considered to be the amount of sediment deposition.
3. Feet AMSL: Feet above mean sea level
5. Asterisk (*) indicates wells recently (since 2013) redeveloped. Further redevelopment is not deemed necessary at this time.

Attachment AA-1

GROUNDWATER SAMPLING LOG

Site/GMA Name: GMA4 GE Pittsfield
Deployment | Personnel: Oct 1, 2015 | RM/CF
Date/Time: 15:15
Weather: Cloudy, 55°

Well No.: GMA4-7S
Key No.: 2537
PID Background (ppm): 0.0
Well Headspace (ppm): 0.0

Sampling Personnel: RM/CF
Date: Oct 19, 2015 8:55
Weather: Sunny, 20°

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point: 1.7 Meas. From: AGS
Well Diameter: 2"
Screen Interval Depth: 10' - 25' Meas. From: BGS
Water Table Depth: 17.85 Meas. From: TIC
Well Depth: 26.52 Meas. From: TIC
Length of Water Column: 8.67
Volume of Water in Well: 1.41

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Additional well maintenance needed? Y (N) (if yes, describe below)

Sample Time: 8:55
Sample ID: GMA4-7S-101915
Duplicate ID: DUP-1-101915
MS/MSD: N/A
Split Sample ID: N/A

Required	Analytical Parameters:	Collected
(✓)	VOCs (Standard List)	(✓)
( )	VOCs (Expanded List)	( )
( )	SVOCs	( )
( )	PCBs (Unfiltered)	( )
( )	PCBs (Filtered)	( )
( )	Metals/Inorganics (Unfiltered)	( )
( )	Metals/Inorganics (Filtered)	( )
( )	Total Cyanide (Unfiltered)	( )
( )	Total Cyanide (Filtered)	( )
( )	PAC Cyanide (Filtered)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

PDB Information

PDB Length/diameter: ~~5'~~ 2' / 1.75"
PDB Material:
PDBs Filled: Lab / Field
Tether Assembled: Lab / Field
Line/Tether Material diameter: 0.5" Rope
Weight Type/Position: Bottom

Water Quality Meters Types(s)/Serial Numbers:
Hach 2100P / YSI Pro plus #19858

PDB Collection				PDB replacement	
Depth	GW Appearance		Number of PDBs at	Depth	Number of
feet (bmp)	Color	Odor	Collection Depth	(ft bmp)	PDBs
21.50	clear	No	1	N/A	N/A

Downhole Field Parameters

pH (SU): 7.40
Specific Conductivity (ms/cm): 271.6
ORP (mV): 164.6
Temperature (°C): 13.3
DO (mg/L): 2.18
Turbidity: 56

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

SAMPLE DESTINATION

Laboratory: SGS
Delivered Via: FedEx
Airbill #:

Field Sampling Coordinator: Chris French

Attachment AA-1

GROUNDWATER SAMPLING LOG

Site/GMA Name: GE Pittsfield GMA4
Deployment Personnel: RM/CF
Date/Time: Oct 1, 2015 1508
Weather: Sunny, 55°

Well No.: GMA4-8
Key No.: 2537
PID Background (ppm): 0.0
Well Headspace (ppm): 0.0

Sampling Personnel: RM/CF
Date: 10/19/15
Weather: Sunny, 20°

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point: 0 Meas. From: BGS
Well Diameter: 2"
Screen Interval Depth: 10-32 Meas. From: BGS
Water Table Depth: 25.58 Meas. From: BGS
Well Depth: 32.71 Meas. From: BGS
Length of Water Column: 7.13
Volume of Water in Well: 1.16

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Additional well maintenance needed? Y (N) (if yes, describe below)

Sample Time: 9:30
Sample ID: GMA4-8-101915
Duplicate ID: N/A
MS/MSD: Collected
Split Sample ID: N/A

Required	Analytical Parameters:	Collected
(✓)	VOCs (Standard List)	(✓)
( )	VOCs (Expanded List)	( )
( )	SVOCs	( )
( )	PCBs (Unfiltered)	( )
( )	PCBs (Filtered)	( )
( )	Metals/Inorganics (Unfiltered)	( )
( )	Metals/Inorganics (Filtered)	( )
( )	Total Cyanide (Unfiltered)	( )
( )	Total Cyanide (Filtered)	( )
( )	PAC Cyanide (Filtered)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

PDB Information

PDB Length/diameter: 2' x 1.75"
PDB Material:
PDBs Filled: Lab / Field
Tether Assembled: Lab / Field
Line/Tether Material diameter: 0.5" Rope
Weight Type/Position: Bottom

Water Quality Meters Types(s)/Serial Numbers: Hach 2100p / YSI Pro plus #19858

PDB Collection				PDB replacement	
Depth	GW Appearance		Number of PDBs at	Depth	Number of
feet (bmp)	Color	Odor	Collection Depth	(ft bmp)	PDBs
29'	Clear	ND	1	N/A	N/A

Downhole Field Parameters

pH (SU): 6.70
Specific Conductivity (ms/cm): 1495
ORP (mV): 205.1
Temperature (°C): 12.1
DO (mg/L): 0.67
Turbidity: 33

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

SAMPLE DESTINATION

Laboratory: SGS
Delivered Via: FedEx
Airbill #:

Field Sampling Coordinator: Chris French

Attachment AA-1

GROUNDWATER SAMPLING LOG

Site/GMA Name: GE Pittsfield GMA4
Deployment Personnel: RM/CF
Date/Time: Oct 1, 2015 1503
Weather: Cloudy, 55°

Well No.: GMA4-9
Key No.: 2537
PID Background (ppm): 0.0
Well Headspace (ppm): 0.0

Sampling Personnel: RM / CF
Date: 10/19/15
Weather: Sunny, 20°

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point: 1.8 Meas. From: AGS
Well Diameter: 2"
Screen Interval Depth: 3-15 Meas. From: BGS
Water Table Depth: 10.70' Meas. From: TIC
Well Depth: 17.89 Meas. From: TIC
Length of Water Column: 7.19
Volume of Water in Well: 1.17

Sample Time: 9:50
Sample ID: GMA4-9-101915
Duplicate ID: N/A
MS/MSD: N/A
Split Sample ID: N/A

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Additional well maintenance needed? Y (N) (if yes, describe below)

Required	Analytical Parameters:	Collected
(✓)	VOCs (Standard List)	(✓)
( )	VOCs (Expanded List)	( )
( )	SVOCs	( )
( )	PCBs (Unfiltered)	( )
( )	PCBs (Filtered)	( )
( )	Metals/Inorganics (Unfiltered)	( )
( )	Metals/Inorganics (Filtered)	( )
( )	Total Cyanide (Unfiltered)	( )
( )	Total Cyanide (Filtered)	( )
( )	PAC Cyanide (Filtered)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

PDB Information

PDB Length/diameter: 2' x 1.75"
PDB Material:
PDBs Filled: Lab / Field
Tether Assembled: Lab / Field
Line/Tether Material diameter: 0.5" Rope
Weight Type/Position: Bottom

Water Quality Meters Types(s)/Serial Numbers:
Hach 2100 / YSI Pro Plus #19858

PDB Collection				PDB replacement	
Depth	GW Appearance		Number of PDBs at	Depth	Number of
feet (bmp)	Color	Odor	Collection Depth	(ft bmp)	PDBs
13'	Clear	NO	1	N/A	N/A

Downhole Field Parameters

pH (SU): 8.00
Specific Conductivity (ms/cm): 221.6
ORP (mV): 143.7
Temperature (°C): 14.2
DO (mg/L): 2.24
Turbidity: 35

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

SAMPLE DESTINATION

Laboratory: CLGS
Delivered Via: FedEx
Airbill #:

Field Sampling Coordinator: Chris French

Attachment AA-1

GROUNDWATER SAMPLING LOG

Site/GMA Name: GE Pittsfield GMA4
Deployment | Personnel: Oct 1, 2015 RM/CF
Date/Time: 10/1/15 1455
Weather: Sunny, 55°

Well No.: H78B-16
Key No.: FX37
PID Background (ppm): 0.0
Well Headspace (ppm): 0.0

Sampling Personnel: RM / CF
Date: 10/19/15
Weather: Sunny, 20°

WELL INFORMATION

Reference Point Marked? (Y) N
Height of Reference Point: 2.9 Meas. From: AGS
Well Diameter: 1"
Screen Interval Depth: 3.6'-13.6' Meas. From: BGS
Water Table Depth: ~~8.49~~ 8.49 Meas. From: TIC
Well Depth: 16.90 Meas. From: TIC
Length of Water Column: 8.41
Volume of Water in Well: 1.37

Sample Time: 9:10
Sample ID: H78B-16-101915
Duplicate ID: N/A
MS/MSD: N/A
Split Sample ID: N/A

Required	Analytical Parameters	Collected
(✓)	VOCs (Standard List)	(✓)
( )	VOCs (Expanded List)	( )
( )	SVOCs	( )
( )	PCBs (Unfiltered)	( )
( )	PCBs (Filtered)	( )
( )	Metals/Inorganics (Unfiltered)	( )
( )	Metals/Inorganics (Filtered)	( )
( )	Total Cyanide (Unfiltered)	( )
( )	Total Cyanide (Filtered)	( )
( )	PAC Cyanide (Filtered)	( )
( )	PCDDs/PCDFs	( )
( )	Pesticides/Herbicides	( )
( )	Natural Attenuation	( )
( )	Other (Specify)	( )

Reference Point Identification:
TIC: Top of Inner (PVC) Casing
TOC: Top of Outer (Protective) Casing
Grade/BGS: Ground Surface

Redevelop? Y (N)

Additional well maintenance needed? Y (N) (if yes, describe below)

PDB Information

PDB Length/diameter: 3' x 0.75"
PDB Material:
PDBs Filled: Lab / Field
Tether Assembled: Lab / Field
Line/Tether Material diameter: 0.5" Rope
Weight Type/Position: Bottom

Water Quality Meters Types(s)/Serial Numbers: Hach 2100p / YSI Professional plus #FB19858

PDB Collection				PDB replacement	
Depth	GW Appearance		Number of PDBs at	Depth	Number of
feet (bmp)	Color	Odor	Collection Depth	(ft bmp)	PDBs
11.0	Clear	No	1	N/A	N/A

Downhole Field Parameters

pH (SU): 7.31
Specific Conductivity (ms/cm): 240.2
ORP (mV): 113.2
Temperature (°C): 14.0
DO (mg/L): 1.13
Turbidity: 15

OBSERVATIONS/SAMPLING METHOD DEVIATIONS

SAMPLE DESTINATION

Laboratory: SGS
Delivered Via: FedEx
Airbill #:

Field Sampling Coordinator: Chris French

Appendix B

Laboratory Analytical Reports

Laboratory Report of Analysis

To: Gregory Hencir
AECOM
250 Apollo Drive
Chelmsford, MA 01824

Report Number: **31501928**

Client Project: **GE Pittsfield**

Dear Gregory Hencir,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples analyzed at the SGS Wilmington location are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards, unless otherwise noted. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or services performed during this project, please call Michael D. Page at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Jeannie Milholland — Date
QA Manager
jeannie.milholland@sgs.com

Print Date: 11/09/2015 N.C. Certification # 481

Terms and Conditions:

All services are rendered in accordance with the applicable SGS General Conditions of Service accessible via:
http://www.sgs.com/terms_and_conditions.htm

Laboratory Qualifiers

Report Definitions

DL	Method, Instrument, or Estimated Detection Limit per Analytical Method
CL	Control Limits for the recovery result of a parameter
LOQ	Reporting Limit
DF	Dilution Factor
RPD	Relative Percent Difference
LCS(D)	Laboratory Control Spike (Duplicate)
MS(D)	Matrix Spike (Duplicate)
MB	Method Blank

Qualifier Definitions

*	Recovery or RPD outside of control limits
B	Analyte was detected in the Lab Method Blank at a level above the LOQ
U	Undetected (Reported as ND or < DL)
J	Estimated Concentration.
E	Amount detected is greater than the Upper Calibration Limit
TIC	Tentatively Identified Compound
ND	Not Detected
P	RPD > 40% between results of dual columns
D	Spike or surrogate was diluted out in order to achieve a parameter result within instrument calibration range

Samples requiring manual integrations for various congeners and/or standards are marked and dated by the analyst. A code definition is provided below:

M1	Mis-identified peak
M2	Software did not integrate peak
M3	Incorrect baseline construction (i.e. not all of peak included; two peaks integrated as one)
M4	Pattern integration required (i.e. DRO, GRO, PCB, Toxaphene and Technical Chlordane)
M5	Other - Explained in case narrative

Note Results pages that include a value for "Solids (%)" have been adjusted for moisture content.

Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
GMA4-7S-101915	31501928001	10/19/2015 08:55	10/21/2015 10:00	Water
H78B-16-101915	31501928002	10/19/2015 09:10	10/21/2015 10:00	Water
GMA4-8-101915	31501928003	10/19/2015 09:30	10/21/2015 10:00	Water
GMA4-9-101915	31501928006	10/19/2015 09:50	10/21/2015 10:00	Water
DUP-1-101915	31501928007	10/19/2015 00:00	10/21/2015 10:00	Water
TB	31501928008		10/21/2015 10:00	Water

Case Narrative

Report Revisions:

Detectable results summary page has been revised. Client Sample ID: GMA4-9-101915 was corrected to remove false positive hits for Methylene chloride and Trichloroethene. See page 5.

Sample Receipt Observations:

The samples were received on October 21, 2015 at 10:00 via courier. The samples arrived in good condition with a temperature of 0.9 °C.

Volatiles Report:

The indicated samples were analyzed for Volatiles according to the guidelines of method SW8260B. Client Sample ID H78B-16-101915 was analyzed on a 20X dilution in order to obtain a result within the calibration range of the instrument. The recovery for 1,1,1-Trichloroethane is marginally above acceptance criteria for the LCSD; there are not hits for this compound in the associated samples. The recoveries for two compounds are outside of control limits in the MS/MSD for client sample ID GMA4-8-101915 due to probable matrix interference.

Detectable Results Summary

Client Sample ID: **GMA4-7S-101915**
Lab Sample ID: 31501928001-A
SW-846 8260B

Parameter	Result	Units	
2-Butanone	1.37	ug/L	J
Acetone	19.8	ug/L	J
Chloroform	0.580	ug/L	J

Client Sample ID: **H78B-16-101915**
Lab Sample ID: 31501928002-A
SW-846 8260B

Parameter	Result	Units	
Acetone	47.2	ug/L	J
Trichloroethene	119	ug/L	

Client Sample ID: **GMA4-8-101915**
Lab Sample ID: 31501928003-A
SW-846 8260B

Parameter	Result	Units	
2-Butanone	1.44	ug/L	J
Acetone	20.3	ug/L	J

Client Sample ID: **GMA4-9-101915**
Lab Sample ID: 31501928006-A
SW-846 8260B

Parameter	Result	Units	
2-Butanone	1.55	ug/L	J
Acetone	10.4	ug/L	J
Chloroform	3.87	ug/L	
Tetrachloroethene	2.43	ug/L	

Client Sample ID: **DUP-1-101915**
Lab Sample ID: 31501928007-A
SW-846 8260B

Parameter	Result	Units	
2-Butanone	1.04	ug/L	J
Acetone	16.6	ug/L	J
Chloroform	0.520	ug/L	J

Revised Report

SGS CHAIN OF CUSTODY | TRACE & SHALE

PRDJECT INFO:
PROJECT: GE Pittsfied
P.O. #: 111216909
QUOTE #:
SITE REF:
TURN AROUND TIME: ~~Standard~~
REPORT LEVEL: (see reverse) ☐ Level I ☐ Level II ☒ Level IV
SPECIAL DELIVERABLES: ☒ State of Origin: MA
☐ EDD: ☐ DoD:
☐ Other:

SENO DOCUMENTATION / RESULTS TO:
COMPANY: AECOM
CONTACT: Gregory Hencir
ADDRESS: 250 Apollo Drive, Chelmsford, MA
PHONE: (203) 415-1843
EMAIL: gregory.hencir@aecom.com

INVOICE TO: (☒ CHECK IF SAME)
COMPANY: CONTACT:
ADDRESS:
PHONE:
EMAIL:

SPECIAL INSTRUCTIONS / COMMENTS:
31501928

LAB ID	SAMPLE ID / DESCRIPTION	DATE	TIME	QC MS	QC MSD	QC DUP	TYPE (C, G)	MATRIX	CONT. QTY	PRESERVATIVE: HCl	ANALYSIS & METHOD: 8260 VOC's	REMARKS
	GMA4-75-101915	10/19/15	0855				G	GW	3		X	
	H78B-16-101915	↓	0910				↓	↓	3		X	
	GMA4-8-101915		0930	X	X				9		X	Extra Volume collected for MS/MSD
	GMA4-9-101915		0950						3		X	
	Dup-1-101915	↓	—			X	↓	↓	3		X	

COLLECTED/RELINQUISHED BY (1):	DATE:	TIME:	RECEIVED BY:
[signature]	10/20/15	15:00	
RELINQUISHED BY (2):	DATE:	TIME:	RECEIVED BY:

RECEIVED BY LABORATORY: [signature] DATE: 10/21/15 TIME: 1000
COC SEAL: ☐ INTACT ☐ BROKEN ☒ ABSENT
SAMPLE RECEIPT TEMP: °C 0.9
CARRIER: TRACKING #:
NOTES:

Revised Report

SGS North America Inc.

Sample Receipt Checklist (SRC)

Client: **GE-MA** Work Order No.: **31501928**

1. _X_ Shipped
   ___ Hand Delivered

2. _X_ COC Present on Receipt
   ___ No COC
   ___ Additional Transmittal Forms

3. ___ Custody Tape on Container
   _X_ No Custody Tape

4. _X_ Samples Intact
   ___ Samples Broken / Leaking

5. _X_ Chilled on Receipt Actual Temp.(s) in °C: 0.9 Thermometer ID#: Login 2D
   ___ Ambient on Receipt
   ___ Walk-in on Ice; Coming down to temp.
   ___ Temperature Blank Present

6. _X_ Sufficient Sample Submitted
   ___ Insufficient Sample Submitted

7. ___ Chlorine absent
   ___ HNO3 < 2
   ___ HCL < 2
   ___ Additional Preservatives verified (see notes)

8. _X_ Received Within Holding Time
   ___ Not Received Within Holding Time

9. _X_ No Discrepancies Noted
   ___ Discrepancies Noted
   ___ NCDENR notified of Discrepancies*

10. _X_ No Headspace present in VOC vials
    ___ Headspace present in VOC vials >6mm

Notes:

Comments:

Inspected and Logged in by: Amalie Walker
Date: 10/21/2015

*NCDENR must be notified when collection, holding time or preservation requirements are not met.

Data Sheet

Workorder	31501928	**Created**	10/21/2015 12:19
Work ID	GE Pittsfield	**Status**	CO
Client	GENERAL ELECTRIC COMPANY - MA	**Report**	REVLET_RPT
Profile	Updated GMA Wells-AECOM [2644]	**PO**	111216909

31501928001 GMA4-7S-101915

Sample Type	Paying sample	**Status**	RP	**Collected**	10/19/2015 08:55
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928001-B	40MLCG	HCL	OK	
31501928001-C	40MLCG	HCL	OK	
31501928001-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W

31501928002 H78B-16-101915

Sample Type	Paying sample	**Status**	RP	**Collected**	10/19/2015 09:10
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928002-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W
31501928002-C	40MLCG	HCL	OK	
31501928002-B	40MLCG	HCL	OK	

31501928003 GMA4-8-101915

Sample Type	Paying sample	**Status**	RP	**Collected**	10/19/2015 09:30
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928003-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W
31501928003-C	40MLCG	HCL	OK	
31501928003-B	40MLCG	HCL	OK	

Data Sheet

Workorder	31501928	**Created**	10/21/2015 12:19
Work ID	GE Pittsfield	**Status**	CO
Client	GENERAL ELECTRIC COMPANY - MA	**Report**	REVLET_RPT
Profile	Updated GMA Wells-AECOM [2644]	**PO**	111216909

31501928004 GMA4-8-101915 MS

Sample Type	Client billable Matrix Spike	**Status**	RP	**Collected**	10/19/2015 09:30
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928004-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W
31501928004-B	40MLCG	HCL	OK	
31501928004-C	40MLCG	HCL	OK	

31501928005 GMA4-8-101915 MSD

Sample Type	Client billable Matrix Spike D	**Status**	RP	**Collected**	10/19/2015 09:30
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928005-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W
31501928005-C	40MLCG	HCL	OK	
31501928005-B	40MLCG	HCL	OK	

31501928006 GMA4-9-101915

Sample Type	Paying sample	**Status**	RP	**Collected**	10/19/2015 09:50
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928006-C	40MLCG	HCL	OK	
31501928006-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W
31501928006-B	40MLCG	HCL	OK	

Data Sheet

Workorder	31501928	**Created**	10/21/2015 12:19
Work ID	GE Pittsfield	**Status**	CO
Client	GENERAL ELECTRIC COMPANY - MA	**Report**	REVLET_RPT
Profile	Updated GMA Wells-AECOM [2644]	**PO**	111216909

31501928007 DUP-1-101915

Sample Type	Paying sample	**Status**	RP	**Collected**	10/19/2015 00:00
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928007-B	40MLCG	HCL	OK	
31501928007-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W
31501928007-C	40MLCG	HCL	OK	

31501928008 TB

Sample Type	Paying sample	**Status**	RP	**Collected**	
Matrix	Water			**Received**	10/21/2015 10:00

Billable Acodes

SW8260-XXW VOA, SW8260, Full List, W

Container ID	Type	Preservative	CC	Container Utilization
31501928008-A	40MLCG	HCL	OK	SW5030-W, SW8260B-W

SW-846 8260B

Sample Data

Results of **GMA4-7S-101915**

Client Sample ID: **GMA4-7S-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928001-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 08:55
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	U	0.101	1.00	ug/L	1	10/22/2015 18:20
1,1,1-Trichloroethane	ND	U	0.106	1.00	ug/L	1	10/22/2015 18:20
1,1,2,2-Tetrachloroethane	ND	U	0.137	1.00	ug/L	1	10/22/2015 18:20
1,1,2-Trichloroethane	ND	U	0.164	1.00	ug/L	1	10/22/2015 18:20
1,1-Dichloroethane	ND	U	0.0890	1.00	ug/L	1	10/22/2015 18:20
1,1-Dichloroethene	ND	U	0.129	1.00	ug/L	1	10/22/2015 18:20
1,2,3-Trichloropropane	ND	U	0.262	1.00	ug/L	1	10/22/2015 18:20
1,2-Dibromo-3-chloropropane	ND	U	0.643	5.00	ug/L	1	10/22/2015 18:20
1,2-Dibromoethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 18:20
1,2-Dichloroethane	ND	U	0.0910	1.00	ug/L	1	10/22/2015 18:20
1,2-Dichloropropane	ND	U	0.142	1.00	ug/L	1	10/22/2015 18:20
1,4 Dioxane	ND	U	14.4	100	ug/L	1	10/22/2015 18:20
2-Butanone	**1.37**	J	0.729	25.0	ug/L	1	10/22/2015 18:20
2-Chloroethylvinyl ether	ND	U	3.94	25.0	ug/L	1	10/22/2015 18:20
2-Hexanone	ND	U	0.408	5.00	ug/L	1	10/22/2015 18:20
4-Methyl-2-pentanone	ND	U	0.520	5.00	ug/L	1	10/22/2015 18:20
Acetone	**19.8**	J	1.50	25.0	ug/L	1	10/22/2015 18:20
Acetonitrile	ND	U	11.5	20.0	ug/L	1	10/22/2015 18:20
Acrolein	ND	U	6.18	25.0	ug/L	1	10/22/2015 18:20
Acrylonitrile	ND	U	5.36	25.0	ug/L	1	10/22/2015 18:20
Allyl chloride	ND	U	0.216	1.00	ug/L	1	10/22/2015 18:20
Benzene	ND	U	0.136	1.00	ug/L	1	10/22/2015 18:20
Bromodichloromethane	ND	U	0.103	1.00	ug/L	1	10/22/2015 18:20
Bromoform	ND	U	0.124	1.00	ug/L	1	10/22/2015 18:20
Bromomethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 18:20
Carbon disulfide	ND	U	0.103	1.00	ug/L	1	10/22/2015 18:20
Carbon tetrachloride	ND	U	0.165	1.00	ug/L	1	10/22/2015 18:20
Chlorobenzene	ND	U	0.108	1.00	ug/L	1	10/22/2015 18:20
Chloroethane	ND	U	0.146	1.00	ug/L	1	10/22/2015 18:20
Chloroform	**0.580**	J	0.120	1.00	ug/L	1	10/22/2015 18:20
Chloromethane	ND	U	0.157	1.00	ug/L	1	10/22/2015 18:20
Chloroprene	ND	U	0.162	1.00	ug/L	1	10/22/2015 18:20
Dibromochloromethane	ND	U	0.173	1.00	ug/L	1	10/22/2015 18:20
Dibromomethane	ND	U	0.0710	1.00	ug/L	1	10/22/2015 18:20
Dichlorodifluoromethane	ND	U	0.155	5.00	ug/L	1	10/22/2015 18:20
cis-1,3-Dichloropropene	ND	U	0.117	1.00	ug/L	1	10/22/2015 18:20
trans-1,3-Dichloropropene	ND	U	0.126	1.00	ug/L	1	10/22/2015 18:20
Ethyl Benzene	ND	U	0.224	1.00	ug/L	1	10/22/2015 18:20
Ethyl methacrylate	ND	U	0.127	1.00	ug/L	1	10/22/2015 18:20
Isobutyl alcohol	ND	U	6.07	50.0	ug/L	1	10/22/2015 18:20
Methyl iodide	ND	U	0.0540	1.00	ug/L	1	10/22/2015 18:20
Methyl methacrylate	ND	U	0.0985	1.00	ug/L	1	10/22/2015 18:20

Results of **GMA4-7S-101915**

Client Sample ID: **GMA4-7S-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928001-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 08:55
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Methylacrylonitrile	ND	U	1.42	10.0	ug/L	1	10/22/2015 18:20
Methylene chloride	ND	U	0.140	5.00	ug/L	1	10/22/2015 18:20
Propionitrile	ND	U	2.22	20.0	ug/L	1	10/22/2015 18:20
Styrene	ND	U	0.224	1.00	ug/L	1	10/22/2015 18:20
Tetrachloroethene	ND	U	0.189	1.00	ug/L	1	10/22/2015 18:20
Toluene	ND	U	0.149	1.00	ug/L	1	10/22/2015 18:20
Trichloroethene	ND	U	0.110	1.00	ug/L	1	10/22/2015 18:20
Trichlorofluoromethane	ND	U	0.142	1.00	ug/L	1	10/22/2015 18:20
Vinyl acetate	ND	U	0.364	2.00	ug/L	1	10/22/2015 18:20
Vinyl chloride	ND	U	0.149	1.00	ug/L	1	10/22/2015 18:20
Xylene (total)	ND	U	0.298	2.00	ug/L	1	10/22/2015 18:20
trans-1,2-Dichloroethene	ND	U	0.101	1.00	ug/L	1	10/22/2015 18:20
trans-1,4-Dichloro-2-butene	ND	U	1.15	5.00	ug/L	1	10/22/2015 18:20
Surrogates							
4-Bromofluorobenzene	96.0			62.0-132	%	1	10/22/2015 18:20
Dibromofluoromethane	102			58.0-133	%	1	10/22/2015 18:20
Toluene d8	89.0			65.0-127	%	1	10/22/2015 18:20

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
Prep Initial Wt./Vol.: **40 mL**
Prep Extract Vol: **40 mL**

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022812.D
Acq On : 22 Oct 2015 6:20 pm
Sample : 1928_1 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:10 2015

Vial: 12
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	290508	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	508506	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	607411	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	265823	30.69	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 102.30%			
26) 1,2-dichloroethane-d4	7.61	65	409378	35.35	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 117.83%			
36) toluene-d8	8.94	98	981974	26.80	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 89.33%			
52) 4-bromofluorobenzene	10.47	95	421479	28.75	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 95.83%			
Target Compounds						Qvalue
8) acrolein	4.94	56	903	~~0.48~~	~~ppb~~	97
10) acetone	5.32	58	41563	19.79	ppb	73
19) 2-butanone	7.26	72	2350	1.37	ppb	80
21) chloroform	6.95	83	9516	0.58	ppb	99
46) 2-hexanone	9.69	58	1317	~~0.30~~	~~ppb~~ #	1

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

1022812.D VMS3752.M Fri Oct 23 13:28:10 2015

Quantitation Report (Qedit)

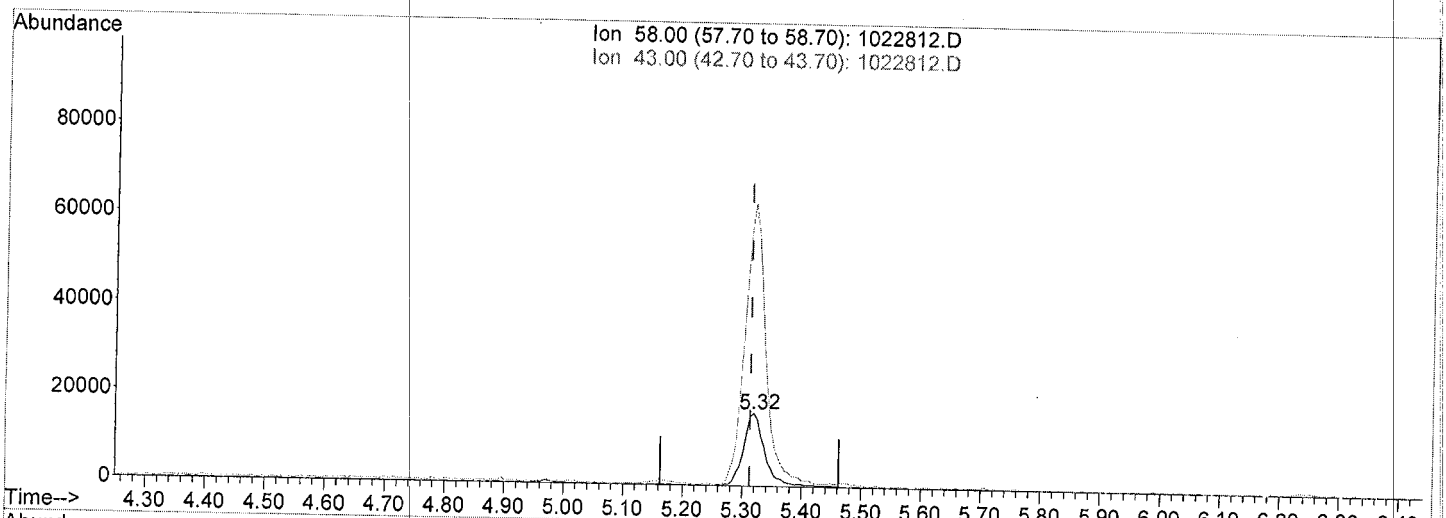
Revised Report

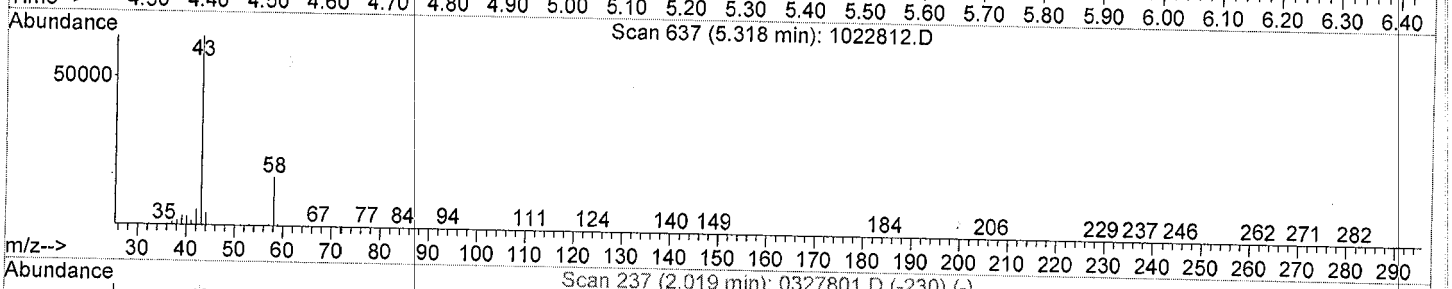
Data File : C:\MSDCHEM\1\DATA\VMS3772\1022812.D
Acq On : 22 Oct 2015 6:20 pm
Sample : 1928_1 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:46 2015

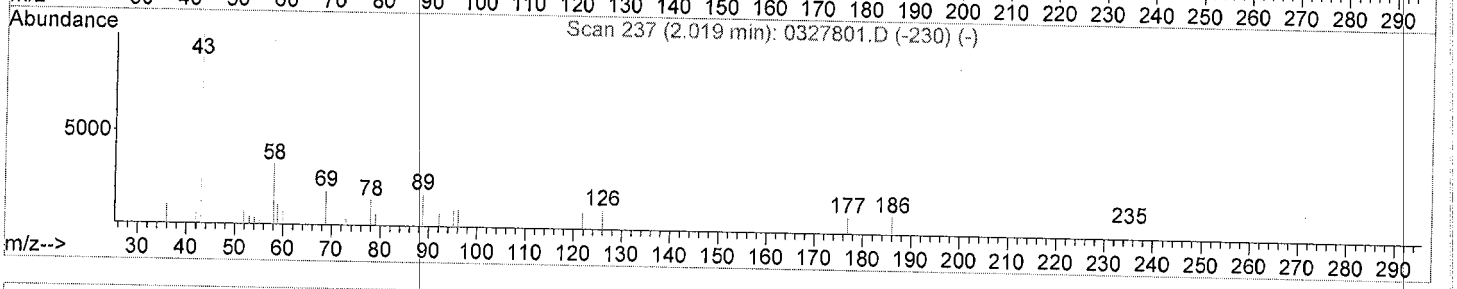
Vial: 12
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022812.D

(10) acetone (T)

5.32min (+0.006) 19.79ppb

response 41563

Ion	Exp%	Act%
58.00	100	100
43.00	329.30	386.31
0.00	0.00	0.00
0.00	0.00	0.00

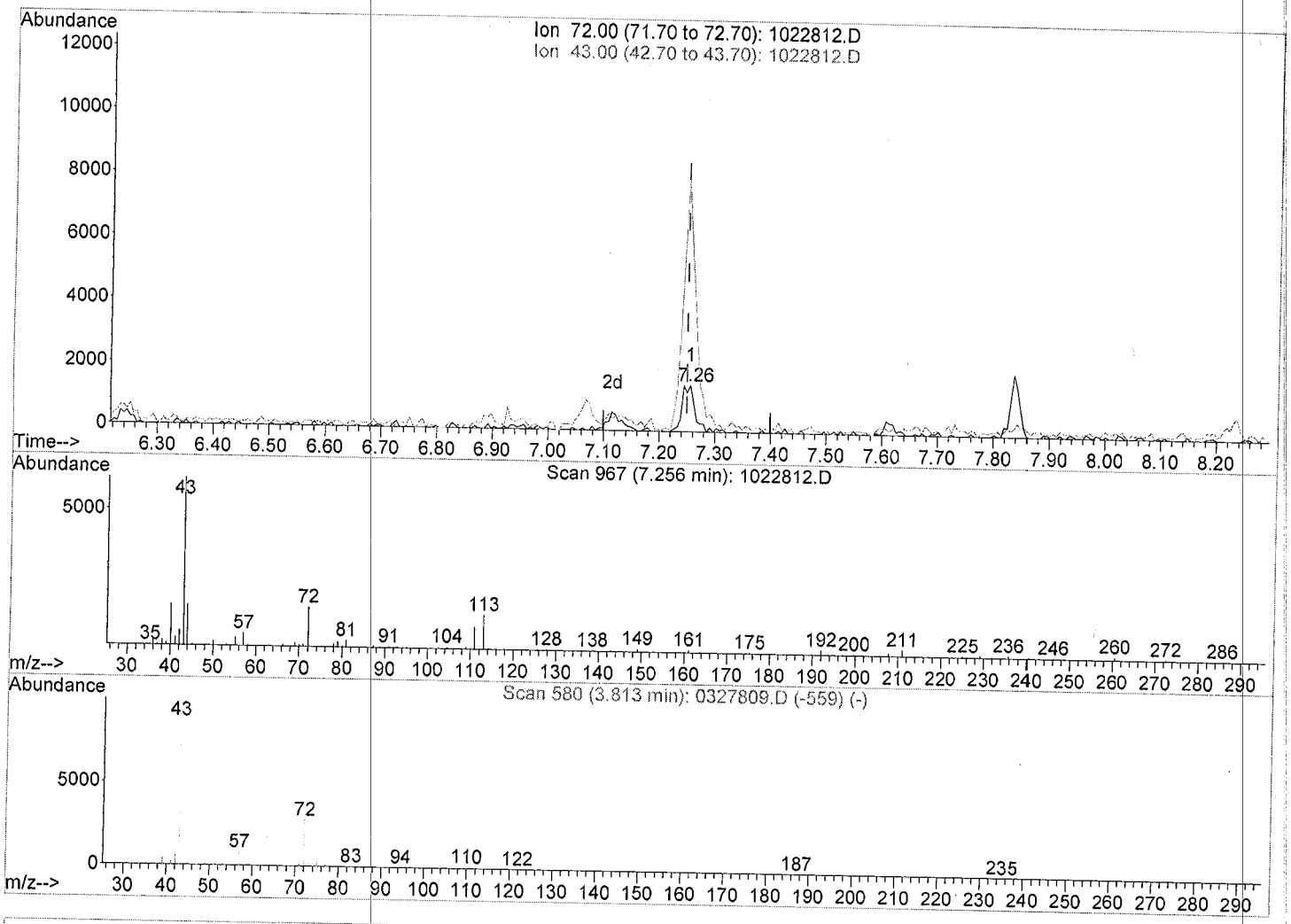
Quantitation Report (Qedit)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022812.D Revised Report
Acq On : 22 Oct 2015 6:20 pm
Sample : 1928_1 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:46 2015

Vial: 12
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration



TIC: 1022812.D

(19) 2-butanone (T)

7.26min (+0.006) 1.37ppb

response 2350

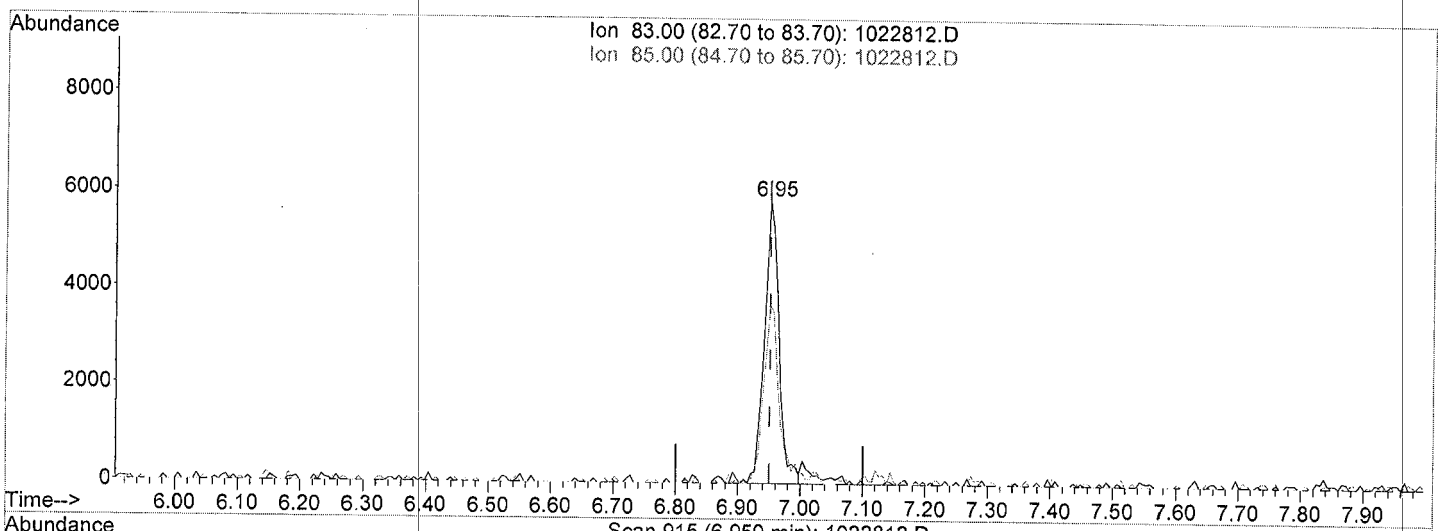
Ion	Exp%	Act%
72.00	100	100
43.00	471.00	417.73
0.00	0.00	0.00
0.00	0.00	0.00

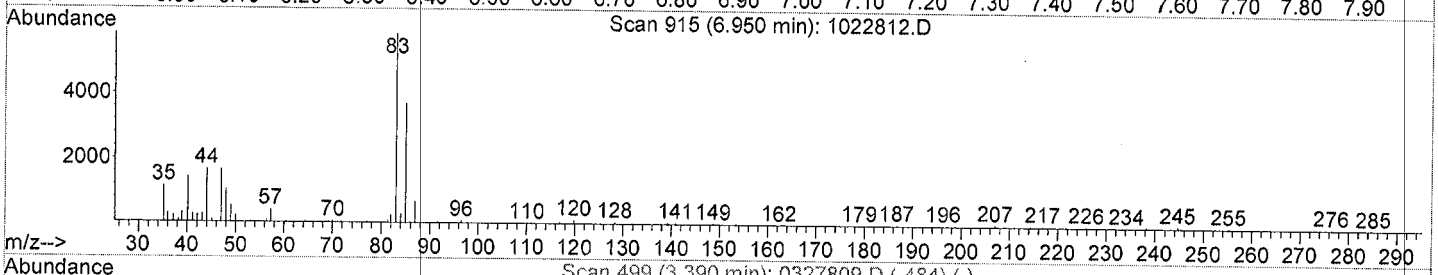
Quantitation Report (Qedit)

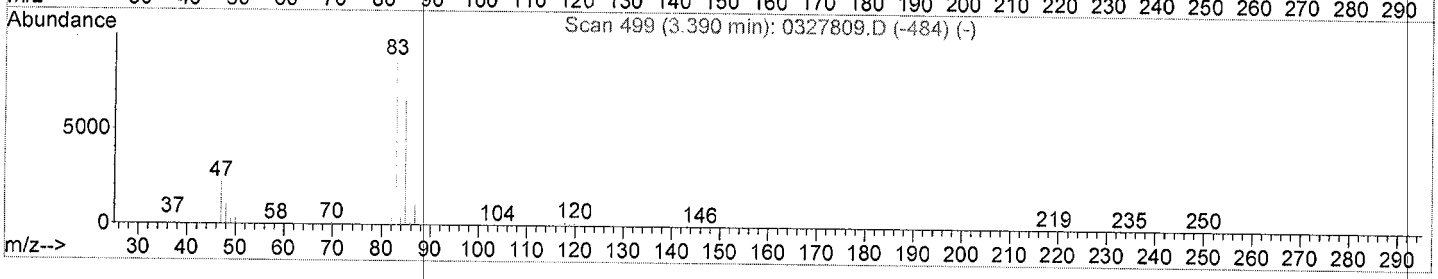
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022812.D Vial: 12
Acq On : 22 Oct 2015 6:20 pm Operator: JHL
Sample : 1928_1 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:46 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022812.D

(21) chloroform (TC)

6.95min (-0.000) 0.58ppb

response 9516

Ion	Exp%	Act%
83.00	100	100
85.00	63.90	63.45
0.00	0.00	0.00
0.00	0.00	0.00

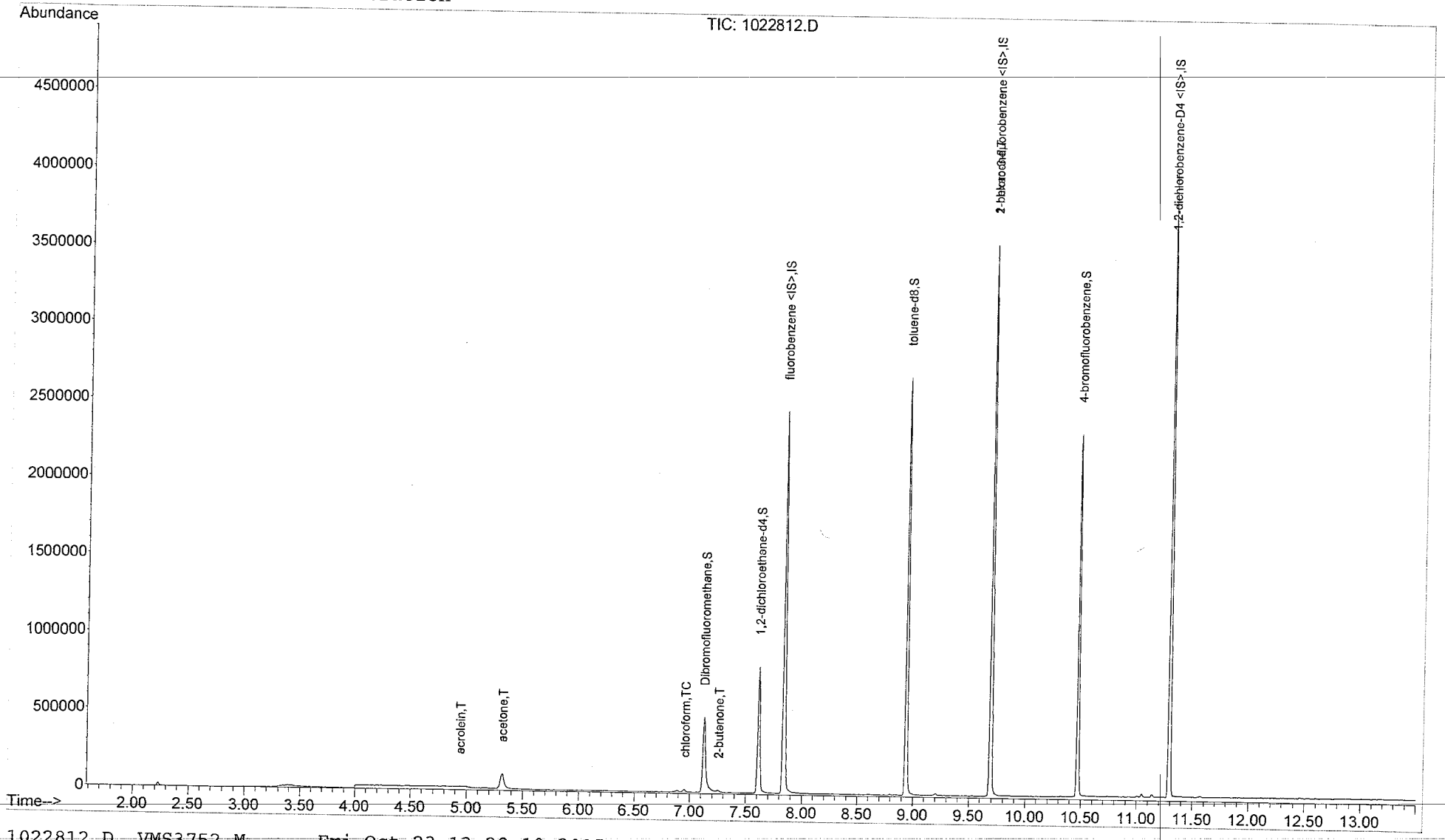
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022812.D
Acq On : 22 Oct 2015 6:20 pm
Sample : 1928_1 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015

Revised Report
Vial: 12
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



1022812.D VMS3752.M Fri Oct 23 13:28:10 2015

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022812.D Vial: 12
Acq On : 22 Oct 2015 6:20 pm Operator: JHL
Sample : 1928_1 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58:49 2015 Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	290508	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	508506	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	607411	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	409378	35.87	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 119.57%			
11) toluene-d8	8.94	98	981974	25.47	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 84.90%			
14) 4-bromofluorobenzene	10.47	95	421479	26.77	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 89.23%			
Target Compounds						Qvalue
2) Acetonitrile	5.86	41	407	~~0.37~~	ppb	# 1
5) Propionitrile	7.61	54	688	~~0.58~~	ppb	# 61
7) Isobutyl alcohol	7.66	43	515	~~13.96~~	ppb	# 20
10) Methyl methacrylate	8.44	41	680	~~0.12~~	ppb	# 20
15) Pentachloroethane	10.82	167	409	~~1.15~~	ppb	# 11

HH 10/29/15

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

Quantitation Report (Not Reviewed)

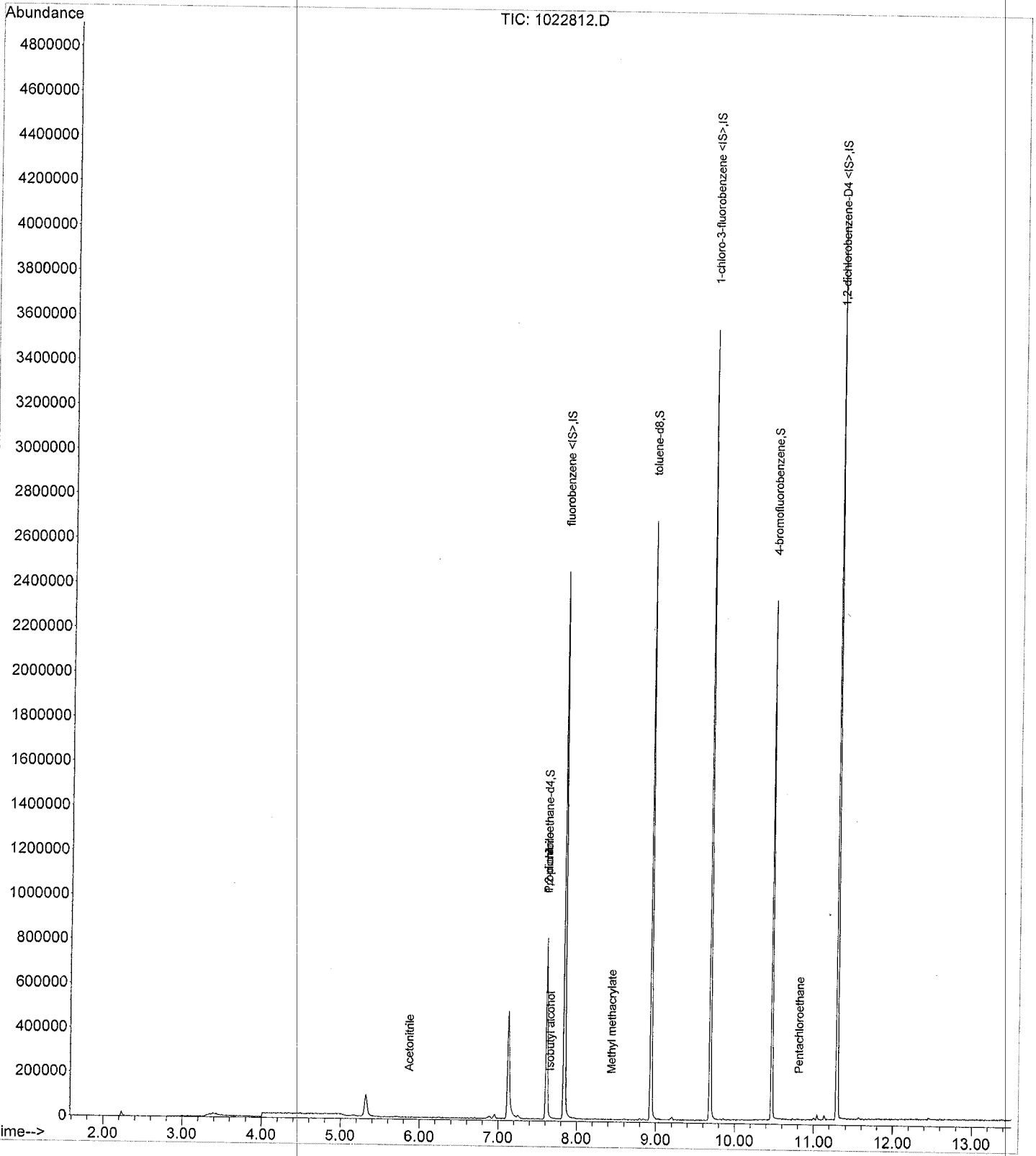
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022812.D
Acq On : 22 Oct 2015 6:20 pm
Sample : 1928_1 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58 2015

Vial: 12
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



Results of **H78B-16-101915**

Client Sample ID: **H78B-16-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928002-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 09:10
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	U	2.02	20.0	ug/L	20	10/22/2015 20:02
1,1,1-Trichloroethane	ND	U	2.12	20.0	ug/L	20	10/22/2015 20:02
1,1,2,2-Tetrachloroethane	ND	U	2.74	20.0	ug/L	20	10/22/2015 20:02
1,1,2-Trichloroethane	ND	U	3.28	20.0	ug/L	20	10/22/2015 20:02
1,1-Dichloroethane	ND	U	1.78	20.0	ug/L	20	10/22/2015 20:02
1,1-Dichloroethene	ND	U	2.58	20.0	ug/L	20	10/22/2015 20:02
1,2,3-Trichloropropane	ND	U	5.24	20.0	ug/L	20	10/22/2015 20:02
1,2-Dibromo-3-chloropropane	ND	U	12.9	100	ug/L	20	10/22/2015 20:02
1,2-Dibromoethane	ND	U	3.76	20.0	ug/L	20	10/22/2015 20:02
1,2-Dichloroethane	ND	U	1.82	20.0	ug/L	20	10/22/2015 20:02
1,2-Dichloropropane	ND	U	2.84	20.0	ug/L	20	10/22/2015 20:02
1,4 Dioxane	ND	U	288	2000	ug/L	20	10/22/2015 20:02
2-Butanone	ND	U	14.6	500	ug/L	20	10/22/2015 20:02
2-Chloroethylvinyl ether	ND	U	78.8	500	ug/L	20	10/22/2015 20:02
2-Hexanone	ND	U	8.16	100	ug/L	20	10/22/2015 20:02
4-Methyl-2-pentanone	ND	U	10.4	100	ug/L	20	10/22/2015 20:02
Acetone	**47.2**	J	30.0	500	ug/L	20	10/22/2015 20:02
Acetonitrile	ND	U	230	400	ug/L	20	10/22/2015 20:02
Acrolein	ND	U	124	500	ug/L	20	10/22/2015 20:02
Acrylonitrile	ND	U	107	500	ug/L	20	10/22/2015 20:02
Allyl chloride	ND	U	4.32	20.0	ug/L	20	10/22/2015 20:02
Benzene	ND	U	2.72	20.0	ug/L	20	10/22/2015 20:02
Bromodichloromethane	ND	U	2.06	20.0	ug/L	20	10/22/2015 20:02
Bromoform	ND	U	2.48	20.0	ug/L	20	10/22/2015 20:02
Bromomethane	ND	U	3.76	20.0	ug/L	20	10/22/2015 20:02
Carbon disulfide	ND	U	2.06	20.0	ug/L	20	10/22/2015 20:02
Carbon tetrachloride	ND	U	3.30	20.0	ug/L	20	10/22/2015 20:02
Chlorobenzene	ND	U	2.16	20.0	ug/L	20	10/22/2015 20:02
Chloroethane	ND	U	2.92	20.0	ug/L	20	10/22/2015 20:02
Chloroform	ND	U	2.40	20.0	ug/L	20	10/22/2015 20:02
Chloromethane	ND	U	3.14	20.0	ug/L	20	10/22/2015 20:02
Chloroprene	ND	U	3.24	20.0	ug/L	20	10/22/2015 20:02
Dibromochloromethane	ND	U	3.46	20.0	ug/L	20	10/22/2015 20:02
Dibromomethane	ND	U	1.42	20.0	ug/L	20	10/22/2015 20:02
Dichlorodifluoromethane	ND	U	3.10	100	ug/L	20	10/22/2015 20:02
cis-1,3-Dichloropropene	ND	U	2.34	20.0	ug/L	20	10/22/2015 20:02
trans-1,3-Dichloropropene	ND	U	2.52	20.0	ug/L	20	10/22/2015 20:02
Ethyl Benzene	ND	U	4.48	20.0	ug/L	20	10/22/2015 20:02
Ethyl methacrylate	ND	U	2.54	20.0	ug/L	20	10/22/2015 20:02
Isobutyl alcohol	ND	U	121	1000	ug/L	20	10/22/2015 20:02
Methyl iodide	ND	U	1.08	20.0	ug/L	20	10/22/2015 20:02
Methyl methacrylate	ND	U	1.97	20.0	ug/L	20	10/22/2015 20:02

Print Date: 11/09/2015

N.C. Certification # 481

Results of **H78B-16-101915**

Client Sample ID: **H78B-16-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928002-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 09:10
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Methylacrylonitrile	ND	U	28.4	200	ug/L	20	10/22/2015 20:02
Methylene chloride	ND	U	2.80	100	ug/L	20	10/22/2015 20:02
Propionitrile	ND	U	44.4	400	ug/L	20	10/22/2015 20:02
Styrene	ND	U	4.48	20.0	ug/L	20	10/22/2015 20:02
Tetrachloroethene	ND	U	3.78	20.0	ug/L	20	10/22/2015 20:02
Toluene	ND	U	2.98	20.0	ug/L	20	10/22/2015 20:02
Trichloroethene	**119**		2.20	20.0	ug/L	20	10/22/2015 20:02
Trichlorofluoromethane	ND	U	2.84	20.0	ug/L	20	10/22/2015 20:02
Vinyl acetate	ND	U	7.28	40.0	ug/L	20	10/22/2015 20:02
Vinyl chloride	ND	U	2.98	20.0	ug/L	20	10/22/2015 20:02
Xylene (total)	ND	U	5.96	40.0	ug/L	20	10/22/2015 20:02
trans-1,2-Dichloroethene	ND	U	2.02	20.0	ug/L	20	10/22/2015 20:02
trans-1,4-Dichloro-2-butene	ND	U	23.0	100	ug/L	20	10/22/2015 20:02
Surrogates							
4-Bromofluorobenzene	97.0			62.0-132	%	20	10/22/2015 20:02
Dibromofluoromethane	101			58.0-133	%	20	10/22/2015 20:02
Toluene d8	90.0			65.0-127	%	20	10/22/2015 20:02

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
Prep Initial Wt./Vol.: **40 mL**
Prep Extract Vol: **40 mL**

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022816.D Vial: 16
Acq On : 22 Oct 2015 8:02 pm Operator: JHL
Sample : 1928_2 x20 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:14 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	292250	30.00 ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	501378	30.00 ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	599271	30.00 ppb	0.00
System Monitoring Compounds					
24) Dibromofluoromethane	7.13	113	263858	30.28 ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 100.93%		
26) 1,2-dichloroethane-d4	7.61	65	404849	34.75 ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 115.83%		
36) toluene-d8	8.94	98	995300	27.00 ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 90.00%		
52) 4-bromofluorobenzene	10.47	95	421805	29.18 ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 97.27%		
Target Compounds					Qvalue
8) acrolein	4.94	56	908	~~0.48 ppb #~~	72
10) acetone	5.32	58	4978	2.36 ppb	78
18) cis-1,2-dichloroethene	6.69	96	15082	1.62 ppb	89
29) trichloroethene	7.97	95	58425	5.94 ppb	97
46) 2-hexanone	9.69	58	1085	~~0.25 ppb #~~	1

JH 10/28/15

$\frac{2.36 \times 5}{5} = 47.2$

CN 10-29-15

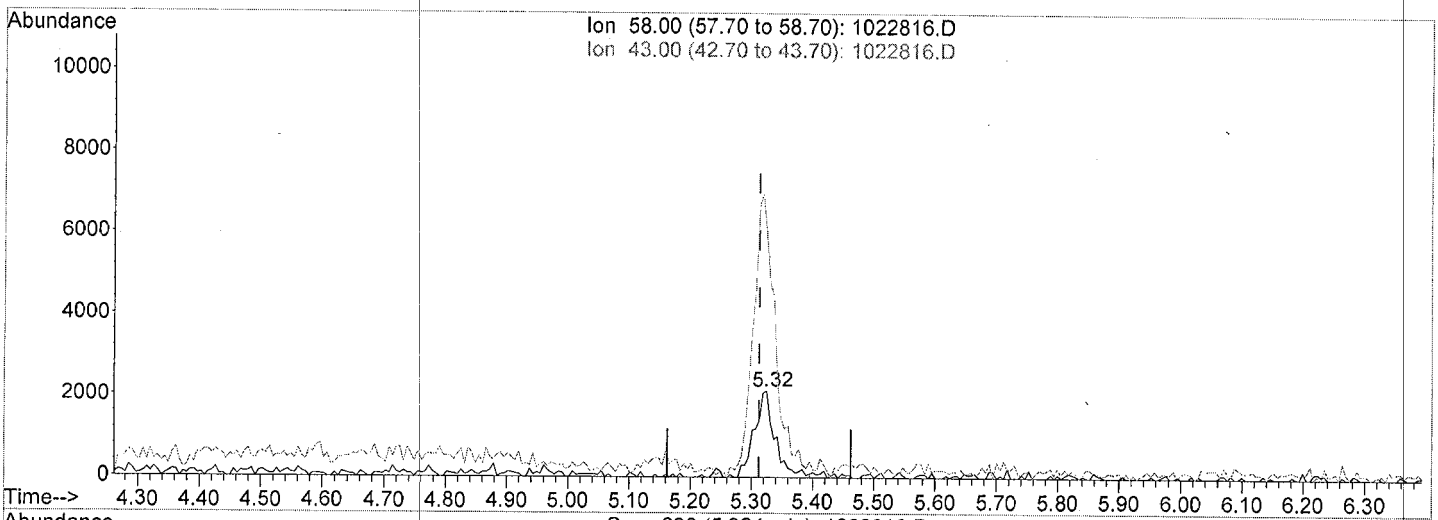
(#) = qualifier out of range (m) = manual integration (+) = signals summed

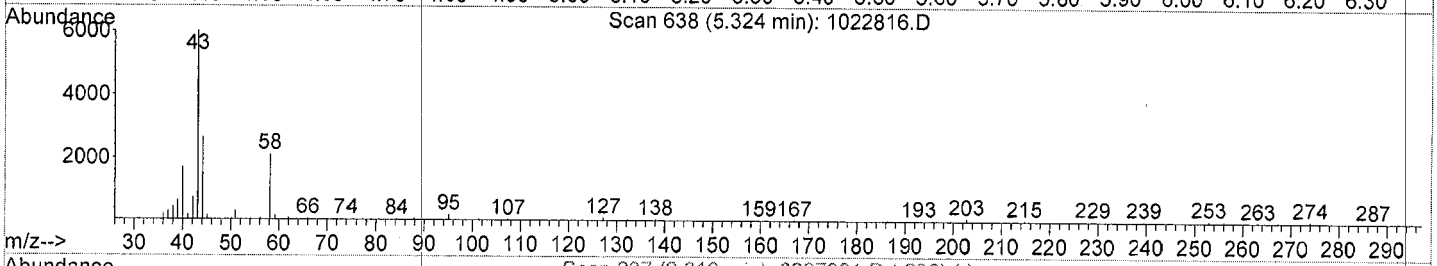
Quantitation Report (Qedit)

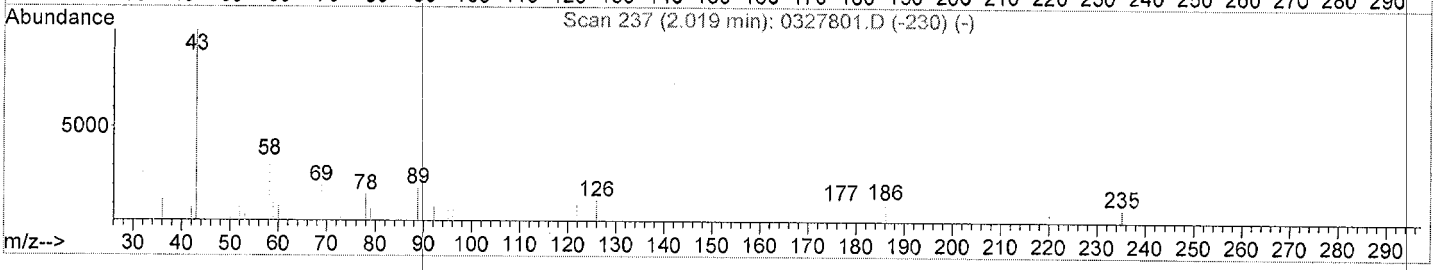
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022816.D Vial: 16
Acq On : 22 Oct 2015 8:02 pm Operator: JHL
Sample : 1928_2 x20 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:50 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022816.D

(10) acetone (T)

5.32min (+0.012) 2.36ppb

response 4978

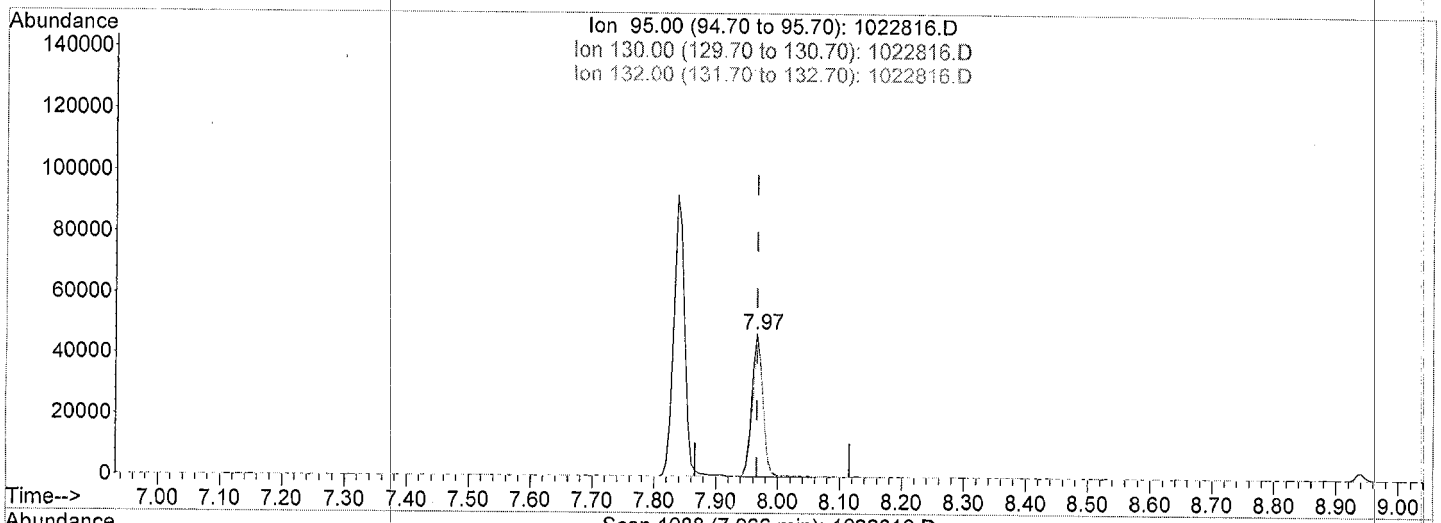
Ion	Exp%	Act%
58.00	100	100
43.00	329.30	284.20
0.00	0.00	0.00
0.00	0.00	0.00

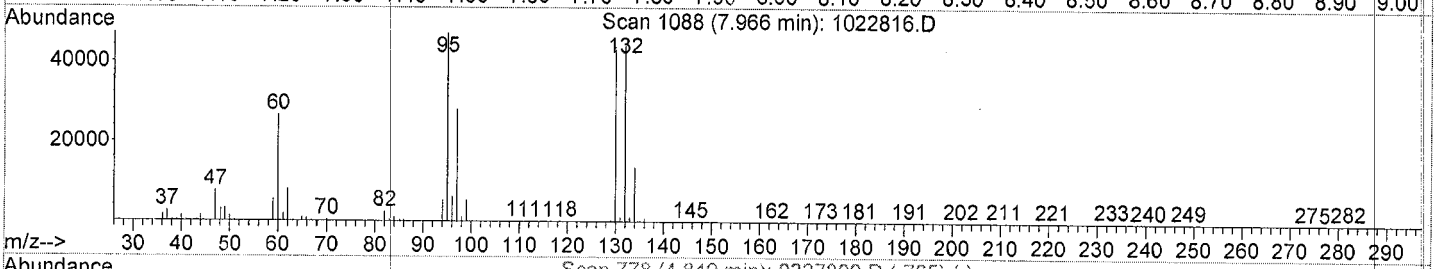
Quantitation Report (Qedit)

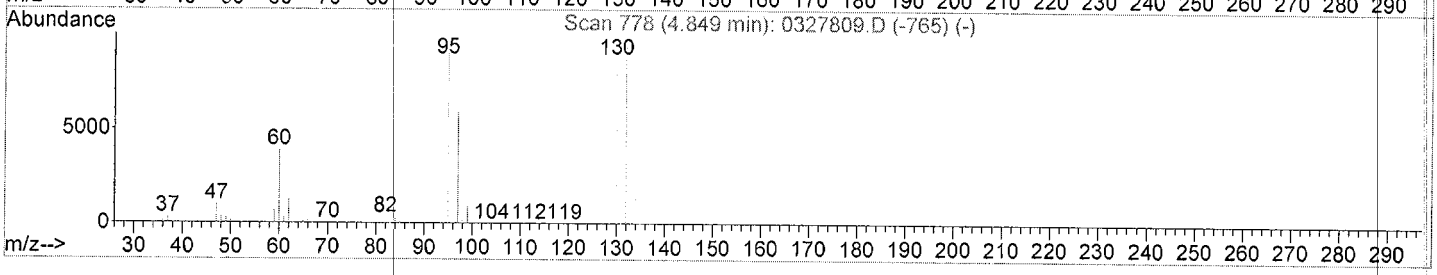
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022816.D Vial: 16
Acq On : 22 Oct 2015 8:02 pm Operator: JHL
Sample : 1928_2 x20 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:50 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022816.D

(29) trichloroethene (T)

7.97min (+0.000) 5.94ppb

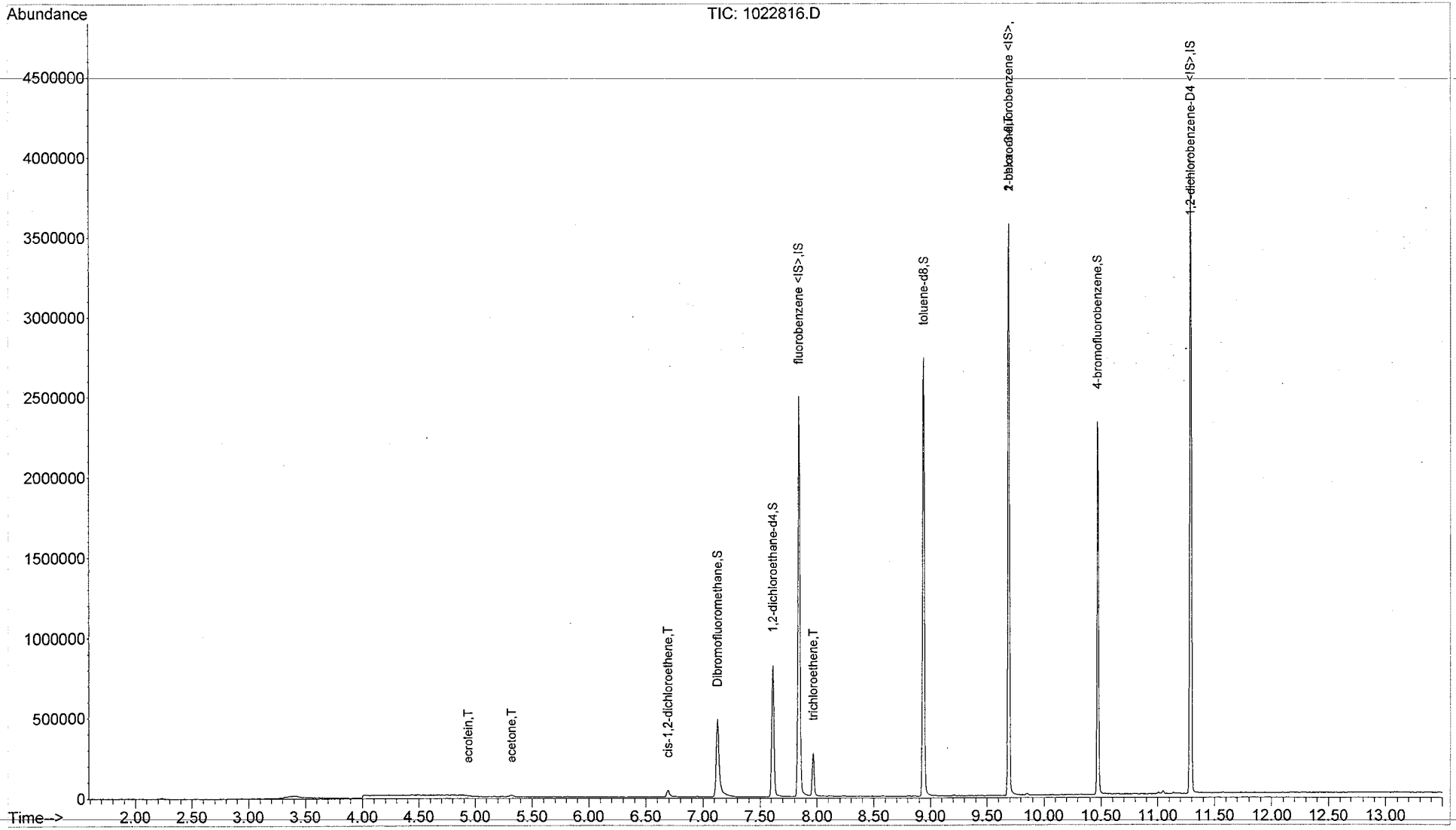
response 58425

Ion	Exp%	Act%
95.00	100	100
130.00	96.50	93.07
132.00	96.30	93.21
0.00	0.00	0.00

Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022816.D Vial: 16
Acq On : 22 Oct 2015 8:02 pm Operator: JHL
Sample : 1928_2 x20 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022816.D Vial: 16
Acq On : 22 Oct 2015 8:02 pm Operator: JHL
Sample : 1928_2 x20 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58:53 2015 Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	292175	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	501363	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	599271	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	404849	35.27	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 117.57%			
11) toluene-d8	8.94	98	995300	25.66	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 85.53%			
14) 4-bromofluorobenzene	10.47	95	421805	27.17	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 90.57%			
Target Compounds						Qvalue
2) Acetonitrile	5.91	41	344	~~0.31 ppb~~	#	1
5) Propionitrile	7.61	54	833	~~0.70 ppb~~	#	36
7) Isobutyl alcohol	7.61	43	308	~~13.18 ppb~~	#	20

HK 10/29/15

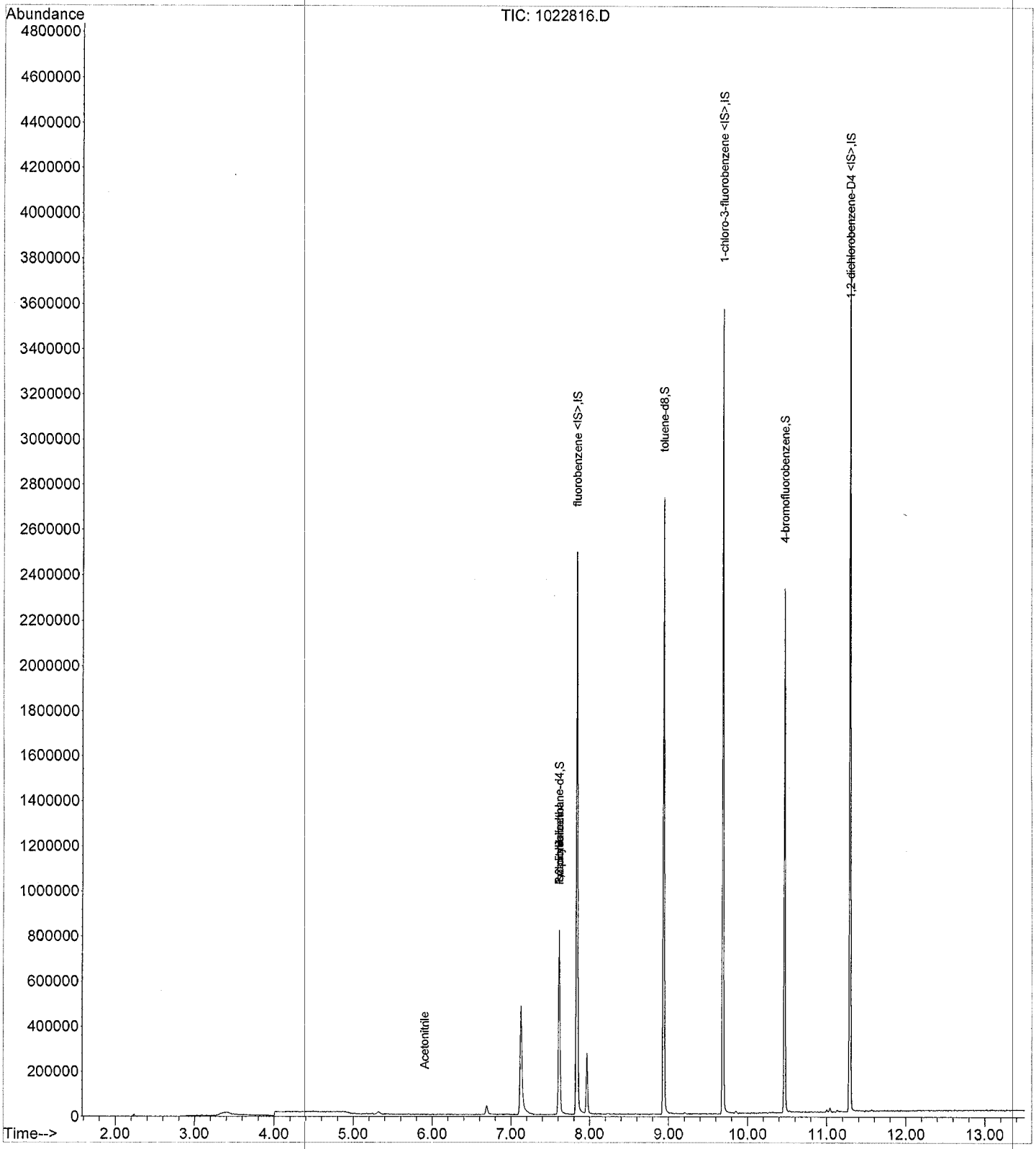
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022816.D Vial: 16
Acq On : 22 Oct 2015 8:02 pm Operator: JHL
Sample : 1928_2 x20 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58 2015 Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



Results of **GMA4-8-101915**

Client Sample ID: **GMA4-8-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928003-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 09:30
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	U	0.101	1.00	ug/L	1	10/22/2015 18:45
1,1,1-Trichloroethane	ND	U	0.106	1.00	ug/L	1	10/22/2015 18:45
1,1,2,2-Tetrachloroethane	ND	U	0.137	1.00	ug/L	1	10/22/2015 18:45
1,1,2-Trichloroethane	ND	U	0.164	1.00	ug/L	1	10/22/2015 18:45
1,1-Dichloroethane	ND	U	0.0890	1.00	ug/L	1	10/22/2015 18:45
1,1-Dichloroethene	ND	U	0.129	1.00	ug/L	1	10/22/2015 18:45
1,2,3-Trichloropropane	ND	U	0.262	1.00	ug/L	1	10/22/2015 18:45
1,2-Dibromo-3-chloropropane	ND	U	0.643	5.00	ug/L	1	10/22/2015 18:45
1,2-Dibromoethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 18:45
1,2-Dichloroethane	ND	U	0.0910	1.00	ug/L	1	10/22/2015 18:45
1,2-Dichloropropane	ND	U	0.142	1.00	ug/L	1	10/22/2015 18:45
1,4 Dioxane	ND	U	14.4	100	ug/L	1	10/22/2015 18:45
2-Butanone	**1.44**	J	0.729	25.0	ug/L	1	10/22/2015 18:45
2-Chloroethylvinyl ether	ND	U	3.94	25.0	ug/L	1	10/22/2015 18:45
2-Hexanone	ND	U	0.408	5.00	ug/L	1	10/22/2015 18:45
4-Methyl-2-pentanone	ND	U	0.520	5.00	ug/L	1	10/22/2015 18:45
Acetone	**20.3**	J	1.50	25.0	ug/L	1	10/22/2015 18:45
Acetonitrile	ND	U	11.5	20.0	ug/L	1	10/22/2015 18:45
Acrolein	ND	U	6.18	25.0	ug/L	1	10/22/2015 18:45
Acrylonitrile	ND	U	5.36	25.0	ug/L	1	10/22/2015 18:45
Allyl chloride	ND	U	0.216	1.00	ug/L	1	10/22/2015 18:45
Benzene	ND	U	0.136	1.00	ug/L	1	10/22/2015 18:45
Bromodichloromethane	ND	U	0.103	1.00	ug/L	1	10/22/2015 18:45
Bromoform	ND	U	0.124	1.00	ug/L	1	10/22/2015 18:45
Bromomethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 18:45
Carbon disulfide	ND	U	0.103	1.00	ug/L	1	10/22/2015 18:45
Carbon tetrachloride	ND	U	0.165	1.00	ug/L	1	10/22/2015 18:45
Chlorobenzene	ND	U	0.108	1.00	ug/L	1	10/22/2015 18:45
Chloroethane	ND	U	0.146	1.00	ug/L	1	10/22/2015 18:45
Chloroform	ND	U	0.120	1.00	ug/L	1	10/22/2015 18:45
Chloromethane	ND	U	0.157	1.00	ug/L	1	10/22/2015 18:45
Chloroprene	ND	U	0.162	1.00	ug/L	1	10/22/2015 18:45
Dibromochloromethane	ND	U	0.173	1.00	ug/L	1	10/22/2015 18:45
Dibromomethane	ND	U	0.0710	1.00	ug/L	1	10/22/2015 18:45
Dichlorodifluoromethane	ND	U	0.155	5.00	ug/L	1	10/22/2015 18:45
cis-1,3-Dichloropropene	ND	U	0.117	1.00	ug/L	1	10/22/2015 18:45
trans-1,3-Dichloropropene	ND	U	0.126	1.00	ug/L	1	10/22/2015 18:45
Ethyl Benzene	ND	U	0.224	1.00	ug/L	1	10/22/2015 18:45
Ethyl methacrylate	ND	U	0.127	1.00	ug/L	1	10/22/2015 18:45
Isobutyl alcohol	ND	U	6.07	50.0	ug/L	1	10/22/2015 18:45
Methyl iodide	ND	U	0.0540	1.00	ug/L	1	10/22/2015 18:45
Methyl methacrylate	ND	U	0.0985	1.00	ug/L	1	10/22/2015 18:45

Results of **GMA4-8-101915**

Client Sample ID: **GMA4-8-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928003-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 09:30
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Methylacrylonitrile	ND	U	1.42	10.0	ug/L	1	10/22/2015 18:45
Methylene chloride	ND	U	0.140	5.00	ug/L	1	10/22/2015 18:45
Propionitrile	ND	U	2.22	20.0	ug/L	1	10/22/2015 18:45
Styrene	ND	U	0.224	1.00	ug/L	1	10/22/2015 18:45
Tetrachloroethene	ND	U	0.189	1.00	ug/L	1	10/22/2015 18:45
Toluene	ND	U	0.149	1.00	ug/L	1	10/22/2015 18:45
Trichloroethene	ND	U	0.110	1.00	ug/L	1	10/22/2015 18:45
Trichlorofluoromethane	ND	U	0.142	1.00	ug/L	1	10/22/2015 18:45
Vinyl acetate	ND	U	0.364	2.00	ug/L	1	10/22/2015 18:45
Vinyl chloride	ND	U	0.149	1.00	ug/L	1	10/22/2015 18:45
Xylene (total)	ND	U	0.298	2.00	ug/L	1	10/22/2015 18:45
trans-1,2-Dichloroethene	ND	U	0.101	1.00	ug/L	1	10/22/2015 18:45
trans-1,4-Dichloro-2-butene	ND	U	1.15	5.00	ug/L	1	10/22/2015 18:45
Surrogates							
4-Bromofluorobenzene	96.0			62.0-132	%	1	10/22/2015 18:45
Dibromofluoromethane	101			58.0-133	%	1	10/22/2015 18:45
Toluene d8	89.0			65.0-127	%	1	10/22/2015 18:45

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
Prep Initial Wt./Vol.: **40 mL**
Prep Extract Vol: **40 mL**

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022813.D
Acq On : 22 Oct 2015 6:45 pm
Sample : 1928_3 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:11 2015

Vial: 13
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	291723	30.00 ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	502161	30.00 ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	608472	30.00 ppb	0.00
System Monitoring Compounds					
24) Dibromofluoromethane	7.13	113	264226	30.38 ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 101.27%		
26) 1,2-dichloroethane-d4	7.61	65	411503	35.38 ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 117.93%		
36) toluene-d8	8.94	98	979490	26.62 ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 88.73%		
52) 4-bromofluorobenzene	10.47	95	415172	28.68 ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 95.60%		
Target Compounds					Qvalue
8) acrolein	4.94	56	628	~~0.33 ppb~~ #	33
10) acetone	5.32	58	42791	20.29 ppb	76
19) 2-butanone	7.25	72	2491	1.44 ppb	92
46) 2-hexanone	9.69	58	1034	~~0.24 ppb~~ #	1
77) naphthalene	12.46	128	5167	~~0.21 ppb~~ #	90

10/23/15

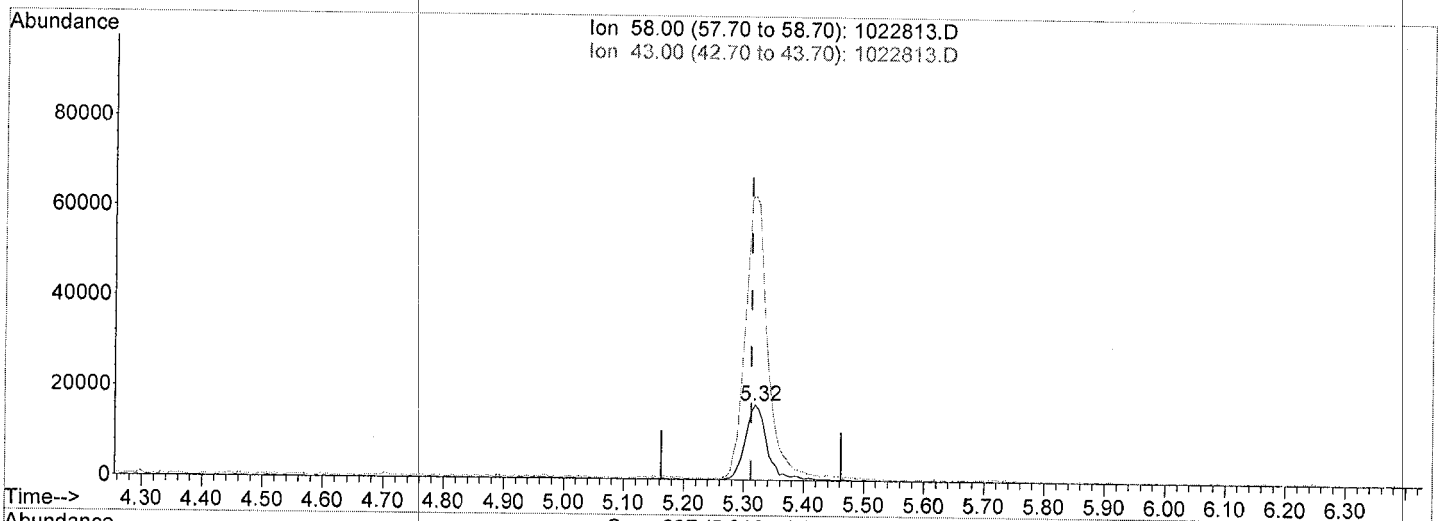
(#) = qualifier out of range (m) = manual integration (+) = signals summed

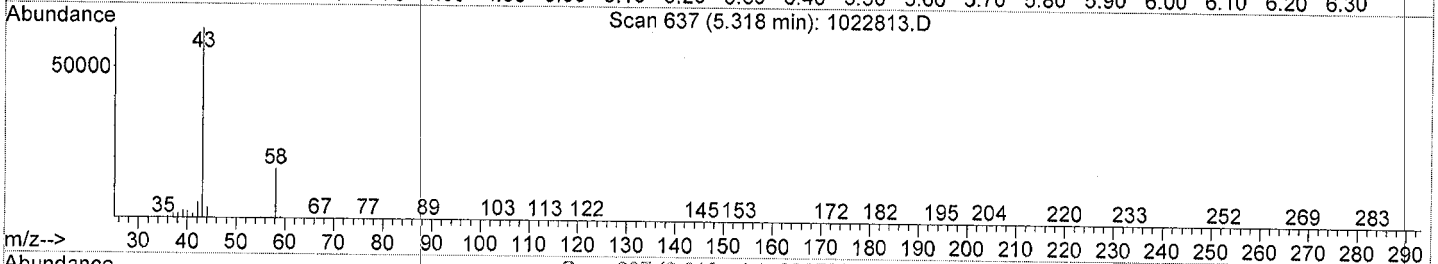
Quantitation Report (Qedit)

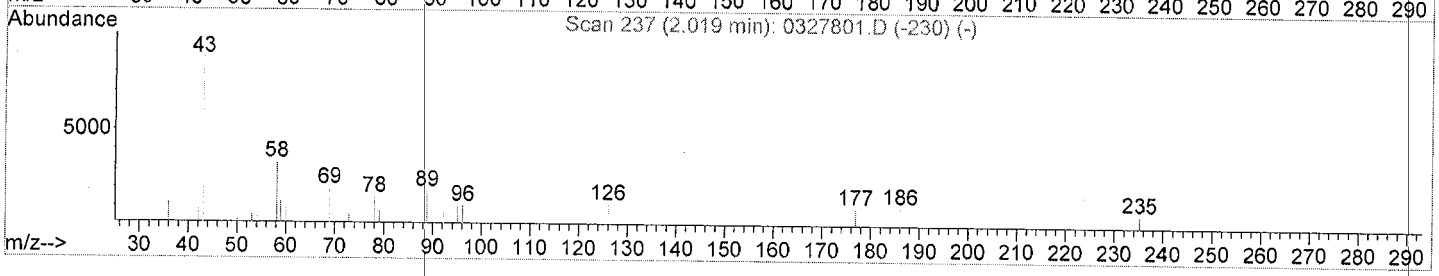
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022813.D Vial: 13
Acq On : 22 Oct 2015 6:45 pm Operator: JHL
Sample : 1928_3 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:47 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022813.D

(10) acetone (T)

5.32min (+0.006) 20.29ppb

response 42791

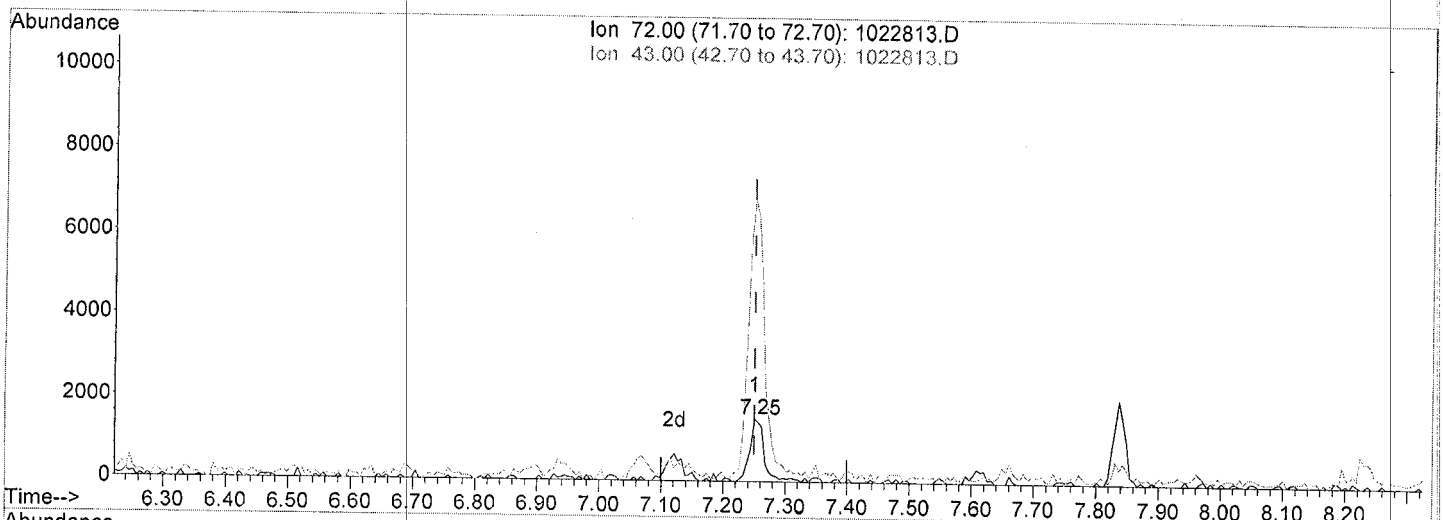
Ion	Exp%	Act%
58.00	100	100
43.00	329.30	380.13
0.00	0.00	0.00
0.00	0.00	0.00

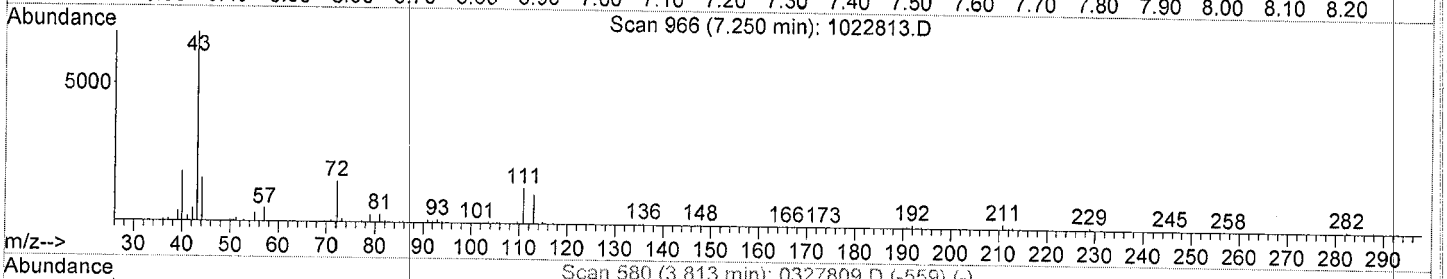
Quantitation Report (Qedit)

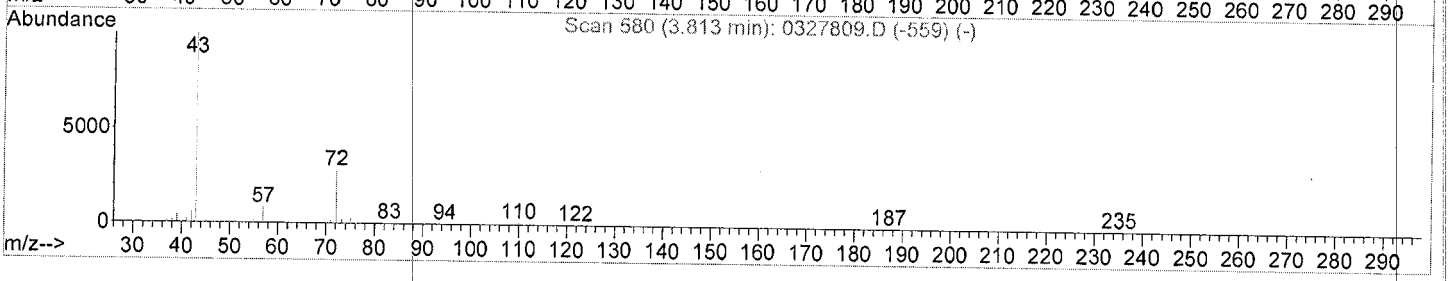
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022813.D Vial: 13
Acq On : 22 Oct 2015 6:45 pm Operator: JHL
Sample : 1928_3 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:47 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022813.D

(19) 2-butanone (T)

7.25min (-0.000) 1.44ppb

response 2491

Ion	Exp%	Act%
72.00	100	100
43.00	471.00	450.00
0.00	0.00	0.00
0.00	0.00	0.00

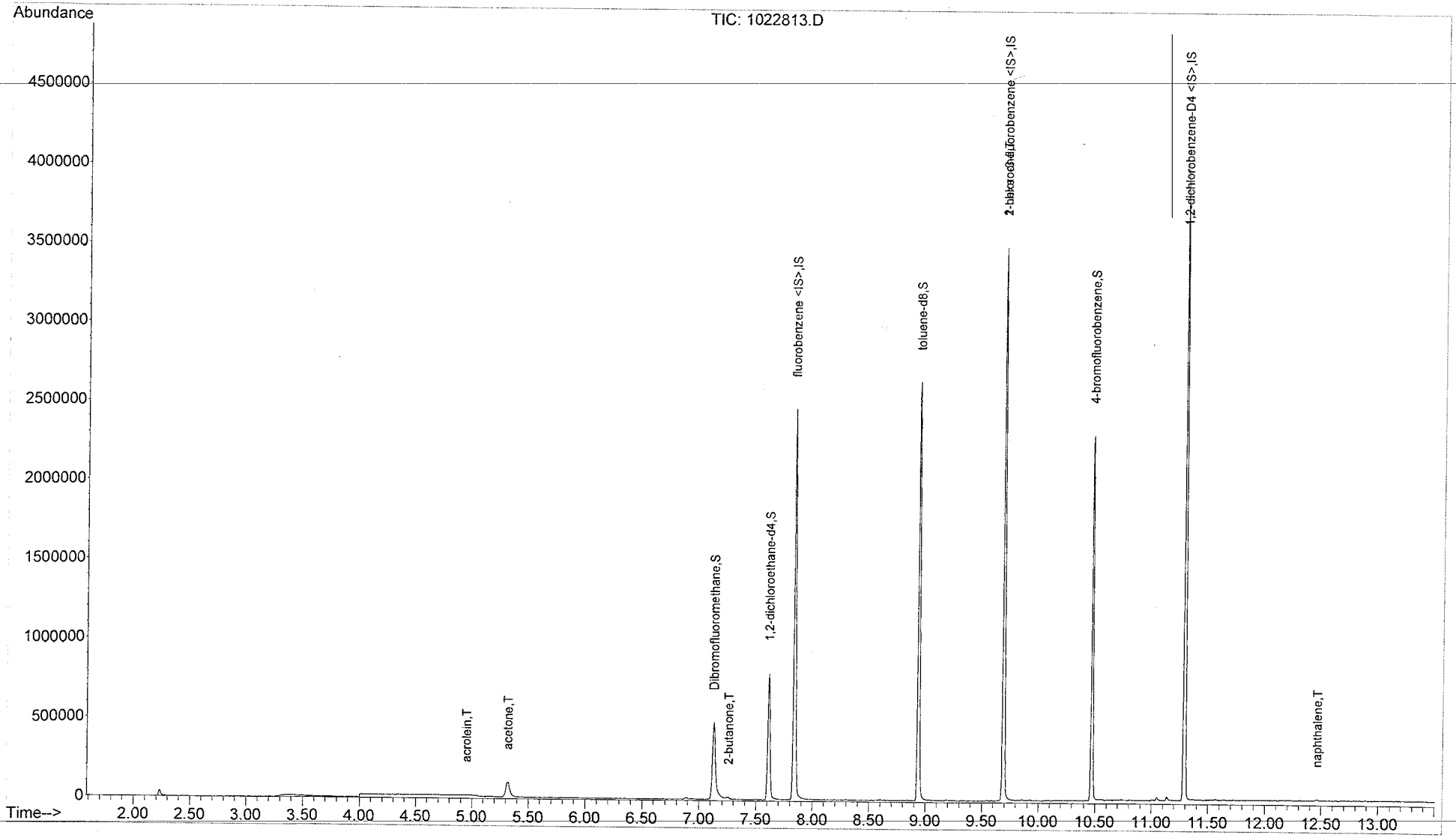
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022813.D
Acq On : 22 Oct 2015 6:45 pm
Sample : 1928_3 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015

Revised Report
Vial: 13
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



1022813.D VMS3752.M Fri Oct 23 13:28:11 2015

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022813.D Vial: 13
Acq On : 22 Oct 2015 6:45 pm Operator: JHL
Sample : 1928_3 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58:50 2015 Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	291723	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	501975	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	608211	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	410809	35.85	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 119.50%			
11) toluene-d8	8.94	98	979490	25.30	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 84.33%			
14) 4-bromofluorobenzene	10.47	95	415172	26.71	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 89.03%			
Target Compounds						Qvalue
2) Acetonitrile	5.86	41	496	~~0.44 ppb~~	#	39
5) Propionitrile	7.60	54	740	~~0.62 ppb~~	#	61
6) Methacrylonitrile	7.61	41	651	~~< 0.14 ppb~~	#	1
7) Isobutyl alcohol	7.66	43	422	~~13.61 ppb~~	#	56
10) Methyl methacrylate	8.51	41	463	~~0.08 ppb~~	#	20

HH 10/29/15

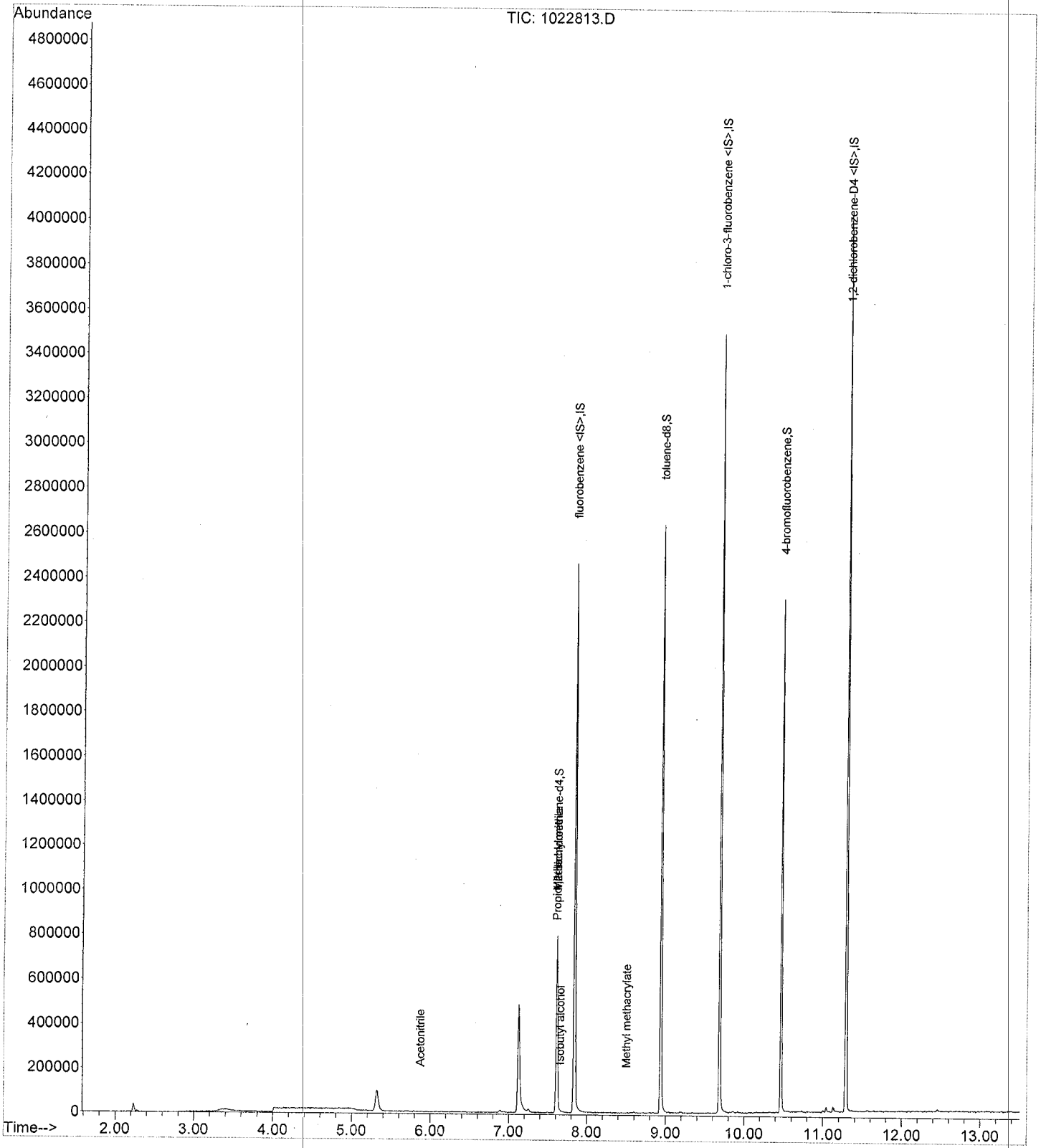
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022813.D Vial: 13
Acq On : 22 Oct 2015 6:45 pm Operator: JHL
Sample : 1928_3 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58 2015 Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



Results of **GMA4-9-101915**

Client Sample ID: **GMA4-9-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928006-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 09:50
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	U	0.101	1.00	ug/L	1	10/22/2015 19:11
1,1,1-Trichloroethane	ND	U	0.106	1.00	ug/L	1	10/22/2015 19:11
1,1,2,2-Tetrachloroethane	ND	U	0.137	1.00	ug/L	1	10/22/2015 19:11
1,1,2-Trichloroethane	ND	U	0.164	1.00	ug/L	1	10/22/2015 19:11
1,1-Dichloroethane	ND	U	0.0890	1.00	ug/L	1	10/22/2015 19:11
1,1-Dichloroethene	ND	U	0.129	1.00	ug/L	1	10/22/2015 19:11
1,2,3-Trichloropropane	ND	U	0.262	1.00	ug/L	1	10/22/2015 19:11
1,2-Dibromo-3-chloropropane	ND	U	0.643	5.00	ug/L	1	10/22/2015 19:11
1,2-Dibromoethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 19:11
1,2-Dichloroethane	ND	U	0.0910	1.00	ug/L	1	10/22/2015 19:11
1,2-Dichloropropane	ND	U	0.142	1.00	ug/L	1	10/22/2015 19:11
1,4 Dioxane	ND	U	14.4	100	ug/L	1	10/22/2015 19:11
2-Butanone	**1.55**	J	0.729	25.0	ug/L	1	10/22/2015 19:11
2-Chloroethylvinyl ether	ND	U	3.94	25.0	ug/L	1	10/22/2015 19:11
2-Hexanone	ND	U	0.408	5.00	ug/L	1	10/22/2015 19:11
4-Methyl-2-pentanone	ND	U	0.520	5.00	ug/L	1	10/22/2015 19:11
Acetone	**10.4**	J	1.50	25.0	ug/L	1	10/22/2015 19:11
Acetonitrile	ND	U	11.5	20.0	ug/L	1	10/22/2015 19:11
Acrolein	ND	U	6.18	25.0	ug/L	1	10/22/2015 19:11
Acrylonitrile	ND	U	5.36	25.0	ug/L	1	10/22/2015 19:11
Allyl chloride	ND	U	0.216	1.00	ug/L	1	10/22/2015 19:11
Benzene	ND	U	0.136	1.00	ug/L	1	10/22/2015 19:11
Bromodichloromethane	ND	U	0.103	1.00	ug/L	1	10/22/2015 19:11
Bromoform	ND	U	0.124	1.00	ug/L	1	10/22/2015 19:11
Bromomethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 19:11
Carbon disulfide	ND	U	0.103	1.00	ug/L	1	10/22/2015 19:11
Carbon tetrachloride	ND	U	0.165	1.00	ug/L	1	10/22/2015 19:11
Chlorobenzene	ND	U	0.108	1.00	ug/L	1	10/22/2015 19:11
Chloroethane	ND	U	0.146	1.00	ug/L	1	10/22/2015 19:11
Chloroform	**3.87**		0.120	1.00	ug/L	1	10/22/2015 19:11
Chloromethane	ND	U	0.157	1.00	ug/L	1	10/22/2015 19:11
Chloroprene	ND	U	0.162	1.00	ug/L	1	10/22/2015 19:11
Dibromochloromethane	ND	U	0.173	1.00	ug/L	1	10/22/2015 19:11
Dibromomethane	ND	U	0.0710	1.00	ug/L	1	10/22/2015 19:11
Dichlorodifluoromethane	ND	U	0.155	5.00	ug/L	1	10/22/2015 19:11
cis-1,3-Dichloropropene	ND	U	0.117	1.00	ug/L	1	10/22/2015 19:11
trans-1,3-Dichloropropene	ND	U	0.126	1.00	ug/L	1	10/22/2015 19:11
Ethyl Benzene	ND	U	0.224	1.00	ug/L	1	10/22/2015 19:11
Ethyl methacrylate	ND	U	0.127	1.00	ug/L	1	10/22/2015 19:11
Isobutyl alcohol	ND	U	6.07	50.0	ug/L	1	10/22/2015 19:11
Methyl iodide	ND	U	0.0540	1.00	ug/L	1	10/22/2015 19:11
Methyl methacrylate	ND	U	0.0985	1.00	ug/L	1	10/22/2015 19:11

Results of **GMA4-9-101915**

Client Sample ID: **GMA4-9-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928006-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 09:50
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Methylacrylonitrile	ND	U	1.42	10.0	ug/L	1	10/22/2015 19:11
Methylene chloride	ND	U	0.140	5.00	ug/L	1	10/22/2015 19:11
Propionitrile	ND	U	2.22	20.0	ug/L	1	10/22/2015 19:11
Styrene	ND	U	0.224	1.00	ug/L	1	10/22/2015 19:11
Tetrachloroethene	**2.43**		0.189	1.00	ug/L	1	10/22/2015 19:11
Toluene	ND	U	0.149	1.00	ug/L	1	10/22/2015 19:11
Trichloroethene	ND	U	0.110	1.00	ug/L	1	10/22/2015 19:11
Trichlorofluoromethane	ND	U	0.142	1.00	ug/L	1	10/22/2015 19:11
Vinyl acetate	ND	U	0.364	2.00	ug/L	1	10/22/2015 19:11
Vinyl chloride	ND	U	0.149	1.00	ug/L	1	10/22/2015 19:11
Xylene (total)	ND	U	0.298	2.00	ug/L	1	10/22/2015 19:11
trans-1,2-Dichloroethene	ND	U	0.101	1.00	ug/L	1	10/22/2015 19:11
trans-1,4-Dichloro-2-butene	ND	U	1.15	5.00	ug/L	1	10/22/2015 19:11
Surrogates							
4-Bromofluorobenzene	95.0			62.0-132	%	1	10/22/2015 19:11
Dibromofluoromethane	100			58.0-133	%	1	10/22/2015 19:11
Toluene d8	90.0			65.0-127	%	1	10/22/2015 19:11

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
Prep Initial Wt./Vol.: **40 mL**
Prep Extract Vol: **40 mL**

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D Vial: 14
Acq On : 22 Oct 2015 7:11 pm Operator: JHL
Sample : 1928_6 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:12 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	320362	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	561515	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	640725	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	287660	30.12	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 100.40%			
26) 1,2-dichloroethane-d4	7.61	65	431099	33.76	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 112.53%			
36) toluene-d8	8.94	98	1092419	27.04	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 90.13%			
52) 4-bromofluorobenzene	10.47	95	460953	28.48	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 94.93%			
Target Compounds						Qvalue
8) acrolein	4.94	56	916	0.44	ppb #	62
10) acetone	5.32	58	24042	10.38	ppb #	59
19) 2-butanone	7.26	72	2943	1.55	ppb	97
21) chloroform	6.95	83	70109	3.87	ppb	95
44) tetrachloroethene	9.20	166	28810	2.43	ppb	96
46) 2-hexanone	9.69	58	1262	0.26	ppb #	1

10/23/15

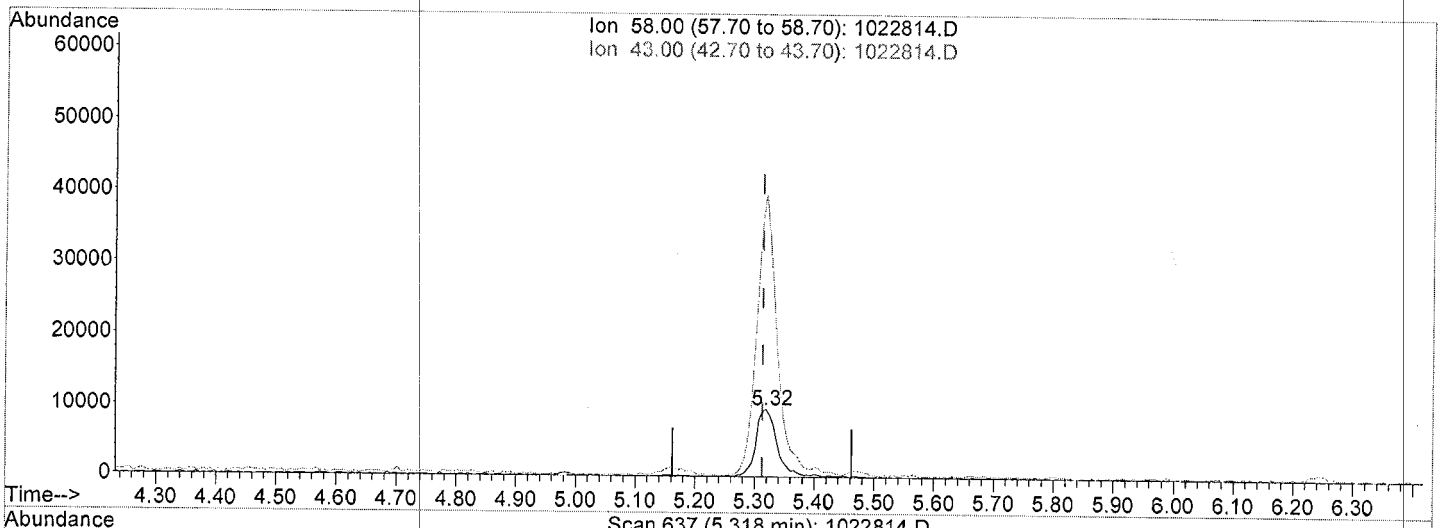
(#) = qualifier out of range (m) = manual integration (+) = signals summed

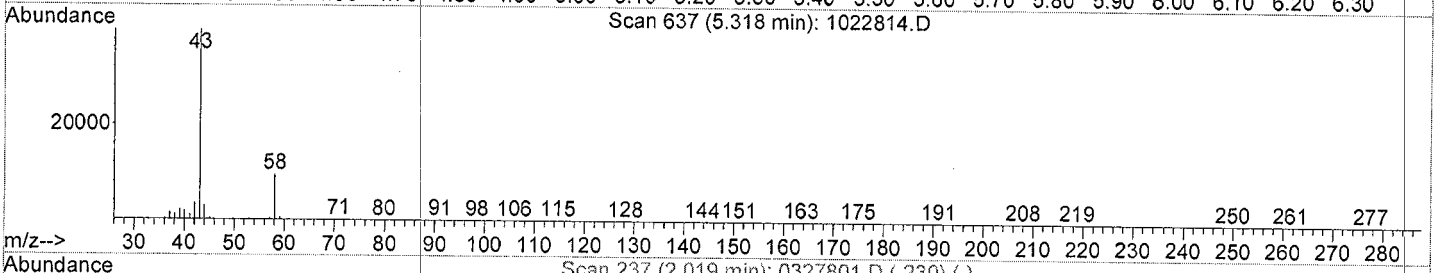
Quantitation Report (Qedit)

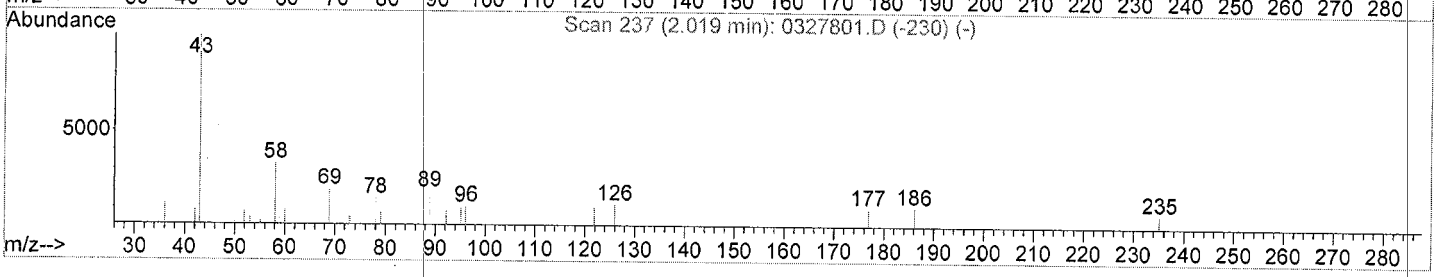
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D Vial: 14
Acq On : 22 Oct 2015 7:11 pm Operator: JHL
Sample : 1928_6 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:48 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022814.D

(10) acetone (T)

5.32min (+0.006) 10.38ppb

response 24042

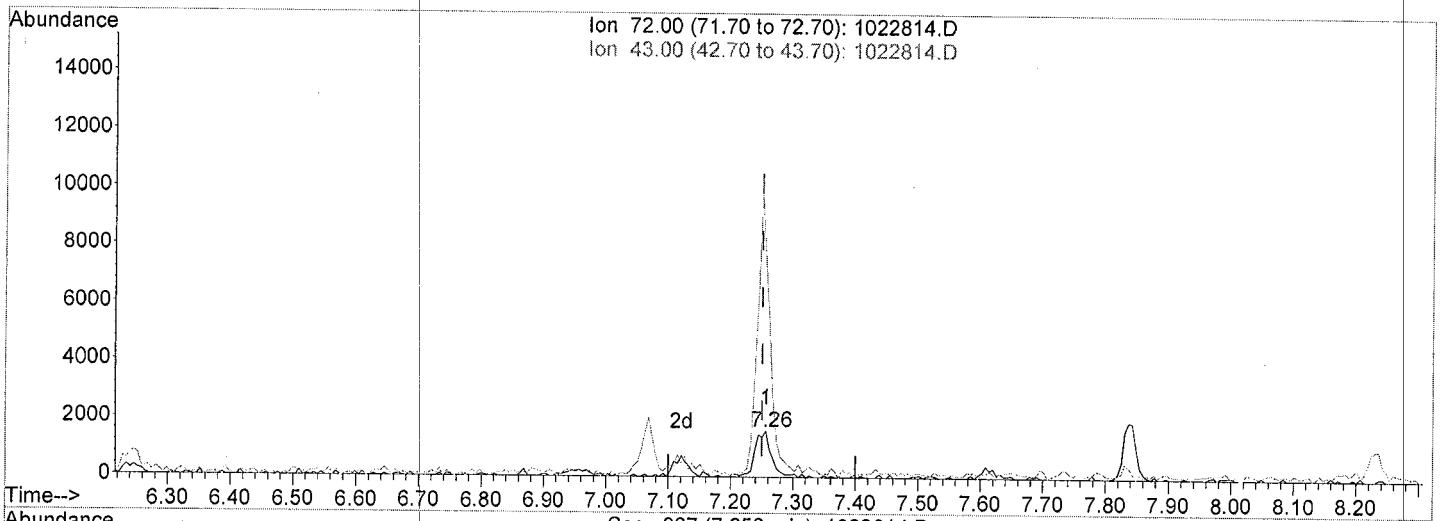
Ion	Exp%	Act%
58.00	100	100
43.00	329.30	414.93#
0.00	0.00	0.00
0.00	0.00	0.00

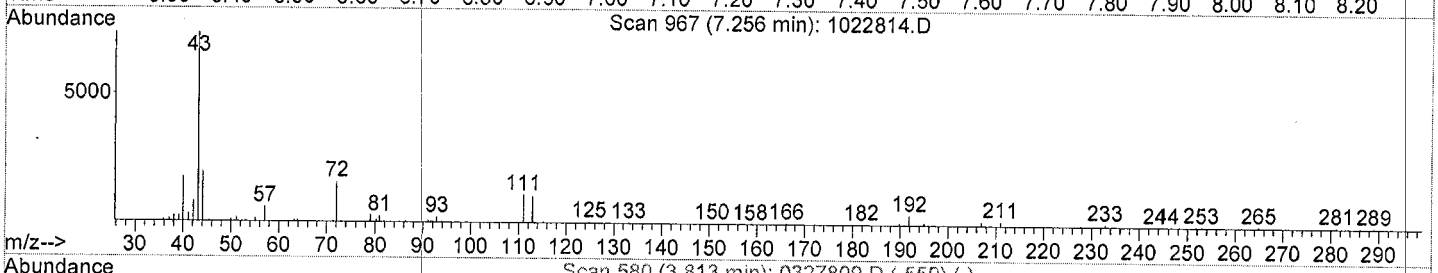
Quantitation Report (Qedit)

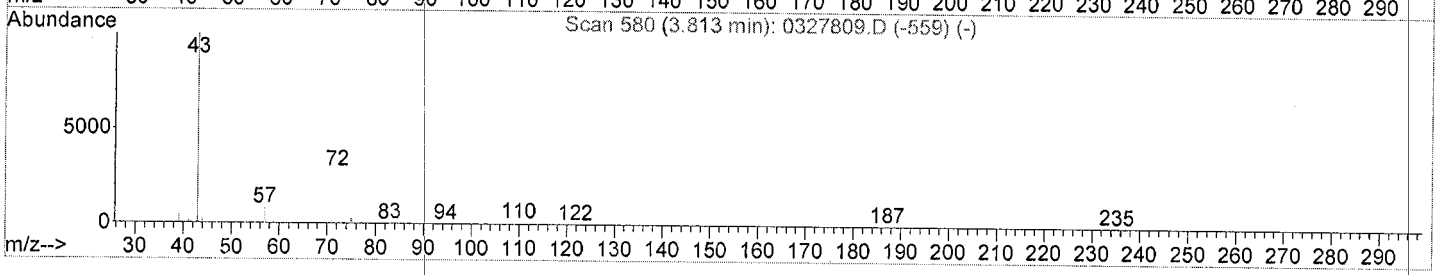
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D Vial: 14
Acq On : 22 Oct 2015 7:11 pm Operator: JHL
Sample : 1928_6 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:48 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022814.D

(19) 2-butanone (T)

7.26min (+0.006) 1.55ppb

response 2943

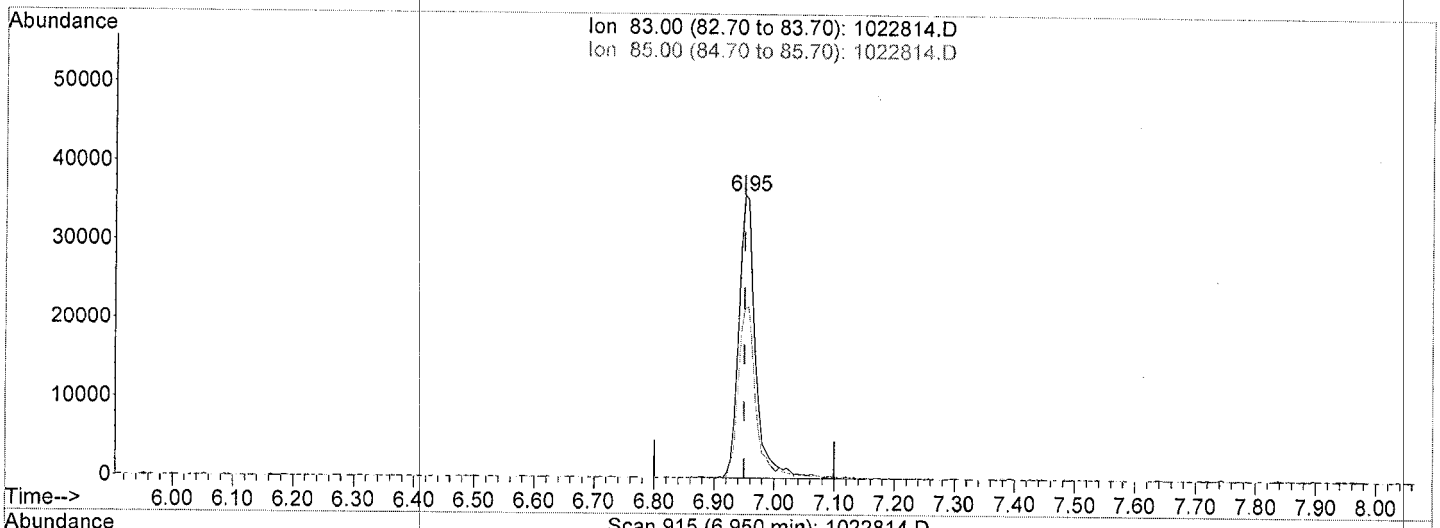
Ion	Exp%	Act%
72.00	100	100
43.00	471.00	463.44
0.00	0.00	0.00
0.00	0.00	0.00

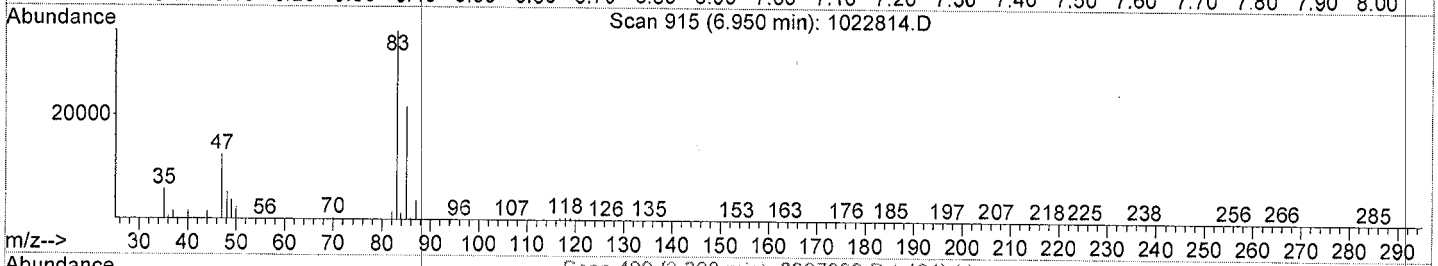
Quantitation Report (Qedit)

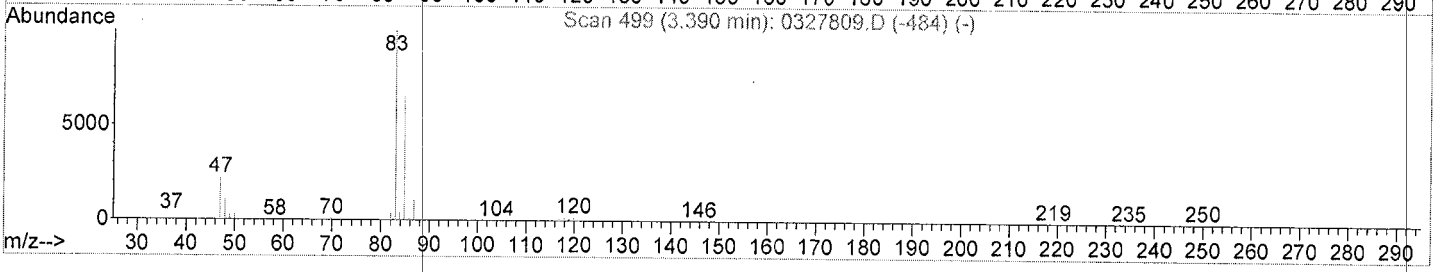
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D Vial: 14
Acq On : 22 Oct 2015 7:11 pm Operator: JHL
Sample : 1928_6 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:48 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022814.D

(21) chloroform (TC)

6.95min (-0.000) 3.87ppb

response 70109

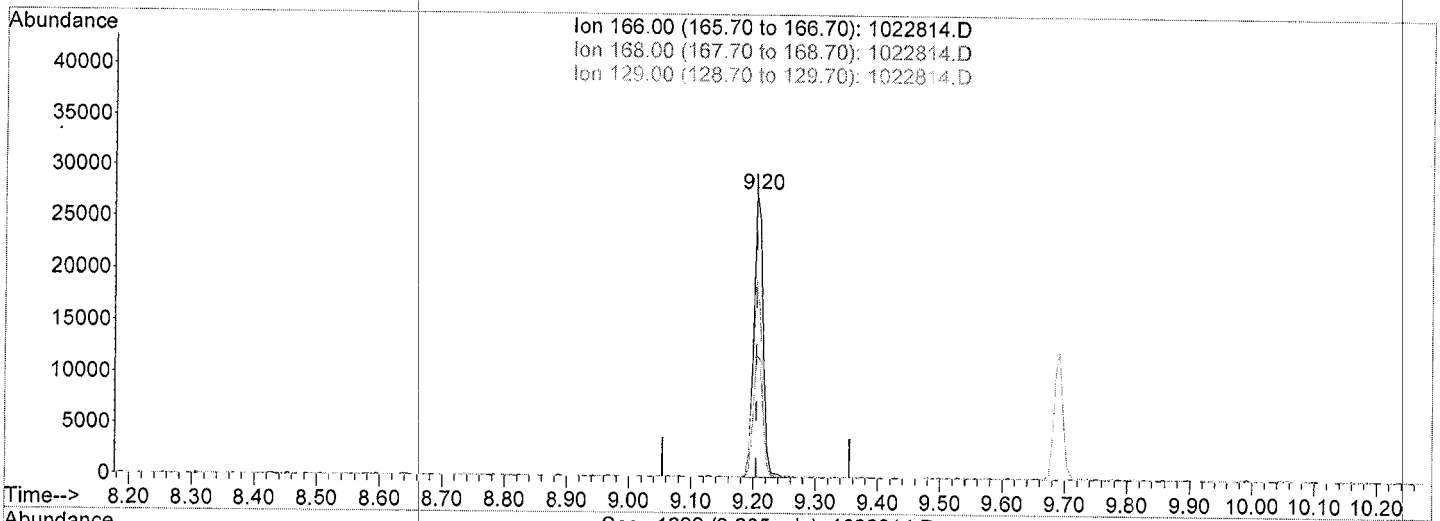
Ion	Exp%	Act%
83.00	100	100
85.00	63.90	60.07
0.00	0.00	0.00
0.00	0.00	0.00

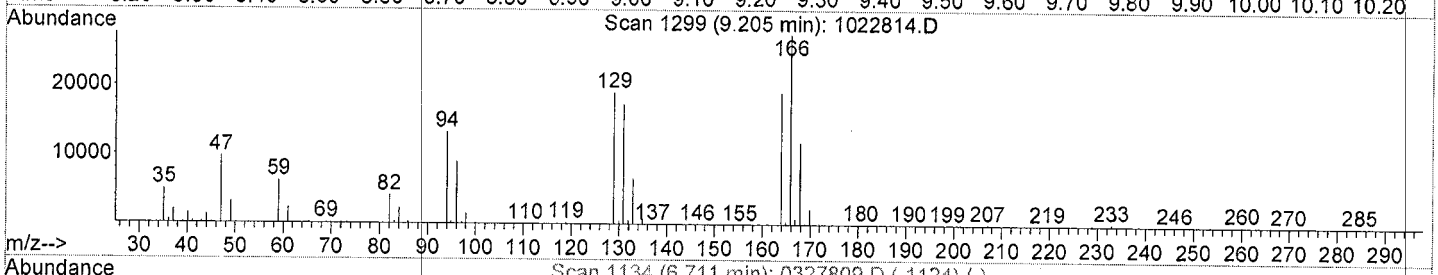
Quantitation Report (Qedit)

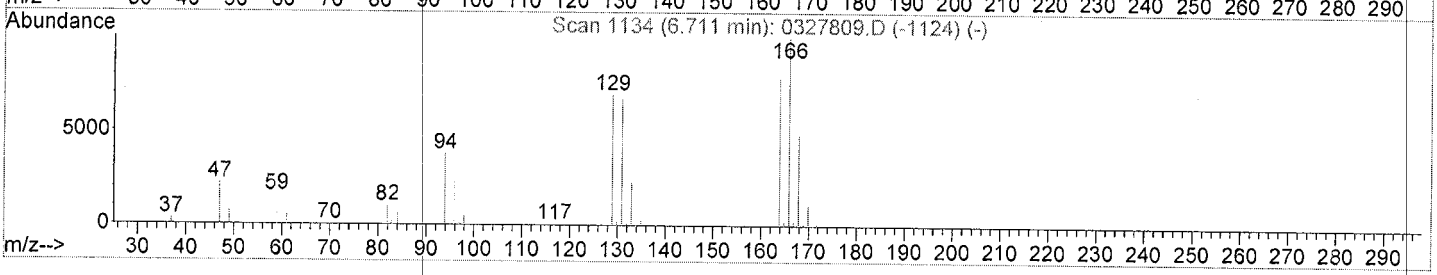
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D Vial: 14
Acq On : 22 Oct 2015 7:11 pm Operator: JHL
Sample : 1928_6 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:48 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022814.D

(44) tetrachloroethene (T)

9.20min (0.000) 2.43ppb

response 28810

Ion	Exp%	Act%
166.00	100	100
168.00	46.50	43.21
129.00	72.60	69.37
0.00	0.00	0.00

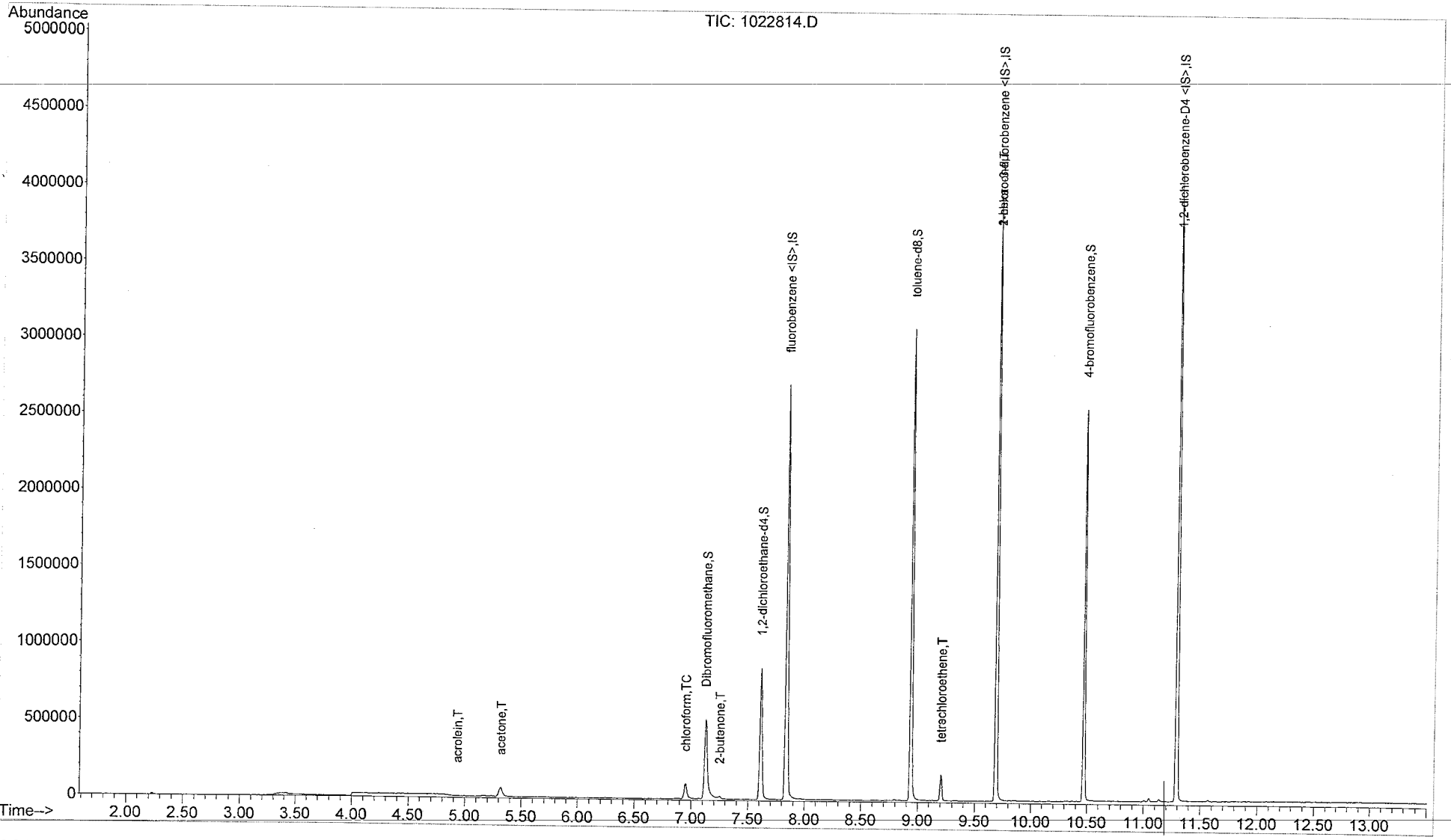
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D
Acq On : 22 Oct 2015 7:11 pm
Sample : 1928_6 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015

Revised Report
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



1022814.D VMS3752.M Fri Oct 23 13:28:12 2015

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D Vial: 14
Acq On : 22 Oct 2015 7:11 pm Operator: JHL
Sample : 1928_6 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58:51 2015 Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	320362	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	561515	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	640709	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	431099	34.26	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 114.20%			
11) toluene-d8	8.94	98	1091772	25.68	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 85.60%			
14) 4-bromofluorobenzene	10.47	95	460953	26.51	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 88.37%			
Target Compounds						Qvalue
2) Acetonitrile	5.88	41	786	~~0.64~~	ppb #	82
5) Propionitrile	7.61	54	769	~~0.59~~	ppb #	61
6) Methacrylonitrile	7.61	41	810	~~0.16~~	ppb #	1
7) Isobutyl alcohol	7.73	43	537	~~13.86~~	ppb #	20
10) Methyl methacrylate	8.45	41	660	~~0.11~~	ppb #	20

✓ ✓ 10/29/15

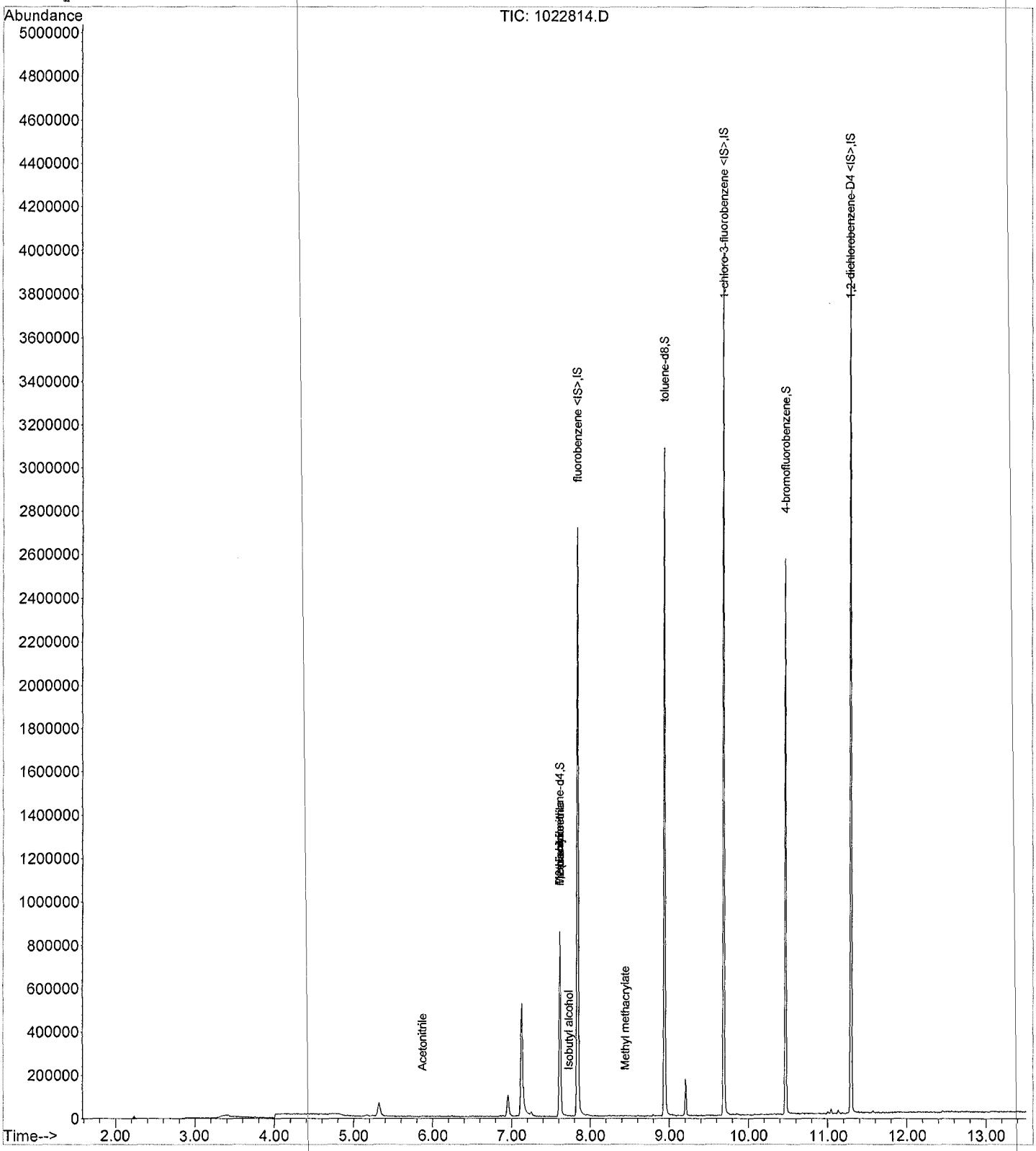
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022814.D Vial: 14
Acq On : 22 Oct 2015 7:11 pm Operator: JHL
Sample : 1928_6 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58 2015 Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



Results of **DUP-1-101915**

Client Sample ID: **DUP-1-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928007-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 00:00
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	U	0.101	1.00	ug/L	1	10/22/2015 19:36
1,1,1-Trichloroethane	ND	U	0.106	1.00	ug/L	1	10/22/2015 19:36
1,1,2,2-Tetrachloroethane	ND	U	0.137	1.00	ug/L	1	10/22/2015 19:36
1,1,2-Trichloroethane	ND	U	0.164	1.00	ug/L	1	10/22/2015 19:36
1,1-Dichloroethane	ND	U	0.0890	1.00	ug/L	1	10/22/2015 19:36
1,1-Dichloroethene	ND	U	0.129	1.00	ug/L	1	10/22/2015 19:36
1,2,3-Trichloropropane	ND	U	0.262	1.00	ug/L	1	10/22/2015 19:36
1,2-Dibromo-3-chloropropane	ND	U	0.643	5.00	ug/L	1	10/22/2015 19:36
1,2-Dibromoethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 19:36
1,2-Dichloroethane	ND	U	0.0910	1.00	ug/L	1	10/22/2015 19:36
1,2-Dichloropropane	ND	U	0.142	1.00	ug/L	1	10/22/2015 19:36
1,4 Dioxane	ND	U	14.4	100	ug/L	1	10/22/2015 19:36
2-Butanone	**1.04**	J	0.729	25.0	ug/L	1	10/22/2015 19:36
2-Chloroethylvinyl ether	ND	U	3.94	25.0	ug/L	1	10/22/2015 19:36
2-Hexanone	ND	U	0.408	5.00	ug/L	1	10/22/2015 19:36
4-Methyl-2-pentanone	ND	U	0.520	5.00	ug/L	1	10/22/2015 19:36
Acetone	**16.6**	J	1.50	25.0	ug/L	1	10/22/2015 19:36
Acetonitrile	ND	U	11.5	20.0	ug/L	1	10/22/2015 19:36
Acrolein	ND	U	6.18	25.0	ug/L	1	10/22/2015 19:36
Acrylonitrile	ND	U	5.36	25.0	ug/L	1	10/22/2015 19:36
Allyl chloride	ND	U	0.216	1.00	ug/L	1	10/22/2015 19:36
Benzene	ND	U	0.136	1.00	ug/L	1	10/22/2015 19:36
Bromodichloromethane	ND	U	0.103	1.00	ug/L	1	10/22/2015 19:36
Bromoform	ND	U	0.124	1.00	ug/L	1	10/22/2015 19:36
Bromomethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 19:36
Carbon disulfide	ND	U	0.103	1.00	ug/L	1	10/22/2015 19:36
Carbon tetrachloride	ND	U	0.165	1.00	ug/L	1	10/22/2015 19:36
Chlorobenzene	ND	U	0.108	1.00	ug/L	1	10/22/2015 19:36
Chloroethane	ND	U	0.146	1.00	ug/L	1	10/22/2015 19:36
Chloroform	**0.520**	J	0.120	1.00	ug/L	1	10/22/2015 19:36
Chloromethane	ND	U	0.157	1.00	ug/L	1	10/22/2015 19:36
Chloroprene	ND	U	0.162	1.00	ug/L	1	10/22/2015 19:36
Dibromochloromethane	ND	U	0.173	1.00	ug/L	1	10/22/2015 19:36
Dibromomethane	ND	U	0.0710	1.00	ug/L	1	10/22/2015 19:36
Dichlorodifluoromethane	ND	U	0.155	5.00	ug/L	1	10/22/2015 19:36
cis-1,3-Dichloropropene	ND	U	0.117	1.00	ug/L	1	10/22/2015 19:36
trans-1,3-Dichloropropene	ND	U	0.126	1.00	ug/L	1	10/22/2015 19:36
Ethyl Benzene	ND	U	0.224	1.00	ug/L	1	10/22/2015 19:36
Ethyl methacrylate	ND	U	0.127	1.00	ug/L	1	10/22/2015 19:36
Isobutyl alcohol	ND	U	6.07	50.0	ug/L	1	10/22/2015 19:36
Methyl iodide	ND	U	0.0540	1.00	ug/L	1	10/22/2015 19:36
Methyl methacrylate	ND	U	0.0985	1.00	ug/L	1	10/22/2015 19:36

Results of **DUP-1-101915**

Client Sample ID: **DUP-1-101915**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928007-A
Lab Project ID: 31501928

Collection Date: 10/19/2015 00:00
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Methylacrylonitrile	ND	U	1.42	10.0	ug/L	1	10/22/2015 19:36
Methylene chloride	ND	U	0.140	5.00	ug/L	1	10/22/2015 19:36
Propionitrile	ND	U	2.22	20.0	ug/L	1	10/22/2015 19:36
Styrene	ND	U	0.224	1.00	ug/L	1	10/22/2015 19:36
Tetrachloroethene	ND	U	0.189	1.00	ug/L	1	10/22/2015 19:36
Toluene	ND	U	0.149	1.00	ug/L	1	10/22/2015 19:36
Trichloroethene	ND	U	0.110	1.00	ug/L	1	10/22/2015 19:36
Trichlorofluoromethane	ND	U	0.142	1.00	ug/L	1	10/22/2015 19:36
Vinyl acetate	ND	U	0.364	2.00	ug/L	1	10/22/2015 19:36
Vinyl chloride	ND	U	0.149	1.00	ug/L	1	10/22/2015 19:36
Xylene (total)	ND	U	0.298	2.00	ug/L	1	10/22/2015 19:36
trans-1,2-Dichloroethene	ND	U	0.101	1.00	ug/L	1	10/22/2015 19:36
trans-1,4-Dichloro-2-butene	ND	U	1.15	5.00	ug/L	1	10/22/2015 19:36
Surrogates							
4-Bromofluorobenzene	99.0			62.0-132	%	1	10/22/2015 19:36
Dibromofluoromethane	101			58.0-133	%	1	10/22/2015 19:36
Toluene d8	91.0			65.0-127	%	1	10/22/2015 19:36

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
Prep Initial Wt./Vol.: **40 mL**
Prep Extract Vol: **40 mL**

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022815.D Vial: 15
Acq On : 22 Oct 2015 7:36 pm Operator: JHL
Sample : 1928_7 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:13 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	327566	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	565126	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	687407	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	296475	30.36	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 101.20%			
26) 1,2-dichloroethane-d4	7.61	65	461672	35.35	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 117.83%			
36) toluene-d8	8.94	98	1126509	27.27	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 90.90%			
52) 4-bromofluorobenzene	10.47	95	484540	29.74	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.13%			
Target Compounds						Qvalue
10) acetone	5.32	58	39381	16.63	ppb	84
19) 2-butanone	7.25	72	2026	1.04	ppb	67
21) chloroform	6.95	83	9568	0.52	ppb	97
46) 2-hexanone	9.69	58	1000	0.21	ppb #	1

✓ 10/28/15 ✓

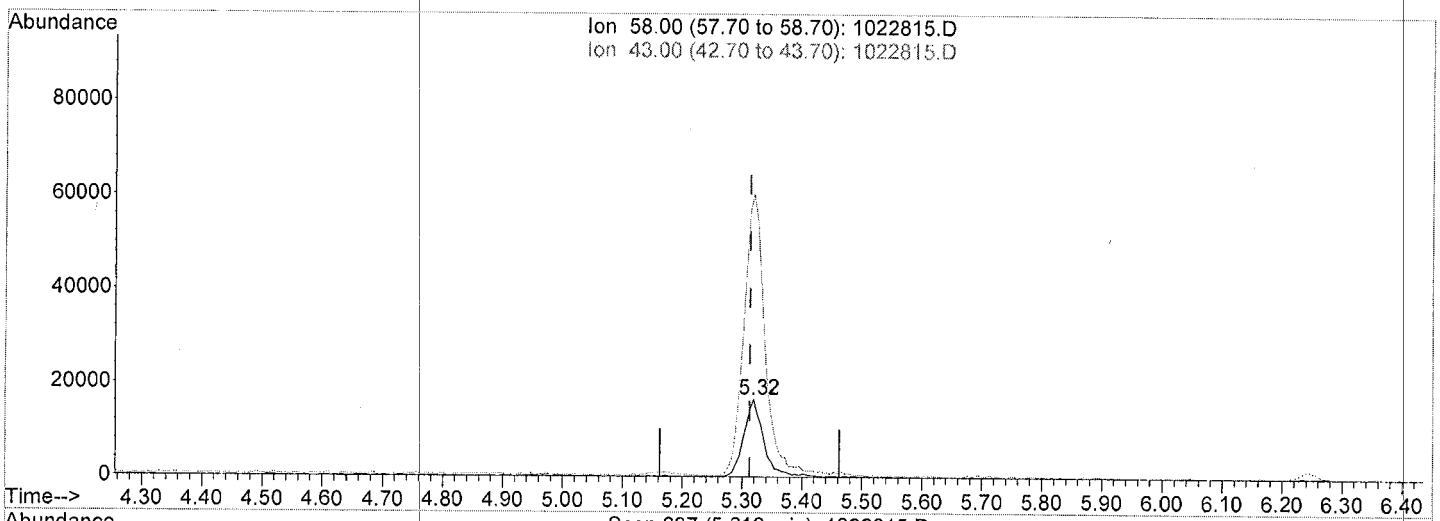
(#) = qualifier out of range (m) = manual integration (+) = signals summed
1022815.D VMS3752.M Fri Oct 23 13:28:13 2015 Page 1

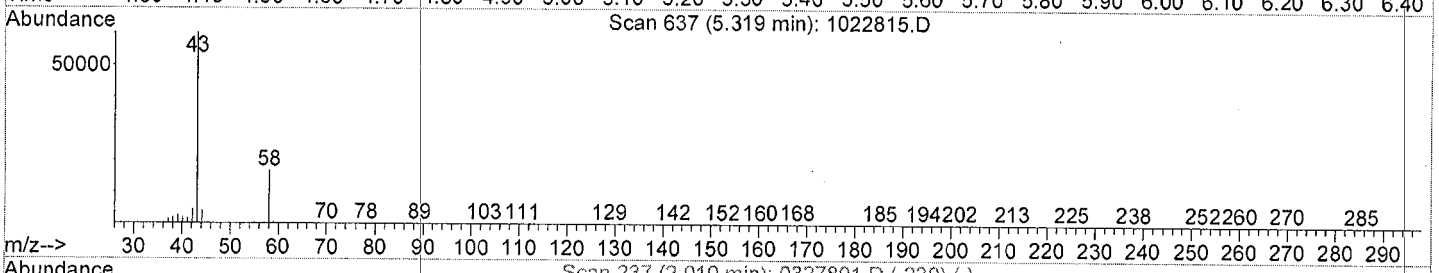
Quantitation Report (Qedit)

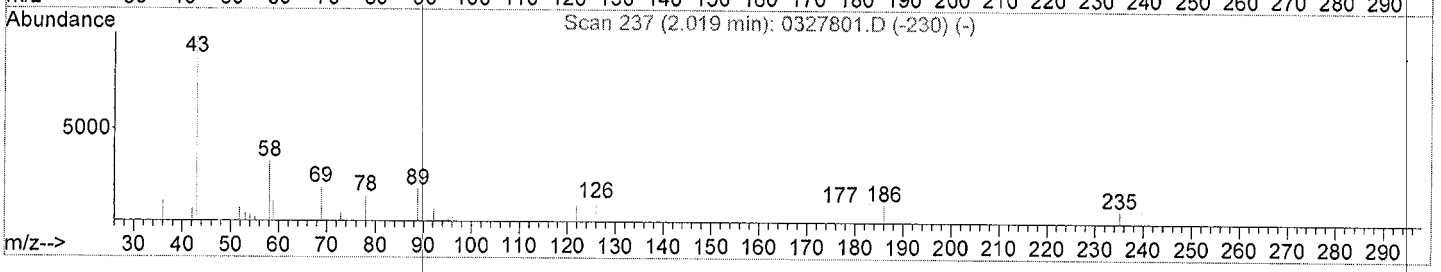
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022815.D Vial: 15
Acq On : 22 Oct 2015 7:36 pm Operator: JHL
Sample : 1928_7 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022815.D

(10) acetone (T)

5.32min (+0.006) 16.63ppb

response 39381

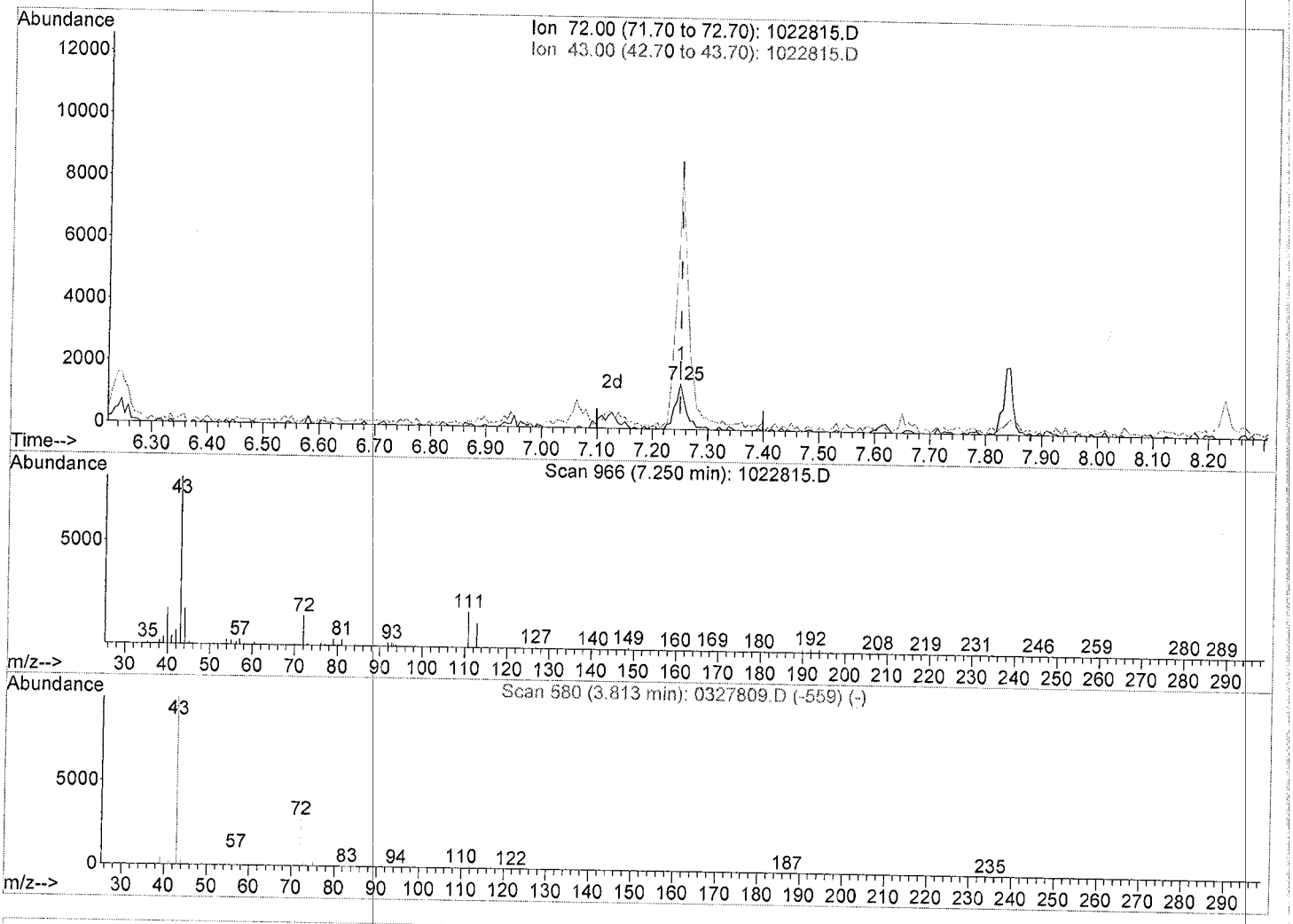
Ion	Exp%	Act%
58.00	100	100
43.00	329.30	361.88
0.00	0.00	0.00
0.00	0.00	0.00

Quantitation Report (Qedit)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022815.D Vial: 15
Acq On : 22 Oct 2015 7:36 pm Operator: JHL
Sample : 1928_7 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration



TIC: 1022815.D

(19) 2-butanone (T)

7.25min (+0.000) 1.04ppb

response 2026

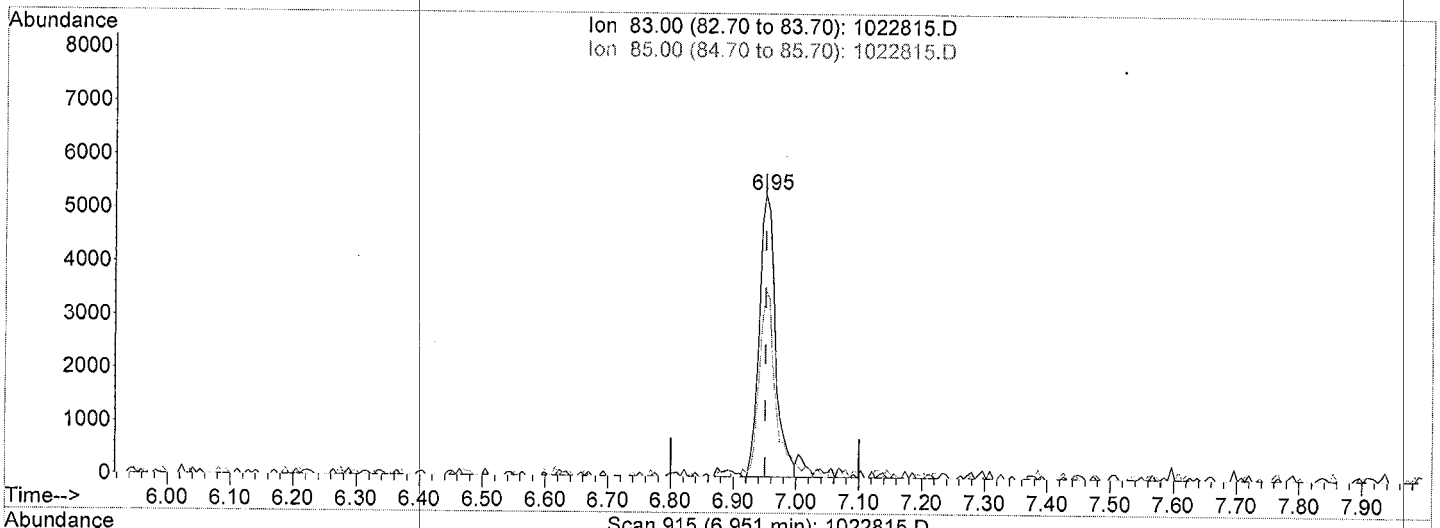
Ion	Exp%	Act%
72.00	100	100
43.00	471.00	558.06
0.00	0.00	0.00
0.00	0.00	0.00

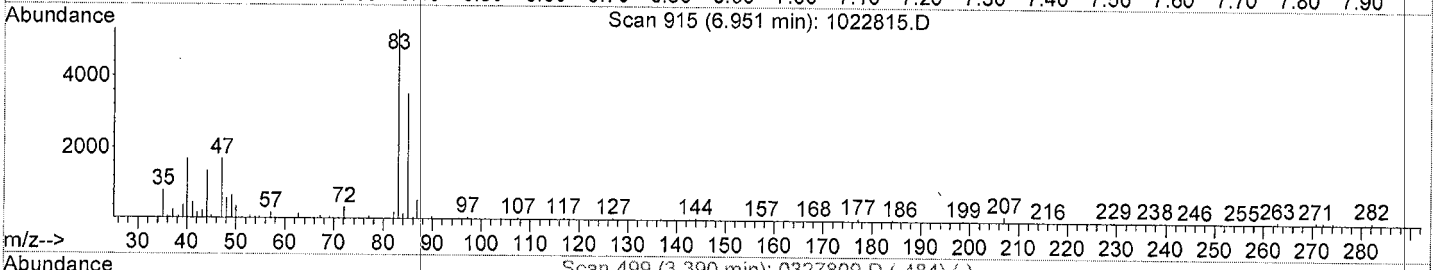
Quantitation Report (Qedit)

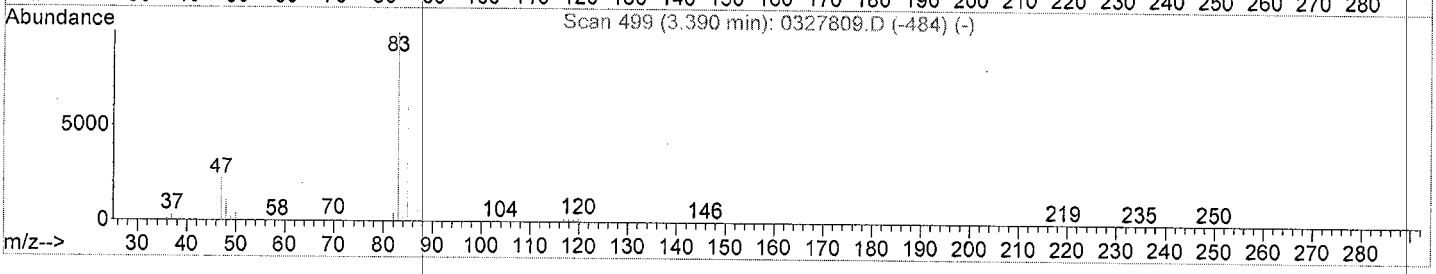
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022815.D Vial: 15
Acq On : 22 Oct 2015 7:36 pm Operator: JHL
Sample : 1928_7 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015 Quant Results File: temp.res

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration







TIC: 1022815.D

(21) chloroform (TC)

6.95min (+0.000) 0.52ppb

response 9568

Ion	Exp%	Act%
83.00	100	100
85.00	63.90	66.27
0.00	0.00	0.00
0.00	0.00	0.00

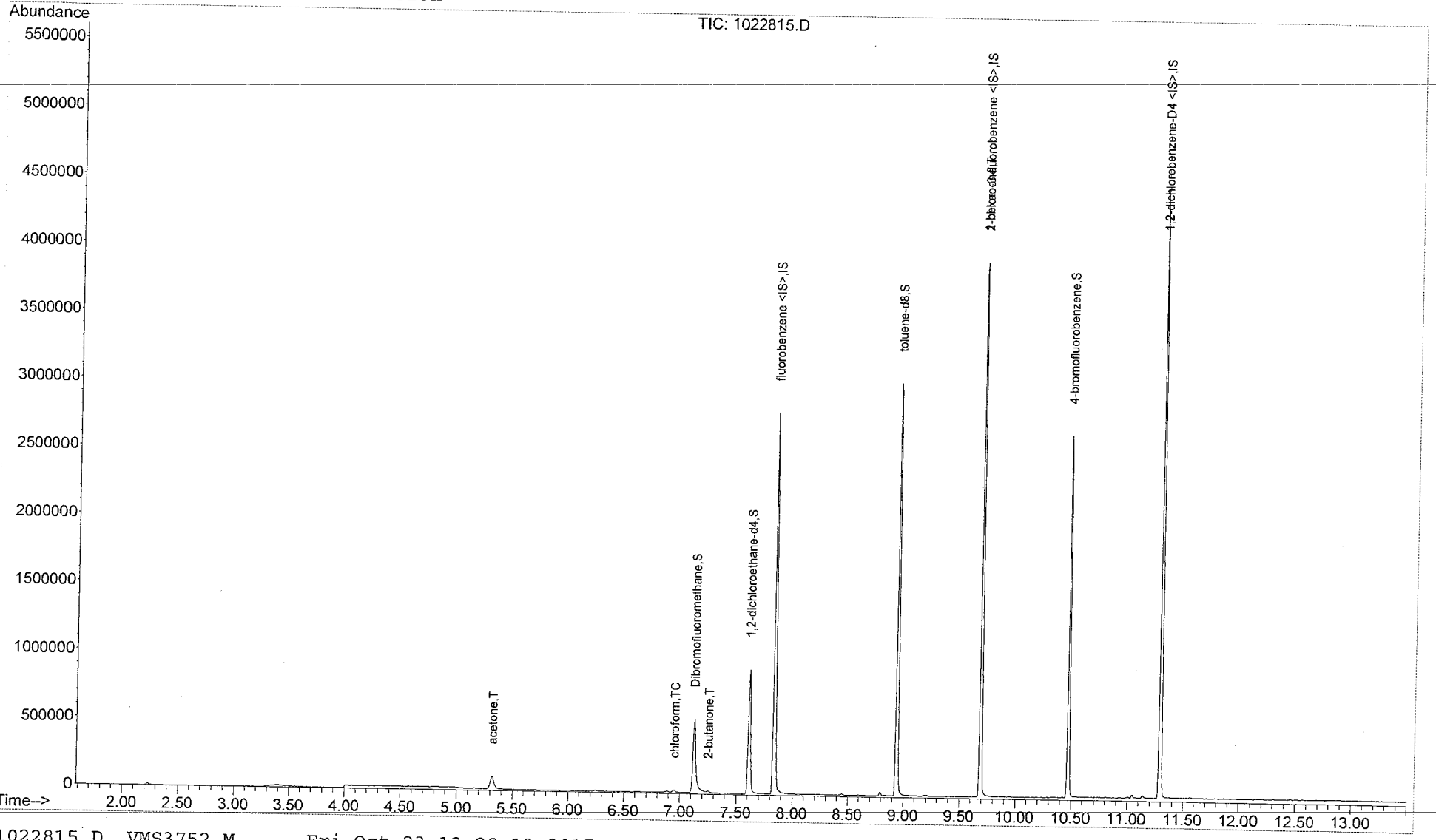
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022815.D
Acq On : 22 Oct 2015 7:36 pm
Sample : 1928_7 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015

Revised Report
Version: 15
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



1022815.D VMS3752.M Fri Oct 23 13:28:13 2015

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022815.D Vial: 15
Acq On : 22 Oct 2015 7:36 pm Operator: JHL
Sample : 1928_7 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58:52 2015 Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	327566	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	565126	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	687407	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	461672	35.88	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 119.60%			
11) toluene-d8	8.94	98	1126509	25.91	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 86.37%			
14) 4-bromofluorobenzene	10.47	95	484540	27.69	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 92.30%			
Target Compounds						Qvalue
2) Acetonitrile	5.96	41	342	~~0.27~~	ppb #	1
5) Propionitrile	7.61	54	755	~~0.57~~	ppb #	38
7) Isobutyl alcohol	7.65	43	770	~~14.59~~	ppb #	78
10) Methyl methacrylate	8.45	41	1409	~~0.22~~	ppb #	20
15) Pentachloroethane	10.76	167	331	~~0.84~~	ppb #	11

10/29/15

(#) = qualifier out of range (m) = manual integration (+) = signals summed
1022815.D VMS3715.M Thu Oct 29 11:58:52 2015 Page 1

Quantitation Report (Not Reviewed)

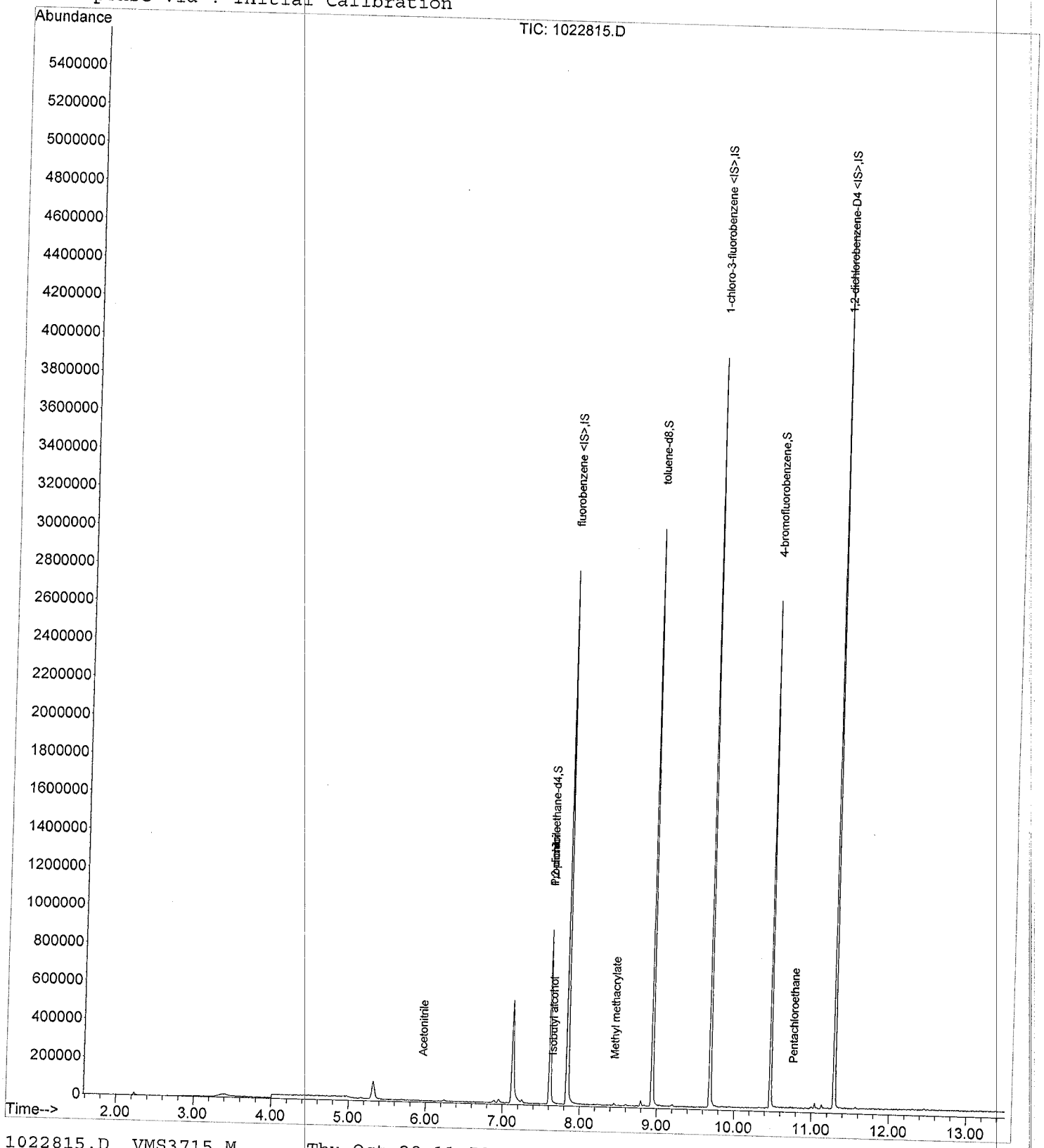
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022815.D
Acq On : 22 Oct 2015 7:36 pm
Sample : 1928_7 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58 2015

Vial: 15
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



Results of **TB**

Client Sample ID: **TB**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928008-A
Lab Project ID: 31501928

Collection Date:
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
1,1,1,2-Tetrachloroethane	ND	U	0.101	1.00	ug/L	1	10/22/2015 16:38
1,1,1-Trichloroethane	ND	U	0.106	1.00	ug/L	1	10/22/2015 16:38
1,1,2,2-Tetrachloroethane	ND	U	0.137	1.00	ug/L	1	10/22/2015 16:38
1,1,2-Trichloroethane	ND	U	0.164	1.00	ug/L	1	10/22/2015 16:38
1,1-Dichloroethane	ND	U	0.0890	1.00	ug/L	1	10/22/2015 16:38
1,1-Dichloroethene	ND	U	0.129	1.00	ug/L	1	10/22/2015 16:38
1,2,3-Trichloropropane	ND	U	0.262	1.00	ug/L	1	10/22/2015 16:38
1,2-Dibromo-3-chloropropane	ND	U	0.643	5.00	ug/L	1	10/22/2015 16:38
1,2-Dibromoethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 16:38
1,2-Dichloroethane	ND	U	0.0910	1.00	ug/L	1	10/22/2015 16:38
1,2-Dichloropropane	ND	U	0.142	1.00	ug/L	1	10/22/2015 16:38
1,4 Dioxane	ND	U	14.4	100	ug/L	1	10/22/2015 16:38
2-Butanone	ND	U	0.729	25.0	ug/L	1	10/22/2015 16:38
2-Chloroethylvinyl ether	ND	U	3.94	25.0	ug/L	1	10/22/2015 16:38
2-Hexanone	ND	U	0.408	5.00	ug/L	1	10/22/2015 16:38
4-Methyl-2-pentanone	ND	U	0.520	5.00	ug/L	1	10/22/2015 16:38
Acetone	ND	U	1.50	25.0	ug/L	1	10/22/2015 16:38
Acetonitrile	ND	U	11.5	20.0	ug/L	1	10/22/2015 16:38
Acrolein	ND	U	6.18	25.0	ug/L	1	10/22/2015 16:38
Acrylonitrile	ND	U	5.36	25.0	ug/L	1	10/22/2015 16:38
Allyl chloride	ND	U	0.216	1.00	ug/L	1	10/22/2015 16:38
Benzene	ND	U	0.136	1.00	ug/L	1	10/22/2015 16:38
Bromodichloromethane	ND	U	0.103	1.00	ug/L	1	10/22/2015 16:38
Bromoform	ND	U	0.124	1.00	ug/L	1	10/22/2015 16:38
Bromomethane	ND	U	0.188	1.00	ug/L	1	10/22/2015 16:38
Carbon disulfide	ND	U	0.103	1.00	ug/L	1	10/22/2015 16:38
Carbon tetrachloride	ND	U	0.165	1.00	ug/L	1	10/22/2015 16:38
Chlorobenzene	ND	U	0.108	1.00	ug/L	1	10/22/2015 16:38
Chloroethane	ND	U	0.146	1.00	ug/L	1	10/22/2015 16:38
Chloroform	ND	U	0.120	1.00	ug/L	1	10/22/2015 16:38
Chloromethane	ND	U	0.157	1.00	ug/L	1	10/22/2015 16:38
Chloroprene	ND	U	0.162	1.00	ug/L	1	10/22/2015 16:38
Dibromochloromethane	ND	U	0.173	1.00	ug/L	1	10/22/2015 16:38
Dibromomethane	ND	U	0.0710	1.00	ug/L	1	10/22/2015 16:38
Dichlorodifluoromethane	ND	U	0.155	5.00	ug/L	1	10/22/2015 16:38
cis-1,3-Dichloropropene	ND	U	0.117	1.00	ug/L	1	10/22/2015 16:38
trans-1,3-Dichloropropene	ND	U	0.126	1.00	ug/L	1	10/22/2015 16:38
Ethyl Benzene	ND	U	0.224	1.00	ug/L	1	10/22/2015 16:38
Ethyl methacrylate	ND	U	0.127	1.00	ug/L	1	10/22/2015 16:38
Isobutyl alcohol	ND	U	6.07	50.0	ug/L	1	10/22/2015 16:38
Methyl iodide	ND	U	0.0540	1.00	ug/L	1	10/22/2015 16:38
Methyl methacrylate	ND	U	0.0985	1.00	ug/L	1	10/22/2015 16:38

Results of **TB**

Client Sample ID: **TB**
Client Project ID: **GE Pittsfield**
Lab Sample ID: 31501928008-A
Lab Project ID: 31501928

Collection Date:
Received Date: 10/21/2015 10:00
Matrix: Water

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF	Date Analyzed
Methylacrylonitrile	ND	U	1.42	10.0	ug/L	1	10/22/2015 16:38
Methylene chloride	ND	U	0.140	5.00	ug/L	1	10/22/2015 16:38
Propionitrile	ND	U	2.22	20.0	ug/L	1	10/22/2015 16:38
Styrene	ND	U	0.224	1.00	ug/L	1	10/22/2015 16:38
Tetrachloroethene	ND	U	0.189	1.00	ug/L	1	10/22/2015 16:38
Toluene	ND	U	0.149	1.00	ug/L	1	10/22/2015 16:38
Trichloroethene	ND	U	0.110	1.00	ug/L	1	10/22/2015 16:38
Trichlorofluoromethane	ND	U	0.142	1.00	ug/L	1	10/22/2015 16:38
Vinyl acetate	ND	U	0.364	2.00	ug/L	1	10/22/2015 16:38
Vinyl chloride	ND	U	0.149	1.00	ug/L	1	10/22/2015 16:38
Xylene (total)	ND	U	0.298	2.00	ug/L	1	10/22/2015 16:38
trans-1,2-Dichloroethene	ND	U	0.101	1.00	ug/L	1	10/22/2015 16:38
trans-1,4-Dichloro-2-butene	ND	U	1.15	5.00	ug/L	1	10/22/2015 16:38
Surrogates							
4-Bromofluorobenzene	99.0			62.0-132	%	1	10/22/2015 16:38
Dibromofluoromethane	98.0			58.0-133	%	1	10/22/2015 16:38
Toluene d8	90.0			65.0-127	%	1	10/22/2015 16:38

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
Prep Initial Wt./Vol.: **40 mL**
Prep Extract Vol: **40 mL**

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022808.D
Acq On : 22 Oct 2015 4:38 pm
Sample : 1928_8 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:06 2015

Vial: 8
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	337336	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	587567	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	700615	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	296962	29.53	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 98.43%			
26) 1,2-dichloroethane-d4	7.61	65	465618	34.62	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 115.40%			
36) toluene-d8	8.94	98	1154357	27.13	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 90.43%			
52) 4-bromofluorobenzene	10.47	95	504057	29.76	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.20%			
Target Compounds						Qvalue
8) acrolein	4.94	56	1323	~~0.60~~	~~ppb~~ #	82
10) acetone	5.32	58	763	~~0.31~~	~~ppb~~	71
46) 2-hexanone	9.69	58	1135	~~0.22~~	~~ppb~~ #	1

✓ ✓ KL 10/28/15

(#) = qualifier out of range (m) = manual integration (+) = signals summed
1022808.D VMS3752.M Fri Oct 23 13:28:06 2015

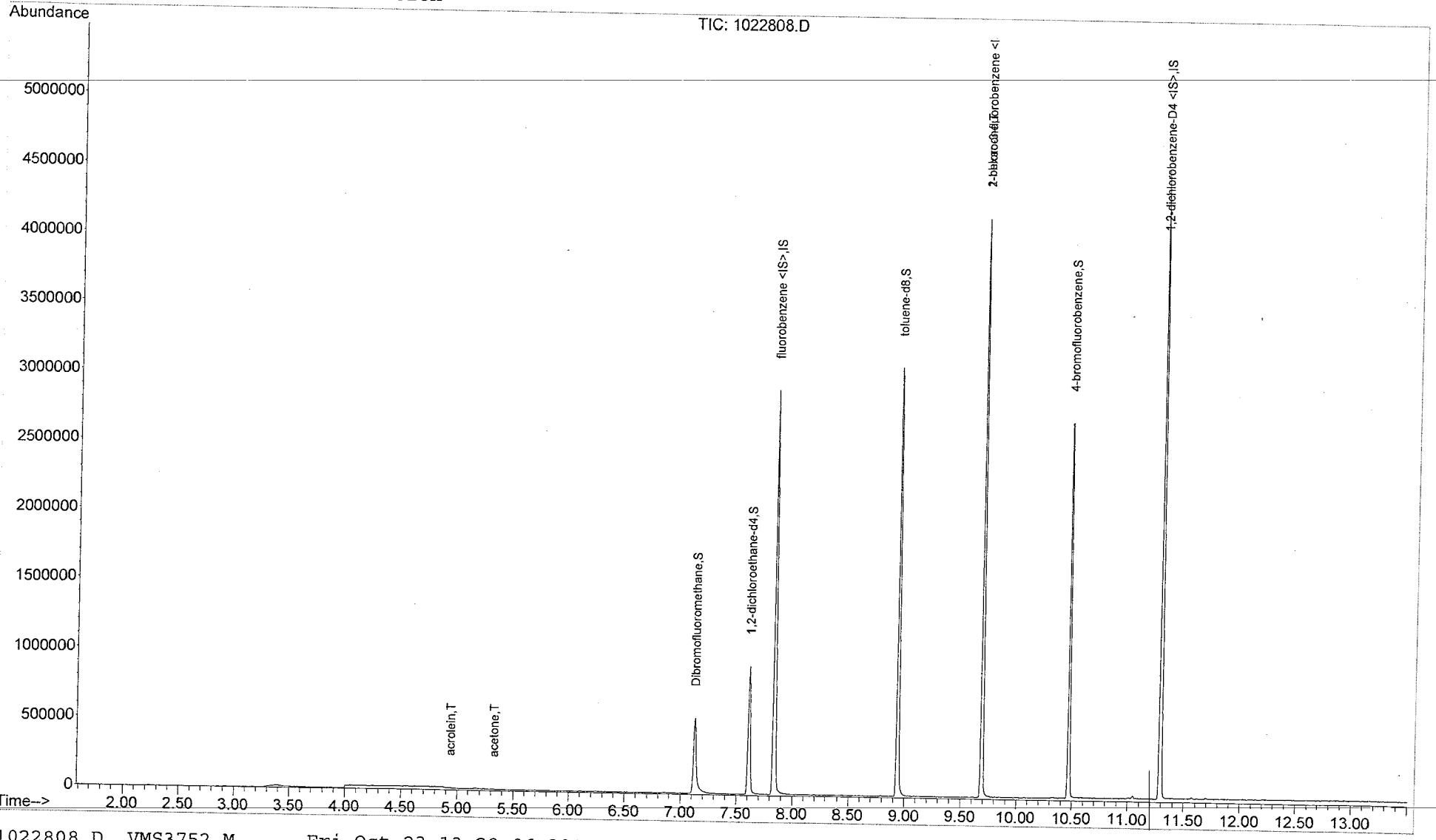
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022808.D
Acq On : 22 Oct 2015 4:38 pm
Sample : 1928_8 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015

Revised Report
Vial: 8
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



1022808.D VMS3752.M Fri Oct 23 13:28:06 2015

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022808.D
Acq On : 22 Oct 2015 4:38 pm
Sample : 1928_8 A
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58:45 2015

Vial: 8
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	337336	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	587567	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	700615	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	465618	35.14	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 117.13%			
11) toluene-d8	8.94	98	1154357	25.78	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 85.93%			
14) 4-bromofluorobenzene	10.47	95	504057	27.70	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 92.33%			
Target Compounds						Qvalue
5) Propionitrile	7.61	54	778	~~0.57~~	ppb #	61
6) Methacrylonitrile	7.61	41	474	~~0.09~~	ppb #	1
7) Isobutyl alcohol	7.65	43	392	~~13.30~~	ppb #	20
15) Pentachloroethane	10.61	167	321	~~0.78~~	ppb #	11

HL 10/29/15

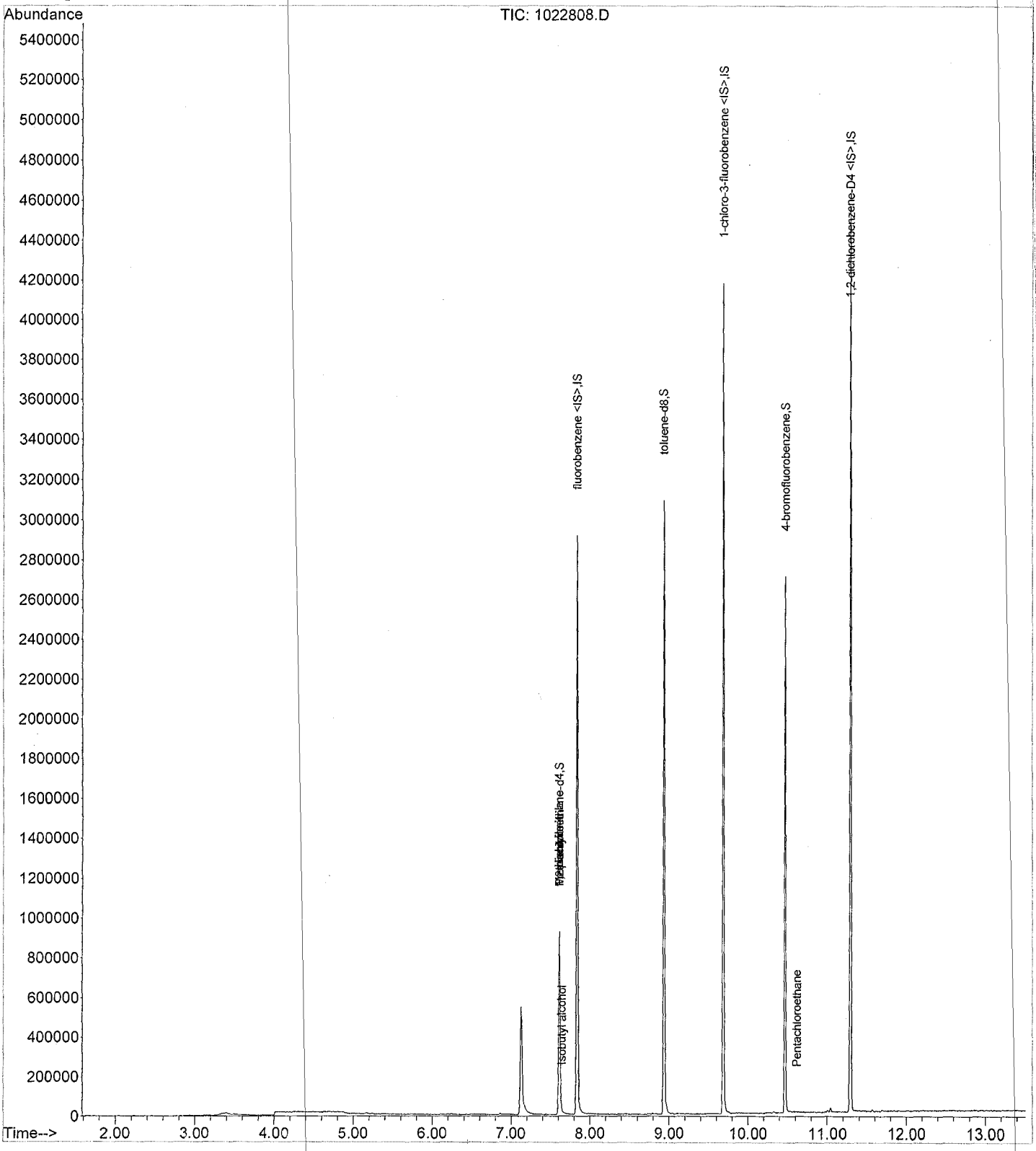
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022808.D Vial: 8
Acq On : 22 Oct 2015 4:38 pm Operator: JHL
Sample : 1928_8 A Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58 2015 Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



SW-846 8260B
QC, Blanks Data

Print Date: 11/09/2015

N.C. Certification # 481

Batch Summary

Analytical Method: SW-846 8260B

Prep Method: SW-846 5030B
Prep Batch: VXX6014
Prep Date: 10/29/2015 12:29

Client Sample ID	Lab Sample ID	Analysis Date	Analytical Batch	Instrument	Analyst
LCS for HBN 95090 [VXX/6014]	183489	10/22/2015 14:06	VMS3772	MSD8	JHL
LCSD for HBN 95090 [VXX/6014]	183490	10/22/2015 14:32	VMS3772	MSD8	JHL
MB for HBN 95090 [VXX/6014]	183491	10/22/2015 15:48	VMS3772	MSD8	JHL
ES2-02AR-101915 MS	31501926003	10/22/2015 21:44	VMS3772	MSD8	JHL
ES2-02AR-101915 MSD	31501926004	10/22/2015 22:10	VMS3772	MSD8	JHL
GMA4-7S-101915	31501928001	10/22/2015 18:20	VMS3772	MSD8	JHL
H78B-16-101915	31501928002	10/22/2015 20:02	VMS3772	MSD8	JHL
GMA4-8-101915	31501928003	10/22/2015 18:45	VMS3772	MSD8	JHL
GMA4-8-101915 MS	31501928004	10/22/2015 22:35	VMS3772	MSD8	JHL
GMA4-8-101915 MSD	31501928005	10/22/2015 23:01	VMS3772	MSD8	JHL
GMA4-9-101915	31501928006	10/22/2015 19:11	VMS3772	MSD8	JHL
DUP-1-101915	31501928007	10/22/2015 19:36	VMS3772	MSD8	JHL
TB	31501928008	10/22/2015 16:38	VMS3772	MSD8	JHL

Surrogate Summary Form 2

Analytical Method: SW-846 8260B
Work Order: 31501928
Matrix: Water

Analytical Batch: VMS3772

Results by **SW-846 8260B**

	12-DCE-D4	4-BFB	DBFM	TOL-D8
DUP-1-101915		99	101	91
ES2-02AR-101915 MS		98	103	94
ES2-02AR-101915 MSD		98	102	94
GMA4-7S-101915		96	102	89
GMA4-8-101915		96	101	89
GMA4-8-101915 MS		99	101	92
GMA4-8-101915 MSD		97	103	91
GMA4-9-101915		95	100	90
H78B-16-101915		97	101	90
LCS for HBN 95090 [VXX/6014]	116	100	101	96
LCSD for HBN 95090 [VXX/6014]	115	99	101	97
MB for HBN 95090 [VXX/6014]	117	99	101	89
TB		99	98	90

Control Limits

1,2-Dichloroethane-d4	12-DCE-D4	64.0-140
4-Bromofluorobenzene	4-BFB	62.0-132
Dibromofluoromethane	DBFM	58.0-133
Toluene d8	TOL-D8	65.0-127

Internal Standard/Retention Time Window Summary **Form 8**

Analytical Batch: VMS3772
Analyst: JHL
Analytical Date/Time: 10/22/2015 13:41
Instrument: MSD8
Filename: 1022802.D

SW-846 8260B

PARAMETER	RT	RT High	RT Low	Area	Area High	Area Low
1,2-Dichlorobenzene-d4	11.29	11.79	10.79	726474	1452948	363237
Fluorobenzene	7.84	8.34	7.34	313259	626518	156630
1-Chloro-3-fluorobenzene	9.69	10.19	9.19	592153	1184306	296077

	IS1		IS2		IS3	
CUSTOMER SAMPLE	RT	Area	RT	Area	RT	Area
LCS for HBN 95090 [VXX/6014]	7.84	336717	9.69	622732	11.29	761032
LCSD for HBN 95090 [VXX/6014]	7.84	307664	9.69	570510	11.29	701773
MB for HBN 95090 [VXX/6014]	7.84	300435	9.69	516488	11.29	614770
TB	7.84	337336	9.69	587567	11.29	700615
GMA4-7S-101915	7.84	290508	9.69	508506	11.29	607411
GMA4-8-101915	7.84	291723	9.69	502161	11.29	608472
GMA4-9-101915	7.84	320362	9.69	561515	11.29	640725
DUP-1-101915	7.84	327566	9.69	565126	11.29	687407
H78B-16-101915	7.84	292250	9.69	501378	11.29	599271
ES2-02AR-101915 MS	7.84	293100	9.69	551086	11.29	678775
ES2-02AR-101915 MSD	7.84	312667	9.69	578906	11.29	698463
GMA4-8-101915 MS	7.84	338394	9.69	626372	11.29	773160
GMA4-8-101915 MSD	7.84	306180	9.69	570679	11.29	695845

Internal Standard/Retention Time Window Summary **Form 8**

Analytical Batch: VMS3772
Analyst: JHL
Analytical Date/Time: 10/22/2015 14:57
Instrument: MSD8
Filename: 1022805.D

SW-846 8260B

PARAMETER	RT	RT High	RT Low	Area	Area High	Area Low
1,2-Dichlorobenzene-d4	11.29	11.79	10.79	637493	1274986	318747
Fluorobenzene	7.84	8.34	7.34	317468	634936	158734
1-Chloro-3-fluorobenzene	9.69	10.19	9.19	530759	1061518	265380

	IS1		IS2		IS3	
CUSTOMER SAMPLE	RT	Area	RT	Area	RT	Area
LCS for HBN 95090 [VXX/6014]	7.84	336717	9.69	622732	11.29	761032
LCSD for HBN 95090 [VXX/6014]	7.84	307664	9.69	570510	11.29	701773
MB for HBN 95090 [VXX/6014]	7.84	300435	9.69	516488	11.29	614770
TB	7.84	337336	9.69	587567	11.29	700615
GMA4-7S-101915	7.84	290508	9.69	508506	11.29	607411
GMA4-8-101915	7.84	291723	9.69	502161	11.29	608472
GMA4-9-101915	7.84	320362	9.69	561515	11.29	640725
DUP-1-101915	7.84	327566	9.69	565126	11.29	687407
H78B-16-101915	7.84	292250	9.69	501378	11.29	599271
ES2-02AR-101915 MS	7.84	293100	9.69	551086	11.29	678775
ES2-02AR-101915 MSD	7.84	312667	9.69	578906	11.29	698463
GMA4-8-101915 MS	7.84	338394	9.69	626372	11.29	773160
GMA4-8-101915 MSD	7.84	306180	9.69	570679	11.29	695845

GC/MS QA-QC Check Report

Tune File : C:\MSDCHEM\1\DATA\VMS3772\1022801.D Revised Report
Tune Time : 22 Oct 2015 1:15 pm

Daily Calibration File : C:\MSDCHEM\1\DATA\VMS3752\0923809.D

						360889	646301	823173
File	Sample	Surrogate Recovery %				Internal Standard Responses		
1022801.D	TUNE	102	114	91	98	297886	524539	619744
1022802.D	QCK010	102	113	97	99	313259	592153	726474
1022803.D	183489 L	101	116	96	100	336717	622732	761032
1022804.D	183490 L	101	115	97	99	307664	570510	701773
1022805.D	CCAPX9	97	115	89	98	317468	530759	637493
1022806.D	R	103	118	92	98	295394	516292	610615
1022807.D	183491 M	101	117	89	99	300435	516488	614770
1022808.D	1928_8	98	115	90	99	337336	587567	700615
1022809.D	1926_9	100	118	90	97	288723	497719	601284
1022810.D	1926_8	102	119	91	99	291757	507530	613800
1022811.D	1926_5	101	118	91	97	306468	534636	646908
1022812.D	1928_1	102	118	89	96	290508	508506	607411
1022813.D	1928_3	101	118	89	96	291723	502161	608472
1022814.D	1928_6	100	113	90	95	320362	561515	640725
1022815.D	1928_7	101	118	91	99	327566	565126	687407
1022816.D	1928_2 x	101	116	90	97	292250	501378	599271
1022817.D	1926_2 x	101	119	90	100	318848	555505	680928
1022818.D	1926_6 x	103	121	90	98	286256	497753	624437
1022819.D	1926_7 x	101	119	89	100	299625	518855	621885
1022820.D	1926_3 x	103	120	94	98	293100	551086	678775
1022821.D	1926_4 x	102	117	94	98	312667	578906	698463
1022822.D	1928_4	101	117	92	99	338394	626372	773160
1022823.D	1928_5	103	114	91	97	306180	570679	695845

t - fails 12hr time check * - fails criteria

Created: Tue Nov 10 15:47:42 2015 MSD8

BWS
11.10.15

Method Blank Summary **Form 4**

Blank ID: MB for HBN 95090 [VXX/6014]
Blank Lab ID: 183491
Prep Batch: VXX6014

Matrix: Water
Analysis Date/Time: 10/22/2015 15:48

Results by **SW-846 8260B**

Client Sample ID	Lab Sample ID	Filename	Date Analyzed	Analyst
LCS for HBN 95090 [VXX/6014]	183489	1022803.D	10/22/2015 14:06	JHL
LCSD for HBN 95090 [VXX/6014]	183490	1022804.D	10/22/2015 14:32	JHL
TB	31501928008	1022808.D	10/22/2015 16:38	JHL
GMA4-7S-101915	31501928001	1022812.D	10/22/2015 18:20	JHL
GMA4-8-101915	31501928003	1022813.D	10/22/2015 18:45	JHL
GMA4-9-101915	31501928006	1022814.D	10/22/2015 19:11	JHL
DUP-1-101915	31501928007	1022815.D	10/22/2015 19:36	JHL
H78B-16-101915	31501928002	1022816.D	10/22/2015 20:02	JHL
ES2-02AR-101915 MS	31501926003	1022820.D	10/22/2015 21:44	JHL
ES2-02AR-101915 MSD	31501926004	1022821.D	10/22/2015 22:10	JHL
GMA4-8-101915 MS	31501928004	1022822.D	10/22/2015 22:35	JHL
GMA4-8-101915 MSD	31501928005	1022823.D	10/22/2015 23:01	JHL

Method Blank

Blank ID: MB for HBN 95090 [VXX/6014] Matrix: Water
Blank Lab ID: 183491
QC for Samples:
31501928001, 31501928002, 31501928003, 31501928006, 31501928007, 31501928008

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF
Dichlorodifluoromethane	ND	U	0.155	5.00	ug/L	1
Chloromethane	ND	U	0.157	1.00	ug/L	1
Vinyl chloride	ND	U	0.149	1.00	ug/L	1
Bromomethane	ND	U	0.188	1.00	ug/L	1
Chloroethane	ND	U	0.146	1.00	ug/L	1
Trichlorofluoromethane	ND	U	0.142	1.00	ug/L	1
Acrolein	ND	U	6.18	25.0	ug/L	1
1,1-Dichloroethene	ND	U	0.129	1.00	ug/L	1
Acetone	ND	U	1.50	25.0	ug/L	1
Acetonitrile	ND	U	11.5	20.0	ug/L	1
Allyl chloride	ND	U	0.216	1.00	ug/L	1
Methylene chloride	ND	U	0.140	5.00	ug/L	1
trans-1,2-Dichloroethene	ND	U	0.101	1.00	ug/L	1
Acrylonitrile	ND	U	5.36	25.0	ug/L	1
1,1-Dichloroethane	ND	U	0.0890	1.00	ug/L	1
Chloroprene	ND	U	0.162	1.00	ug/L	1
2-Butanone	ND	U	0.729	25.0	ug/L	1
Propionitrile	ND	U	2.22	20.0	ug/L	1
Methylacrylonitrile	ND	U	1.42	10.0	ug/L	1
Chloroform	ND	U	0.120	1.00	ug/L	1
1,1,1-Trichloroethane	ND	U	0.106	1.00	ug/L	1
Carbon tetrachloride	ND	U	0.165	1.00	ug/L	1
Isobutyl alcohol	ND	U	6.07	50.0	ug/L	1
Benzene	ND	U	0.136	1.00	ug/L	1
1,2-Dichloroethane	ND	U	0.0910	1.00	ug/L	1
Trichloroethene	ND	U	0.110	1.00	ug/L	1
1,2-Dichloropropane	ND	U	0.142	1.00	ug/L	1
Dibromomethane	ND	U	0.0710	1.00	ug/L	1
Bromodichloromethane	ND	U	0.103	1.00	ug/L	1
Methyl methacrylate	ND	U	0.0985	1.00	ug/L	1
1,4 Dioxane	ND	U	14.4	100	ug/L	1
2-Chloroethylvinyl ether	ND	U	3.94	25.0	ug/L	1
cis-1,3-Dichloropropene	ND	U	0.117	1.00	ug/L	1
4-Methyl-2-pentanone	ND	U	0.520	5.00	ug/L	1
Toluene	ND	U	0.149	1.00	ug/L	1
Methyl iodide	ND	U	0.0540	1.00	ug/L	1
trans-1,3-Dichloropropene	ND	U	0.126	1.00	ug/L	1
Ethyl methacrylate	ND	U	0.127	1.00	ug/L	1
Vinyl acetate	ND	U	0.364	2.00	ug/L	1
Carbon disulfide	ND	U	0.103	1.00	ug/L	1
1,1,2-Trichloroethane	ND	U	0.164	1.00	ug/L	1

Method Blank

Blank ID: MB for HBN 95090 [VXX/6014]
Matrix: Water
Blank Lab ID: 183491
QC for Samples:
31501928001, 31501928002, 31501928003, 31501928006, 31501928007, 31501928008

Results by **SW-846 8260B**

Parameter	Result	Qual	DL	LOQ/CL	Units	DF
Tetrachloroethene	ND	U	0.189	1.00	ug/L	1
2-Hexanone	ND	U	0.408	5.00	ug/L	1
Dibromochloromethane	ND	U	0.173	1.00	ug/L	1
1,2-Dibromoethane	ND	U	0.188	1.00	ug/L	1
Chlorobenzene	ND	U	0.108	1.00	ug/L	1
1,1,1,2-Tetrachloroethane	ND	U	0.101	1.00	ug/L	1
Bromoform	ND	U	0.124	1.00	ug/L	1
1,1,2,2-Tetrachloroethane	ND	U	0.137	1.00	ug/L	1
1,2,3-Trichloropropane	ND	U	0.262	1.00	ug/L	1
Ethyl Benzene	ND	U	0.224	1.00	ug/L	1
Styrene	ND	U	0.224	1.00	ug/L	1
Xylene (total)	ND	U	0.298	2.00	ug/L	1
1,2-Dibromo-3-chloropropane	ND	U	0.643	5.00	ug/L	1
trans-1,4-Dichloro-2-butene	ND	U	1.15	5.00	ug/L	1
Surrogates						
1,2-Dichloroethane-d4	117			64.0-140	%	1
Dibromofluoromethane	101			58.0-133	%	1
Toluene d8	89.0			65.0-127	%	1
4-Bromofluorobenzene	99.0			62.0-132	%	1

Batch Information

Analytical Batch: VMS3772
Analytical Method: SW-846 8260B
Instrument: MSD8
Analyst: JHL

Prep Batch: VXX6014
Prep Method: SW-846 5030B
Prep Date/Time: 10/29/2015 12:29:57PM
Prep Initial Wt./Vol.: 40 mL
Prep Extract Vol: 40 mL

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022807.D
Acq On : 22 Oct 2015 3:48 pm
Sample : 183491 MB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 16:10:48 2015

Vial: 7
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	300435	30.00 ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	516488	30.00 ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	614770	30.00 ppb	0.00
System Monitoring Compounds					
24) Dibromofluoromethane	7.13	113	271726	30.34 ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 101.13%		
26) 1,2-dichloroethane-d4	7.61	65	420374	35.10 ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 117.00%		
36) toluene-d8	8.94	98	1012769	26.73 ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 89.10%		
52) 4-bromofluorobenzene	10.47	95	440391	29.58 ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 98.60%		
Target Compounds					Qvalue
8) acrolein	4.94	56	1460	~~0.74 ppb~~ #	62
46) 2-hexanone	9.69	58	976	~~0.22 ppb~~ #	1
74) 1,2-dibromo-3-chloropropan	11.75	75	584	~~0.30 ppb~~ #	23

✓ ✓ 10/29/15

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

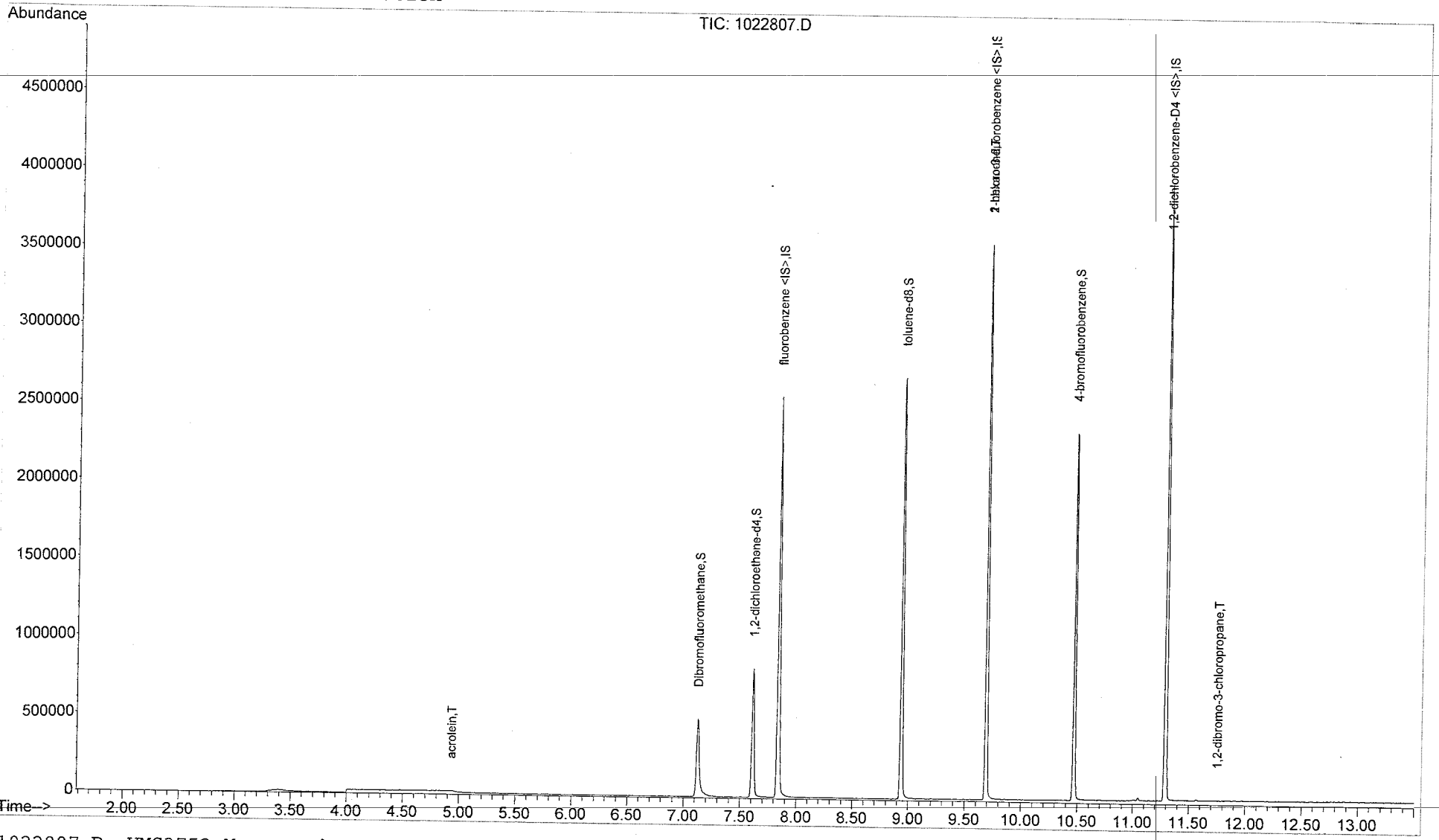
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022807.D
Acq On : 22 Oct 2015 3:48 pm
Sample : 183491 MB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 16:10 2015

Revised Report
Vial: 7
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022807.D
Acq On : 22 Oct 2015 3:48 pm
Sample : 183491 MB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58:44 2015

Vial: 7
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	300369	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	516488	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	614770	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	420374	35.63	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 118.77%			
11) toluene-d8	8.94	98	1012769	25.40	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 84.67%			
14) 4-bromofluorobenzene	10.47	95	440017	27.51	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 91.70%			
Target Compounds						Qvalue
2) Acetonitrile	5.88	41	344	~~0.30 ppb~~	#	1
4) Chloroprene	6.21	53	714	~~0.08 ppb~~	#	31
5) Propionitrile	7.61	54	679	~~0.55 ppb~~	#	61
6) Methacrylonitrile	7.70	41	359	~~0.07 ppb~~	#	25
7) Isobutyl alcohol	7.65	43	315	~~13.17 ppb~~	#	29
9) 1,4-Dioxane	8.54	88	620	~~40.57 ppb~~	#	73
12) Ethyl methacrylate	9.50	69	306	~~0.33 ppb~~	#	22

HK 10/29/15

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

Quantitation Report (Not Reviewed)

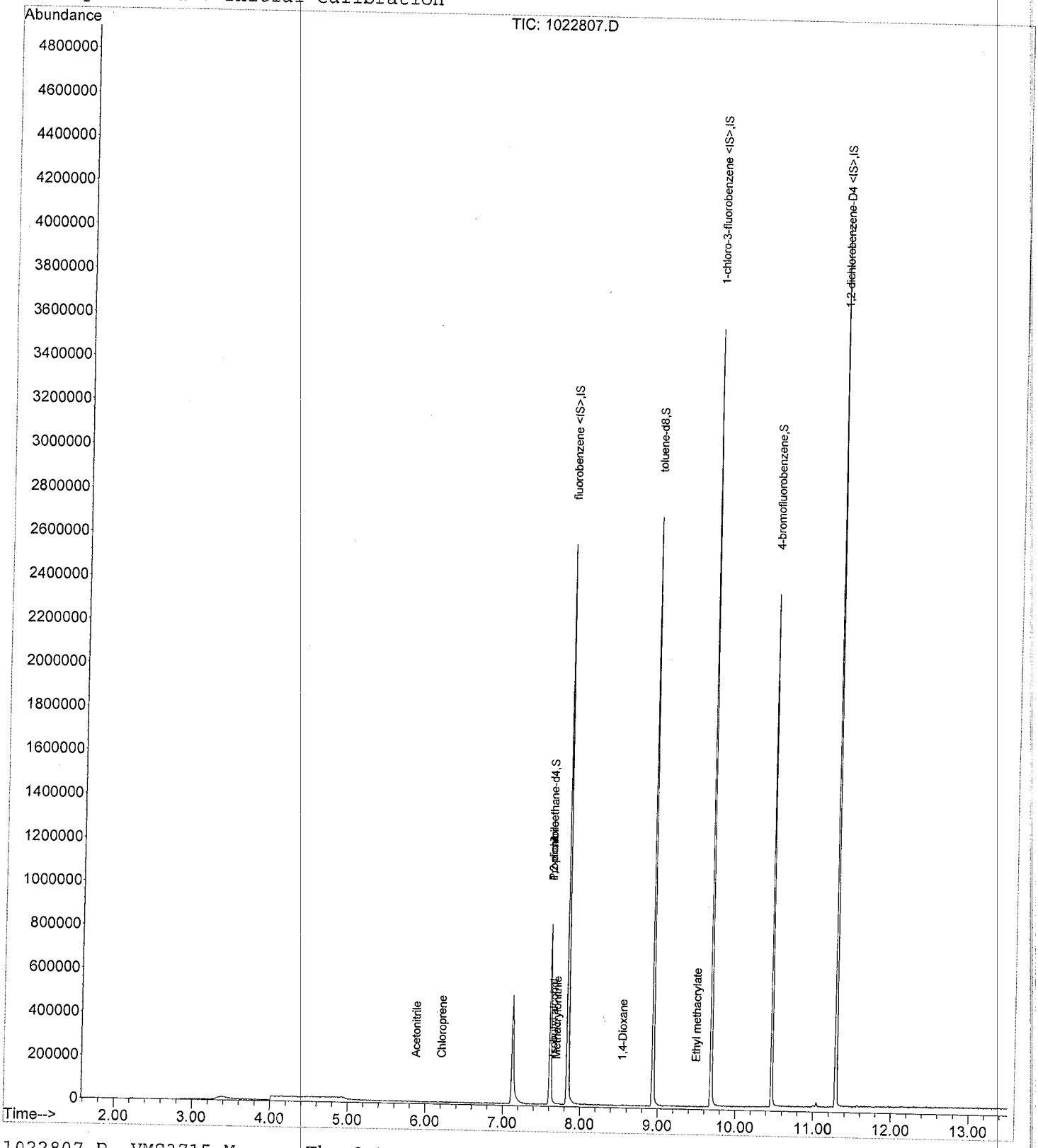
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022807.D
Acq On : 22 Oct 2015 3:48 pm
Sample : 183491 MB
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 11:58 2015

Vial: 7
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



Blank Spike Summary

Blank Spike ID: LCS for HBN 95090 [VXX/6014]
Blank Spike Lab ID: 183489
Date Analyzed: 10/22/2015 14:06

Spike Duplicate ID: LCSD for HBN 95090 [VXX/6014]
Spike Duplicate Lab ID: 183490
Date Analyzed: 10/22/2015 14:32
Matrix: Water

QC for Samples: 31501928001, 31501928002, 31501928003, 31501928006, 31501928007, 31501928008

Results by **SW-846 8260B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Dichlorodifluoromethane	5.00	5.72	114	5.00	6.18	124	33.0-170	7.7	30.00
Chloromethane	5.00	5.43	109	5.00	5.99	120	57.0-132	9.8	30.00
Vinyl chloride	5.00	4.93	99	5.00	5.31	106	59.0-138	7.4	30.00
Bromomethane	5.00	4.93	99	5.00	5.86	117	51.0-134	17	30.00
Chloroethane	5.00	4.92	98	5.00	5.52	110	64.0-145	11	30.00
Trichlorofluoromethane	5.00	5.61	112	5.00	6.02	120	64.0-133	7.1	30.00
Acrolein	125	118	94	125	136	108	56.0-131	14	30.00
1,1-Dichloroethene	5.00	4.35	87	5.00	4.82	96	71.0-128	10	30.00
Acetone	25.0	18.5	74	25.0	22.3	89	52.0-140	19	30.00
Methylene chloride	5.00	4.82	96	5.00	5.33	107	70.0-113	10	30.00
trans-1,2-Dichloroethene	5.00	4.38	88	5.00	4.86	97	57.0-138	10	30.00
Acrylonitrile	125	123	98	125	136	108	55.0-141	10	30.00
1,1-Dichloroethane	5.00	4.98	100	5.00	5.54	111	72.0-134	11	30.00
2-Butanone	25.0	19.9	80	25.0	22.2	89	58.0-134	11	30.00
Chloroform	5.00	5.02	100	5.00	5.69	114	74.0-124	13	30.00
1,1,1-Trichloroethane	5.00	5.29	106	5.00	5.99	**120***	76.0-119	12	30.00
Carbon tetrachloride	5.00	5.43	109	5.00	5.87	117	75.0-120	7.8	30.00
Benzene	5.00	4.42	88	5.00	4.91	98	78.0-122	11	30.00
1,2-Dichloroethane	5.00	5.29	106	5.00	5.88	118	76.0-119	11	30.00
Trichloroethene	5.00	4.49	90	5.00	4.98	100	78.0-125	10	30.00
1,2-Dichloropropane	5.00	4.49	90	5.00	4.97	99	74.0-124	10	30.00
Dibromomethane	5.00	4.79	96	5.00	5.19	104	71.0-128	8.0	30.00
Bromodichloromethane	5.00	4.98	100	5.00	5.63	113	72.0-120	12	30.00
2-Chloroethylvinyl ether	125	125	100	125	138	110	65.0-128	9.9	30.00
cis-1,3-Dichloropropene	5.00	4.76	95	5.00	5.25	105	73.0-122	9.8	30.00
4-Methyl-2-pentanone	25.0	22.0	88	25.0	24.4	98	65.0-124	10	30.00
Toluene	5.00	4.47	89	5.00	4.88	98	82.0-122	8.8	30.00
Methyl iodide	5.00	3.81	76	5.00	4.26	85	55.0-123	11	30.00
trans-1,3-Dichloropropene	5.00	4.76	95	5.00	5.25	105	70.0-125	9.8	30.00
Vinyl acetate	12.5	13.4	107	12.5	14.4	115	40.0-141	7.2	30.00
Carbon disulfide	5.00	4.57	91	5.00	5.05	101	65.0-132	10	30.00
1,1,2-Trichloroethane	5.00	4.77	95	5.00	5.28	106	76.0-121	10	30.00

Blank Spike Summary

Blank Spike ID: LCS for HBN 95090 [VXX/6014]
Blank Spike Lab ID: 183489
Date Analyzed: 10/22/2015 14:06

Spike Duplicate ID: LCSD for HBN 95090 [VXX/6014]
Spike Duplicate Lab ID: 183490
Date Analyzed: 10/22/2015 14:32
Matrix: Water

QC for Samples: 31501928001, 31501928002, 31501928003, 31501928006, 31501928007, 31501928008

Results by **SW-846 8260B**

	Blank Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Tetrachloroethene	5.00	4.51	90	5.00	4.88	98	59.0-112	7.9	30.00
2-Hexanone	25.0	21.4	86	25.0	23.2	93	56.0-133	8.1	30.00
Dibromochloromethane	5.00	4.73	95	5.00	5.32	106	67.0-122	12	30.00
1,2-Dibromoethane	5.00	4.44	89	5.00	5.00	100	74.0-119	12	30.00
Chlorobenzene	5.00	4.24	85	5.00	4.66	93	77.0-133	9.4	30.00
1,1,1,2-Tetrachloroethane	5.00	4.85	97	5.00	5.31	106	73.0-119	9.1	30.00
Bromoform	5.00	5.32	106	5.00	5.66	113	62.0-127	6.2	30.00
1,1,2,2-Tetrachloroethane	5.00	4.93	99	5.00	5.38	108	68.0-129	8.7	30.00
1,2,3-Trichloropropane	5.00	4.96	99	5.00	5.24	105	67.0-126	5.5	30.00
Ethyl Benzene	5.00	4.21	84	5.00	4.55	91	76.0-123	7.8	30.00
Styrene	5.00	4.75	95	5.00	5.06	101	76.0-121	6.3	30.00
1,2-Dibromo-3-chloropropane	30.0	33.0	110	30.0	35.6	119	62.0-130	7.6	30.00
trans-1,4-Dichloro-2-butene	25.0	27.6	110	25.0	30.0	120	61.0-132	8.3	30.00
Surrogates									
1,2-Dichloroethane-d4			116			115	64.0-140		
Dibromofluoromethane			101			101	58.0-133		
Toluene d8			96			97	65.0-127		
4-Bromofluorobenzene			100			99	62.0-132		

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
Spike Init Wt./Vol.: **40 mL** Extract Vol: **40 mL**
Dupe Init Wt./Vol.: **40 mL** Extract Vol: **40 mL**

Print Date: 11/09/2015

N.C. Certification # 481

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022803.D Vial: 3
Acq On : 22 Oct 2015 2:06 pm Operator: JHL
Sample : 183489 LCS Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 22 15:59:51 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	336717	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	622732	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	761032	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	304113	30.29	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 100.97%				
26) 1,2-dichloroethane-d4	7.61	65	468799	34.92	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 116.40%				
36) toluene-d8	8.93	98	1228246	28.92	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 96.40%				
52) 4-bromofluorobenzene	10.47	95	536180	29.87	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.57%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	67927	5.72	ppb		95
3) chloromethane	2.74	50	77828	5.43	ppb		94
4) vinyl chloride	2.84	62	62869	4.93	ppb		95
5) bromomethane	3.30	94	33785	4.93	ppb		97
6) chloroethane	3.49	64	37446	4.92	ppb		96
7) trichlorofluoromethane	3.69	101	88742	5.61	ppb		97
8) acrolein	4.94	56	258539	117.68	ppb		99
9) 1,1-dichloroethene	4.46	96	46850	4.35	ppb		94
10) acetone	5.32	58	45118	18.54	ppb		76
11) methylene chloride	5.24	84	53632	4.82	ppb		95
12) trans-1,2-dichloroethene	5.44	96	42691	4.38	ppb		95
13) acrylonitrile	6.20	53	647806	122.99	ppb		97
14) MTBE	5.58	73	111656	4.01	ppb		96
15) 1,1-dichloroethane	6.14	63	104621	4.98	ppb		97
16) DIPE	6.01	45	146667	4.04	ppb	#	85
17) 2,2-dichloropropane	6.80	77	80304	5.35	ppb		96
18) cis-1,2-dichloroethene	6.69	96	45252	4.22	ppb		97
19) 2-butanone	7.25	72	39787	19.94	ppb		93
20) bromochloromethane	6.89	130	29280	4.47	ppb	#	79
21) chloroform	6.95	83	95592	5.02	ppb		97
22) 1,1,1-trichloroethane	7.16	97	85652	5.29	ppb		99
23) carbon tetrachloride	7.09	117	73055	5.43	ppb		88
25) 1,1-dichloropropene	7.27	75	65766	4.35	ppb		95
27) benzene	7.50	78	197078	4.42	ppb		97
28) 1,2-dichloroethane	7.67	62	80098	5.29	ppb	#	95
29) trichloroethene	7.97	95	50865	4.49	ppb		95
30) 1,2-dichloropropane	8.36	63	52747	4.49	ppb	#	88
31) dibromomethane	8.29	93	29451	4.79	ppb		95
32) bromodichloromethane	8.39	83	66037	4.98	ppb		97
33) 2-chloroethyl vinyl ether	8.76	106	287255	124.77	ppb	#	79
34) cis-1,3-dichloropropene	8.82	75	81376	4.76	ppb		99
35) 4-methyl-2-pentanone	9.19	100	30859	21.98	ppb		79
37) toluene	8.97	92	128569	4.47	ppb		99
38) iodomethane	4.66	142	61685	3.81	ppb		89
39) trans-1,3-dichloropropene	8.82	75	81376	4.76	ppb		99
40) Vinyl acetate	6.40	43	307422	13.43	ppb		98
41) carbon disulfide	4.49	76	183677	4.57	ppb		100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022803.D Vial: 3
Acq On : 22 Oct 2015 2:06 pm Operator: JHL
Sample : 183489 LCS Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 22 15:59:51 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
43) 1,1,2-trichloroethane	9.32	83	40689	4.77	ppb		96
44) tetrachloroethene	9.20	166	59348	4.51	ppb		97
45) 1,3-dichloropropane	9.48	76	74090	4.37	ppb		97
46) 2-hexanone	9.66	58	114680	21.38	ppb		97
47) dibromochloromethane	9.43	129	45496	4.73	ppb		93
48) 1,2-dibromoethane	9.57	107	41228	4.44	ppb	#	99
49) chlorobenzene	9.86	112	137236	4.24	ppb		94
50) 1,1,1,2-tetrachloroethane	9.89	131	49283	4.85	ppb		89
51) bromoform	10.22	173	32086	5.32	ppb		99
53) bromobenzene	10.54	156	62493	4.42	ppb		98
54) 1,1,2,2-tetrachloroethane	10.55	83	64620	4.93	ppb		99
55) 1,2,3-trichloropropane	10.64	110	20707	4.96	ppb		85
57) ethylbenzene	9.86	106	67269	4.21	ppb		96
58) m/p-xylene	9.93	106	173555	8.59	ppb		88
59) styrene	10.18	104	131522	4.75	ppb		96
60) o-xylene	10.16	106	73597	3.95	ppb		95
61) isopropylbenzene	10.31	105	214259	4.32	ppb		96
62) n-propyl benzene	10.52	91	296765	4.55	ppb		98
63) 2-chlorotoluene	10.62	126	59264	4.57	ppb		88
64) 4-chlorotoluene	10.70	126	54858	4.41	ppb		94
65) 1,3,5-trimethylbenzene	10.61	105	180239	4.45	ppb		96
66) tert-butylbenzene	10.78	119	163979	4.43	ppb		93
67) 1,2,4-trimethylbenzene	10.81	105	200521	4.67	ppb		98
68) sec-butylbenzene	10.87	105	259844	4.52	ppb		99
69) 1,3-dichlorobenzene	11.01	146	118309	4.60	ppb		100
70) 4-isopropyltoluene	10.93	119	212536	4.87	ppb		97
71) 1,4-dichlorobenzene	11.06	146	114947	4.53	ppb		98
72) 1,2-dichlorobenzene	11.29	146	120898	4.79	ppb		93
73) n-butylbenzene	11.16	91	201414	4.83	ppb		97
74) 1,2-dibromo-3-chloropropan	11.76	75	80004	32.97	ppb		87
75) 1,2,4-trichlorobenzene	12.20	180	65894	4.40	ppb		94
76) hexachlorobutadiene	12.15	225	44948	4.80	ppb		99
77) naphthalene	12.46	128	133993	4.28	ppb		98
78) trans-1,4-Dichloro-2-buten	10.64	88	57961	27.56	ppb		97
79) 1,2,3-trichlorobenzene	12.60	180	60262	4.67	ppb		98

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

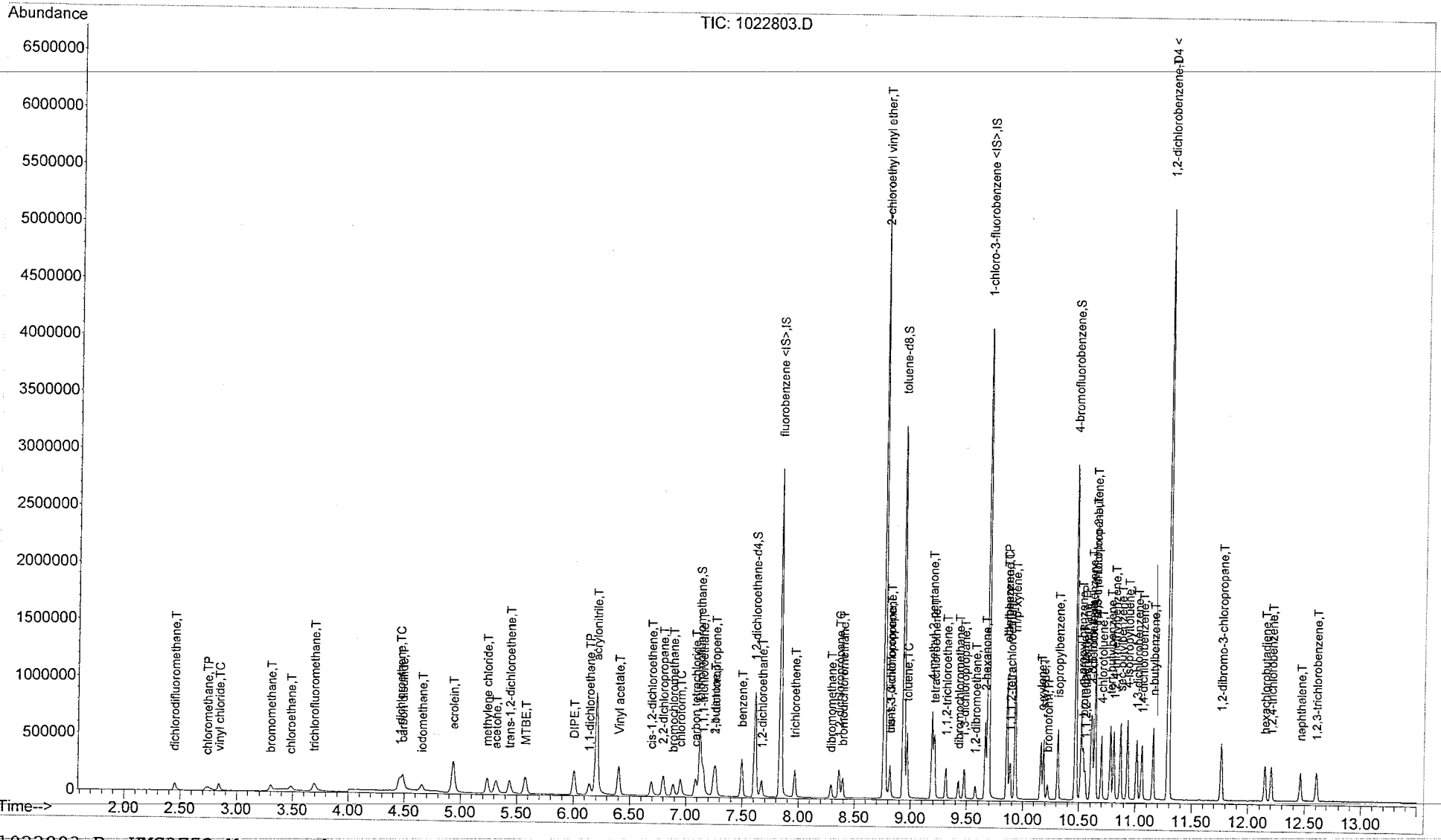
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022803.D
Acq On : 22 Oct 2015 2:06 pm
Sample : 183489 LCS
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 15:59 2015

Revised Report
Vial: 3
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



1022803.D VMS3752.M Thu Oct 22 15:59:51 2015

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022804.D Vial: 4
Acq On : 22 Oct 2015 2:32 pm Operator: JHL
Sample : 183490 LCSD Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 22 15:59:53 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	307664	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	570510	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	701773	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	278670	30.38	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 101.27%				
26) 1,2-dichloroethane-d4	7.61	65	424062	34.58	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 115.27%				
36) toluene-d8	8.94	98	1124013	28.97	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 96.57%				
52) 4-bromofluorobenzene	10.47	95	487784	29.66	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 98.87%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	67091	6.18	ppb		95
3) chloromethane	2.73	50	78447	5.99	ppb		94
4) vinyl chloride	2.84	62	61891	5.31	ppb		97
5) bromomethane	3.30	94	36597	5.86	ppb		96
6) chloroethane	3.49	64	38388	5.52	ppb		97
7) trichlorofluoromethane	3.69	101	86965	6.02	ppb		97
8) acrolein	4.94	56	272175	135.59	ppb		98
9) 1,1-dichloroethene	4.46	96	47449	4.82	ppb		91
10) acetone	5.32	58	49601	22.30	ppb		85
11) methylene chloride	5.24	84	54188	5.33	ppb		99
12) trans-1,2-dichloroethene	5.44	96	43203	4.86	ppb		92
13) acrylonitrile	6.20	53	652422	135.56	ppb		100
14) MTBE	5.58	73	117042	4.60	ppb		95
15) 1,1-dichloroethane	6.14	63	106468	5.54	ppb		97
16) DIPE	6.01	45	150151	4.53	ppb	#	84
17) 2,2-dichloropropane	6.80	77	82164	5.99	ppb		99
18) cis-1,2-dichloroethene	6.69	96	47131	4.81	ppb		94
19) 2-butanone	7.25	72	40450	22.19	ppb		85
20) bromochloromethane	6.89	130	30346	5.07	ppb	#	83
21) chloroform	6.95	83	99098	5.69	ppb		94
22) 1,1,1-trichloroethane	7.16	97	88647	5.99	ppb		97
23) carbon tetrachloride	7.09	117	72181	5.87	ppb		99
25) 1,1-dichloropropene	7.27	75	65127	4.71	ppb		97
27) benzene	7.50	78	199763	4.91	ppb		99
28) 1,2-dichloroethane	7.67	62	81331	5.88	ppb		99
29) trichloroethene	7.97	95	51547	4.98	ppb		96
30) 1,2-dichloropropane	8.36	63	53323	4.97	ppb	#	86
31) dibromomethane	8.29	93	29194	5.19	ppb		97
32) bromodichloromethane	8.39	83	68240	5.63	ppb		98
33) 2-chloroethyl vinyl ether	8.76	106	290371	138.04	ppb	#	73
34) cis-1,3-dichloropropene	8.82	75	82003	5.25	ppb		99
35) 4-methyl-2-pentanone	9.19	100	31283	24.39	ppb		93
37) toluene	8.97	92	128397	4.88	ppb		99
38) iodomethane	4.66	142	63059	4.26	ppb		93
39) trans-1,3-dichloropropene	8.82	75	82003	5.25	ppb		99
40) Vinyl acetate	6.40	43	301386	14.41	ppb		96
41) carbon disulfide	4.49	76	185410	5.05	ppb		99

(#) = qualifier out of range (m) = manual integration

10/03/15

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022804.D
Acq On : 22 Oct 2015 2:32 pm
Sample : 183490 LCSD
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 15:59:53 2015

Vial: 4
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43) 1,1,2-trichloroethane	9.32	83	41203	5.28	ppb	93
44) tetrachloroethene	9.20	166	58813	4.88	ppb	97
45) 1,3-dichloropropane	9.48	76	76485	4.93	ppb	99
46) 2-hexanone	9.66	58	113975	23.19	ppb	97
47) dibromochloromethane	9.43	129	46889	5.32	ppb	97
48) 1,2-dibromoethane	9.57	107	42574	5.00	ppb	95
49) chlorobenzene	9.86	112	137942	4.66	ppb	93
50) 1,1,1,2-tetrachloroethane	9.89	131	49470	5.31	ppb	95
51) bromoform	10.22	173	31292	5.66	ppb	94
53) bromobenzene	10.54	156	62866	4.85	ppb	96
54) 1,1,2,2-tetrachloroethane	10.55	83	64605	5.38	ppb	99
55) 1,2,3-trichloropropane	10.64	110	20057	5.24	ppb	97
57) ethylbenzene	9.86	106	67037	4.55	ppb	87
58) m/p-xylene	9.93	106	180689	9.70	ppb	91
59) styrene	10.18	104	129171	5.06	ppb	93
60) o-xylene	10.16	106	76256	4.44	ppb	98
61) isopropylbenzene	10.31	105	210631	4.60	ppb	100
62) n-propyl benzene	10.52	91	297100	4.94	ppb	98
63) 2-chlorotoluene	10.62	126	59258	4.96	ppb	90
64) 4-chlorotoluene	10.70	126	54531	4.75	ppb	90
65) 1,3,5-trimethylbenzene	10.61	105	187812	5.03	ppb	96
66) tert-butylbenzene	10.78	119	166579	4.89	ppb	99
67) 1,2,4-trimethylbenzene	10.81	105	200676	5.06	ppb	97
68) sec-butylbenzene	10.87	105	260812	4.92	ppb	100
69) 1,3-dichlorobenzene	11.01	146	118534	4.99	ppb	98
70) 4-isopropyltoluene	10.93	119	212016	5.27	ppb	97
71) 1,4-dichlorobenzene	11.06	146	115041	4.92	ppb	98
72) 1,2-dichlorobenzene	11.29	146	123826	5.32	ppb	94
73) n-butylbenzene	11.16	91	205978	5.35	ppb	98
74) 1,2-dibromo-3-chloropropan	11.76	75	79711	35.63	ppb	86
75) 1,2,4-trichlorobenzene	12.20	180	64455	4.67	ppb	98
76) hexachlorobutadiene	12.15	225	45653	5.28	ppb	98
77) naphthalene	12.46	128	137259	4.75	ppb	99
78) trans-1,4-Dichloro-2-buten	10.64	88	58244	30.03	ppb	93
79) 1,2,3-trichlorobenzene	12.60	180	61605	5.18	ppb	98

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

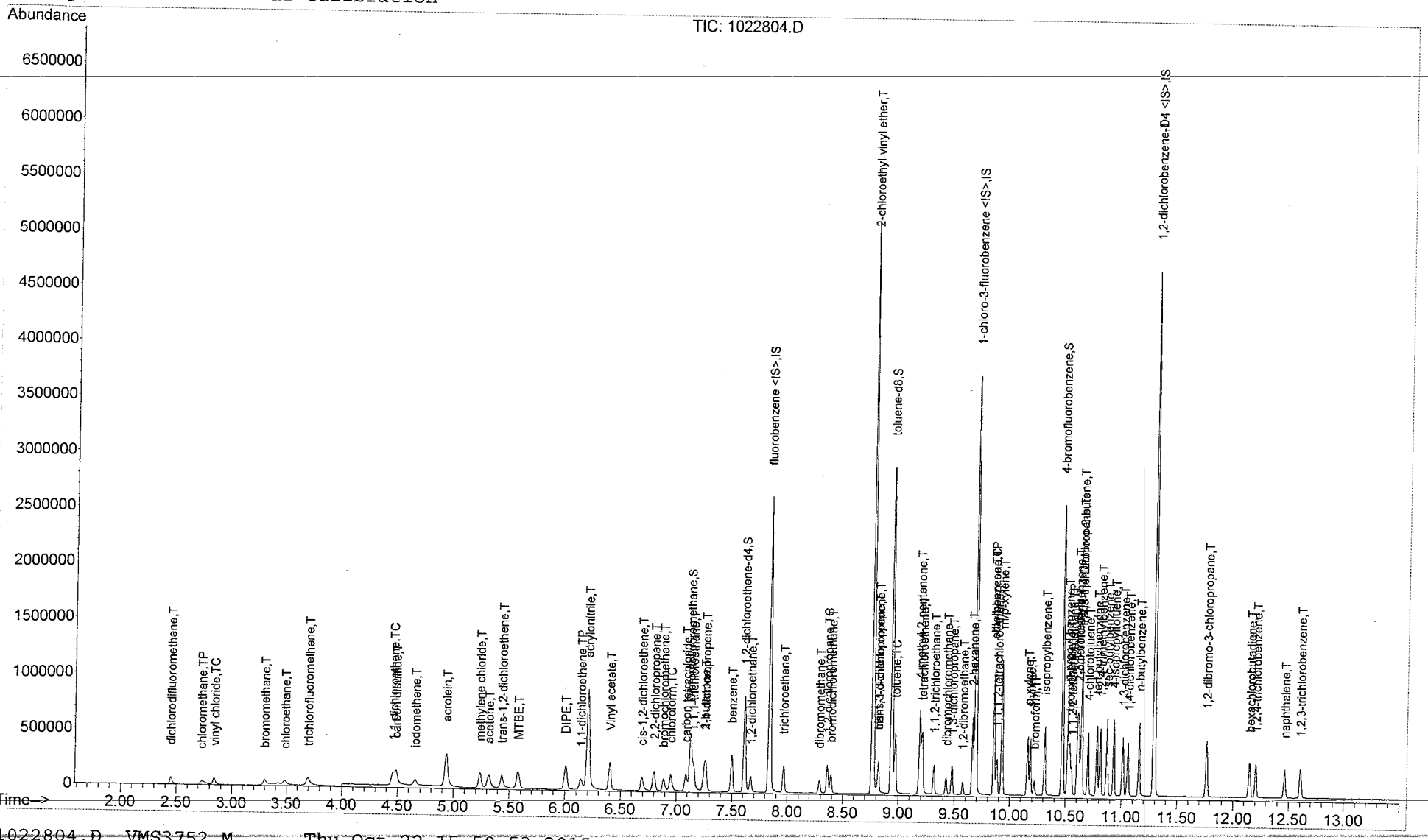
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022804.D
Acq On : 22 Oct 2015 2:32 pm
Sample : 183490 LCSD
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 15:59 2015

Revised Report
Vial: 4
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



1022804.D VMS3752.M Thu Oct 22 15:59:53 2015

Matrix Spike Summary

Original Sample ID: 31501928003 (GMA4-8-101915)
MS Sample ID: 31501928004
MSD Sample ID: 31501928005

Analysis Date: 10/22/2015 18:45
Analysis Date: 10/22/2015 22:35
Analysis Date: 10/22/2015 23:01
Matrix: Water

QC for Samples: 31501928001, 31501928002, 31501928003, 31501928006, 31501928007, 31501928008

Results by **SW-846 8260B**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
1,1,1,2-Tetrachloroethane	ND	5.00	4.57	91	5.00	5.36	107	69.0-120	16	20.00
1,1,1-Trichloroethane	ND	5.00	5.23	105	5.00	6.00	120	78.0-121	14	20.00
1,1,2,2-Tetrachloroethane	ND	5.00	5.11	102	5.00	5.65	113	76.0-136	10	20.00
1,1,2-Trichloroethane	ND	5.00	4.60	92	5.00	5.26	105	65.0-128	13	20.00
1,1-Dichloroethane	ND	5.00	5.00	100	5.00	5.65	113	72.0-134	12	20.00
1,1-Dichloroethene	ND	5.00	4.78	96	5.00	5.17	103	64.0-130	7.8	20.00
1,2,3-Trichloropropane	ND	5.00	4.87	97	5.00	5.23	105	10.0-218	7.1	20.00
1,2-Dibromo-3-chloropropane	ND	30.0	32.2	107	30.0	35.8	119	20.0-171	11	20.00
1,2-Dibromoethane	ND	5.00	4.46	89	5.00	4.87	97	79.0-123	8.8	20.00
1,2-Dichloroethane	ND	5.00	5.44	109	5.00	6.10	122	71.0-127	11	20.00
1,2-Dichloropropane	ND	5.00	4.52	90	5.00	5.18	104	77.0-129	14	20.00
2-Butanone	1.44	25.0	15.4	62	25.0	17.8	71	36.0-107	14	20.00
2-Chloroethylvinyl ether	ND	125	ND	0 *	125	ND	0 *	17.0-283		20.00
2-Hexanone	ND	25.0	15.9	64	25.0	17.4	69	42.0-111	9.0	20.00
4-Methyl-2-pentanone	ND	25.0	20.3	81	25.0	22.3	89	6.90-166	9.4	20.00
Acetone	20.3	25.0	29.3	117 *	25.0	33.3	133 *	18.0-85.0	13	20.00
Acrolein	ND	125	115	92	125	136	108	0.00-424	17	20.00
Acrylonitrile	ND	125	128	102	125	142	114	85.0-175	10	20.00
Benzene	ND	5.00	4.48	90	5.00	4.99	100	78.0-122	11	20.00
Bromodichloromethane	ND	5.00	5.17	103	5.00	5.72	114	74.0-123	10	20.00
Bromoform	ND	5.00	5.21	104	5.00	5.86	117	52.0-122	12	20.00
Bromomethane	ND	5.00	5.36	107	5.00	5.98	120	10.0-284	11	20.00
Carbon disulfide	ND	5.00	4.78	96	5.00	5.41	108	69.0-129	12	20.00
Carbon tetrachloride	ND	5.00	5.24	105	5.00	5.98	120	72.0-122	13	20.00
Chlorobenzene	ND	5.00	4.40	88	5.00	4.77	95	77.0-133	8.1	20.00
Chloroethane	ND	5.00	5.46	109	5.00	6.22	124	10.0-233	13	20.00
Chloroform	ND	5.00	5.30	106	5.00	5.72	114	74.0-128	7.6	20.00
Chloromethane	ND	5.00	5.68	114	5.00	6.24	125	72.0-138	9.4	20.00
Dibromochloromethane	ND	5.00	4.56	91	5.00	5.08	102	69.0-117	11	20.00
Dibromomethane	ND	5.00	4.97	99	5.00	5.46	109	71.0-137	9.4	20.00
Dichlorodifluoromethane	ND	5.00	5.70	114	5.00	6.25	125	42.0-166	9.2	20.00
cis-1,3-Dichloropropene	ND	5.00	3.66	73	5.00	4.08	82	67.0-132	11	20.00
trans-1,3-Dichloropropene	ND	5.00	3.66	73	5.00	4.08	82	45.0-144	11	20.00
Ethyl Benzene	ND	5.00	4.11	82	5.00	4.71	94	74.0-126	14	20.00
Methyl iodide	ND	5.00	4.16	83	5.00	4.44	89	41.0-126	6.5	20.00
Methylene chloride	ND	5.00	4.93	99	5.00	5.56	111	49.0-155	12	20.00

Print Date: 11/09/2015

N.C. Certification # 481

Matrix Spike Summary

Original Sample ID: 31501928003 (GMA4-8-101915)
MS Sample ID: 31501928004
MSD Sample ID: 31501928005

Analysis Date: 10/22/2015 18:45
Analysis Date: 10/22/2015 22:35
Analysis Date: 10/22/2015 23:01
Matrix: Water

QC for Samples: 31501928001, 31501928002, 31501928003, 31501928006, 31501928007, 31501928008

Results by **SW-846 8260B**

		Matrix Spike (ug/L)			Spike Duplicate (ug/L)					
Parameter	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Styrene	ND	5.00	4.57	91	5.00	5.29	106	73.0-123	15	20.00
Tetrachloroethene	ND	5.00	4.38	88	5.00	5.01	100	46.0-153	13	20.00
Toluene	ND	5.00	4.49	90	5.00	4.94	99	82.0-122	9.5	20.00
Trichloroethene	ND	5.00	4.42	88	5.00	5.07	101	78.0-125	14	20.00
Trichlorofluoromethane	ND	5.00	5.81	116	5.00	6.56	131	77.0-132	12	20.00
Vinyl acetate	ND	12.5	11.5	92	12.5	12.5	100	0.00-355	8.3	20.00
Vinyl chloride	ND	5.00	5.15	103	5.00	5.77	115	68.0-137	11	20.00
trans-1,2-Dichloroethene	ND	5.00	4.39	88	5.00	5.14	103	75.0-124	16	20.00
trans-1,4-Dichloro-2-butene	ND	25.0	26.5	106	25.0	29.6	118	26.0-149	11	20.00
Surrogates										
4-Bromofluorobenzene				99			97	62.0-132		
Dibromofluoromethane				101			103	58.0-133		
Toluene d8				92			91	65.0-127		

Batch Information

Analytical Batch: **VMS3772**
Analytical Method: **SW-846 8260B**
Instrument: **MSD8**
Analyst: **JHL**

Prep Batch: **VXX6014**
Prep Method: **SW-846 5030B**
Prep Date/Time: **10/29/2015 12:29**
MS Init Wt./Vol.: **40 mL** Extract Vol.: **40 mL**
MSD Init Wt./Vol.: **40 mL** Extract Vol.: **40 mL**

Print Date: 11/09/2015

N.C. Certification # 481

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022822.D Vial: 22
Acq On : 22 Oct 2015 10:35 pm Operator: JHL
Sample : 1928_4 A-MS Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:23 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	338394	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	626372	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	773160	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	305674	30.30	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 101.00%				
26) 1,2-dichloroethane-d4	7.61	65	472945	35.06	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 116.87%				
36) toluene-d8	8.94	98	1179454	27.63	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 92.10%				
52) 4-bromofluorobenzene	10.47	95	535218	29.64	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 98.80%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	68139	5.70	ppb		96
3) chloromethane	2.74	50	81874	5.68	ppb		90
4) vinyl chloride	2.84	62	66015	5.15	ppb		96
5) bromomethane	3.30	94	36855	5.36	ppb		99
6) chloroethane	3.49	64	41754	5.46	ppb		92
7) trichlorofluoromethane	3.70	101	92400	5.81	ppb		94
8) acrolein	4.94	56	253616	114.87	ppb		99
9) 1,1-dichloroethene	4.46	96	51832	4.78	ppb		93
10) acetone	5.32	58	71757	29.34	ppb	#	64
11) methylene chloride	5.24	84	55104	4.93	ppb		96
12) trans-1,2-dichloroethene	5.44	96	42945	4.39	ppb		94
13) acrylonitrile	6.20	53	676162	127.74	ppb		100
14) MTBE	5.58	73	111036	3.96	ppb		95
15) 1,1-dichloroethane	6.14	63	105619	5.00	ppb		98
16) DIPE	6.01	45	149894	4.11	ppb	#	80
17) 2,2-dichloropropane	6.80	77	72952	4.83	ppb		98
18) cis-1,2-dichloroethene	6.69	96	44540	4.13	ppb		85
19) 2-butanone	7.25	72	30881	15.40	ppb		71
20) bromochloromethane	6.89	130	29834	4.53	ppb		87
21) chloroform	6.95	83	101489	5.30	ppb		96
22) 1,1,1-trichloroethane	7.16	97	85035	5.23	ppb		96
23) carbon tetrachloride	7.09	117	70792	5.24	ppb		98
25) 1,1-dichloropropene	7.27	75	64813	4.26	ppb		99
27) benzene	7.50	78	200751	4.48	ppb		97
28) 1,2-dichloroethane	7.67	62	82723	5.44	ppb		99
29) trichloroethene	7.97	95	50255	4.42	ppb		98
30) 1,2-dichloropropane	8.36	63	53317	4.52	ppb		89
31) dibromomethane	8.29	93	30755	4.97	ppb		99
32) bromodichloromethane	8.39	83	69006	5.17	ppb		100
34) cis-1,3-dichloropropene	8.82	75	62891	3.66	ppb		96
35) 4-methyl-2-pentanone	9.19	100	28691	20.33	ppb		93
37) toluene	8.97	92	129784	4.49	ppb		99
38) iodomethane	4.66	142	67605	4.16	ppb		92
39) trans-1,3-dichloropropene	8.82	75	62891	3.66	ppb		96
40) Vinyl acetate	6.40	43	263532	11.46	ppb		96
41) carbon disulfide	4.48	76	193184	4.78	ppb		98
43) 1,1,2-trichloroethane	9.32	83	39426	4.60	ppb		95

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022822.D Vial: 22
Acq On : 22 Oct 2015 10:35 pm Operator: JHL
Sample : 1928_4 A-MS Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:23 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
44)	tetrachloroethene	9.20	166	58054	4.38	ppb		96
45)	1,3-dichloropropane	9.48	76	74525	4.37	ppb		99
46)	2-hexanone	9.66	58	85848	15.91	ppb		98
47)	dibromochloromethane	9.43	129	44084	4.56	ppb		98
48)	1,2-dibromoethane	9.57	107	41625	4.46	ppb	#	94
49)	chlorobenzene	9.86	112	142928	4.40	ppb		95
50)	1,1,1,2-tetrachloroethane	9.89	131	46772	4.57	ppb		98
51)	bromoform	10.22	173	31608	5.21	ppb		100
53)	bromobenzene	10.54	156	62584	4.40	ppb		94
54)	1,1,2,2-tetrachloroethane	10.55	83	67431	5.11	ppb		100
55)	1,2,3-trichloropropane	10.64	110	20439	4.87	ppb		81
57)	ethylbenzene	9.86	106	66710	4.11	ppb		95
58)	m/p-xylene	9.93	106	177961	8.67	ppb		91
59)	styrene	10.18	104	128469	4.57	ppb		95
60)	o-xylene	10.16	106	75175	3.97	ppb		98
61)	isopropylbenzene	10.31	105	206214	4.09	ppb		100
62)	n-propyl benzene	10.52	91	299772	4.52	ppb		97
63)	2-chlorotoluene	10.62	126	60386	4.58	ppb		97
64)	4-chlorotoluene	10.70	126	54752	4.33	ppb		88
65)	1,3,5-trimethylbenzene	10.61	105	183404	4.45	ppb		99
66)	tert-butylbenzene	10.78	119	162304	4.32	ppb		92
67)	1,2,4-trimethylbenzene	10.81	105	199673	4.57	ppb		97
68)	sec-butylbenzene	10.87	105	258723	4.43	ppb		99
69)	1,3-dichlorobenzene	11.01	146	116240	4.45	ppb		99
70)	4-isopropyltoluene	10.93	119	210150	4.74	ppb		96
71)	1,4-dichlorobenzene	11.06	146	113856	4.42	ppb		97
72)	1,2-dichlorobenzene	11.29	146	121981	4.76	ppb	#	92
73)	n-butylbenzene	11.16	91	202064	4.77	ppb		95
74)	1,2-dibromo-3-chloropropan	11.76	75	79421	32.22	ppb		84
75)	1,2,4-trichlorobenzene	12.20	180	63442	4.17	ppb		96
76)	hexachlorobutadiene	12.15	225	43782	4.60	ppb		95
77)	naphthalene	12.46	128	138246	4.35	ppb		97
78)	trans-1,4-Dichloro-2-buten	10.64	88	56529	26.45	ppb		87
79)	1,2,3-trichlorobenzene	12.60	180	57614	4.40	ppb		97

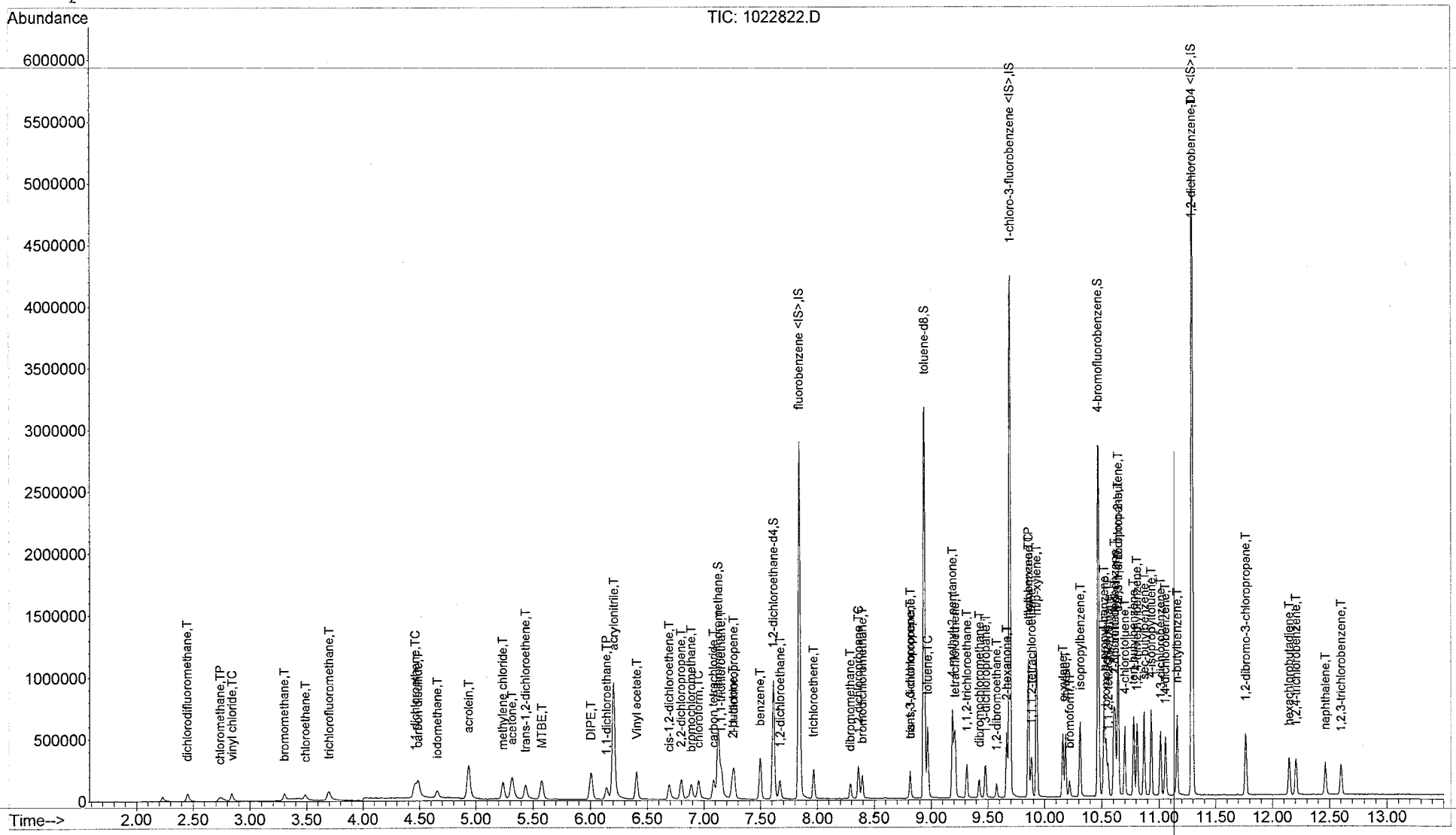
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022822.D Vial: 22
Acq On : 22 Oct 2015 10:35 pm Operator: JHL
Sample : 1928_4 A-MS Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022823.D Vial: 23
Acq On : 22 Oct 2015 11:01 pm Operator: JHL
Sample : 1928_5 A-MSD Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:25 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	306180	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	570679	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	695845	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	282023	30.89	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 102.97%				
26) 1,2-dichloroethane-d4	7.61	65	417040	34.17	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 113.90%				
36) toluene-d8	8.93	98	1057831	27.39	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 91.30%				
52) 4-bromofluorobenzene	10.47	95	480353	29.20	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 97.33%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	67546	6.25	ppb		97
3) chloromethane	2.73	50	81367	6.24	ppb		91
4) vinyl chloride	2.84	62	66953	5.77	ppb		97
5) bromomethane	3.30	94	37172	5.98	ppb		99
6) chloroethane	3.49	64	43044	6.22	ppb		94
7) trichlorofluoromethane	3.69	101	94355	6.56	ppb		99
8) acrolein	4.94	56	270897	135.60	ppb		100
9) 1,1-dichloroethene	4.46	96	50693	5.17	ppb		89
10) acetone	5.32	58	73700	33.30	ppb		82
11) methylene chloride	5.24	84	56318	5.56	ppb		88
12) trans-1,2-dichloroethene	5.44	96	45486	5.14	ppb		92
13) acrylonitrile	6.21	53	682142	142.42	ppb		99
14) MTBE	5.58	73	112796	4.45	ppb	#	89
15) 1,1-dichloroethane	6.14	63	107977	5.65	ppb		99
16) DIPE	6.01	45	149577	4.53	ppb		90
17) 2,2-dichloropropane	6.80	77	75115	5.50	ppb		93
18) cis-1,2-dichloroethene	6.69	96	44968	4.61	ppb		89
19) 2-butanone	7.25	72	32327	17.82	ppb		82
20) bromochloromethane	6.89	130	32057	5.38	ppb	#	81
21) chloroform	6.95	83	99186	5.72	ppb		99
22) 1,1,1-trichloroethane	7.16	97	88299	6.00	ppb		94
23) carbon tetrachloride	7.09	117	73216	5.98	ppb		98
25) 1,1-dichloropropene	7.27	75	67289	4.89	ppb		94
27) benzene	7.50	78	202142	4.99	ppb		100
28) 1,2-dichloroethane	7.67	62	83952	6.10	ppb		96
29) trichloroethene	7.97	95	52155	5.07	ppb		94
30) 1,2-dichloropropane	8.36	63	55320	5.18	ppb		89
31) dibromomethane	8.29	93	30582	5.46	ppb		96
32) bromodichloromethane	8.39	83	69049	5.72	ppb		97
34) cis-1,3-dichloropropene	8.82	75	63474	4.08	ppb		97
35) 4-methyl-2-pentanone	9.19	100	28482	22.31	ppb		80
37) toluene	8.97	92	129242	4.94	ppb		97
38) iodomethane	4.66	142	65351	4.44	ppb		91
39) trans-1,3-dichloropropene	8.82	75	63474	4.08	ppb		97
40) Vinyl acetate	6.40	43	259008	12.45	ppb		97
41) carbon disulfide	4.49	76	197858	5.41	ppb		99
43) 1,1,2-trichloroethane	9.32	83	41085	5.26	ppb		96

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022823.D Vial: 23
Acq On : 22 Oct 2015 11:01 pm Operator: JHL
Sample : 1928_5 A-MSD Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28:25 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
44)	tetrachloroethene	9.20	166	60490	5.01	ppb		98
45)	1,3-dichloropropane	9.48	76	76510	4.93	ppb		96
46)	2-hexanone	9.66	58	85313	17.36	ppb		94
47)	dibromochloromethane	9.43	129	44795	5.08	ppb		97
48)	1,2-dibromoethane	9.57	107	41483	4.87	ppb	#	98
49)	chlorobenzene	9.86	112	141183	4.77	ppb		94
50)	1,1,1,2-tetrachloroethane	9.89	131	49963	5.36	ppb		95
51)	bromoform	10.22	173	32377	5.86	ppb		99
53)	bromobenzene	10.54	156	64261	4.96	ppb		96
54)	1,1,2,2-tetrachloroethane	10.55	83	67895	5.65	ppb		97
55)	1,2,3-trichloropropane	10.64	110	20031	5.23	ppb		97
57)	ethylbenzene	9.86	106	68819	4.71	ppb		96
58)	m/p-xylene	9.93	106	182676	9.89	ppb		98
59)	styrene	10.19	104	133720	5.29	ppb		98
60)	o-xylene	10.16	106	75312	4.42	ppb		91
61)	isopropylbenzene	10.31	105	211582	4.66	ppb		96
62)	n-propyl benzene	10.52	91	303116	5.08	ppb		100
63)	2-chlorotoluene	10.62	126	63183	5.33	ppb		96
64)	4-chlorotoluene	10.70	126	56747	4.99	ppb		95
65)	1,3,5-trimethylbenzene	10.61	105	180767	4.88	ppb		99
66)	tert-butylbenzene	10.78	119	162738	4.81	ppb		89
67)	1,2,4-trimethylbenzene	10.81	105	207576	5.28	ppb		96
68)	sec-butylbenzene	10.87	105	268814	5.11	ppb		100
69)	1,3-dichlorobenzene	11.01	146	120471	5.12	ppb		98
70)	4-isopropyltoluene	10.93	119	211754	5.31	ppb		96
71)	1,4-dichlorobenzene	11.06	146	115957	5.00	ppb		97
72)	1,2-dichlorobenzene	11.29	146	123049	5.34	ppb		92
73)	n-butylbenzene	11.16	91	209605	5.49	ppb		97
74)	1,2-dibromo-3-chloropropan	11.76	75	79348	35.77	ppb		87
75)	1,2,4-trichlorobenzene	12.20	180	62077	4.53	ppb		95
76)	hexachlorobutadiene	12.15	225	43696	5.10	ppb		99
77)	naphthalene	12.46	128	139734	4.88	ppb		98
78)	trans-1,4-Dichloro-2-buten	10.64	88	56943	29.61	ppb		96
79)	1,2,3-trichlorobenzene	12.60	180	60311	5.11	ppb		98

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

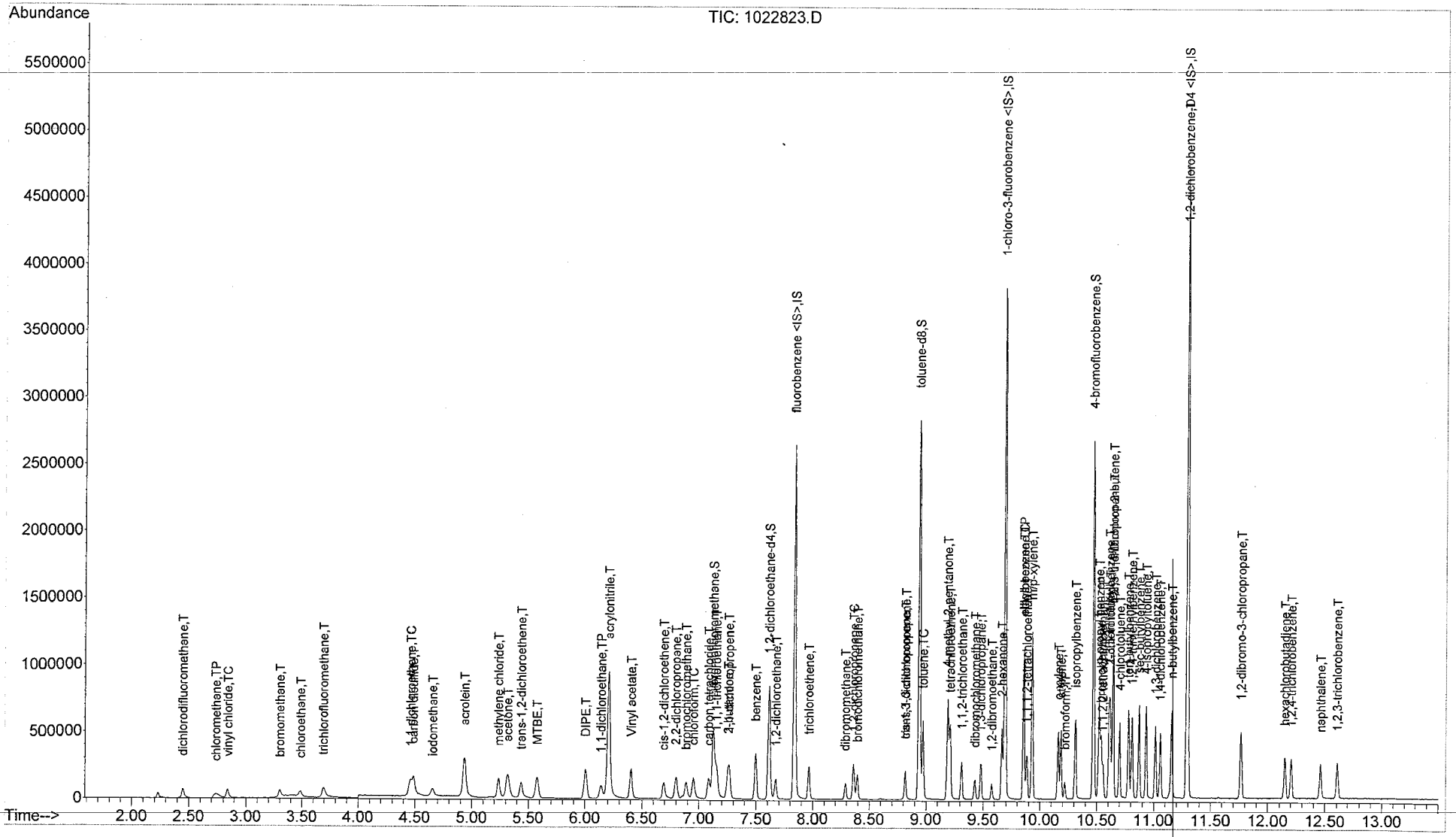
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022823.D
Acq On : 22 Oct 2015 11:01 pm
Sample : 1928_5 A-MSD
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 23 13:28 2015

Revised Report
Vial: 23
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



SW-846 8260B
Prep, Standard, Run Logs

Revised Report

VXX: G014
VMS: 3772

Sequence Pullsheet

SGS Environmental Laboratories. Inc.

Instrument: MSD8 Date: 10 22 2015

Vial #	Sample ID	EXT	Dilution	Comment
1	TUNE			
2	QCK010			
3	183489 . LCS			
4	183490 - LCSD			
5	CLAPX9			
6	R			
7	183491 - MB			
8	1928-8		x1	✓
9	1926-9		↓	✓
10	↓ -8		↓	✓
11	↓ -5		↓	✓
12	1928 -1		↓	✓
13	↓ -3		↓	✓
14	~~-4~~		↓	✓
15	~~-5~~		↓	✓
16	↓ -6		↓	✓
17	↓ -7		↓	✓
18	↓ -2		x20	4hrs @ 5ppb
19	1926 - 2		x 40	✓
20	↓ -6		x 50	✓
21	↓ -7		x100	✓
22	↓ -3	MS	x 40	✓
23	↓ -4	MSD	x 40	✓
24	1928- 4	MS1		✓
25	↓ - 5	MSD		✓

Vial #	Sample ID	EXT	Dilution	Comment
26	R			
27	R			
28				
29				
30				
31				
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MSD8 Runlog

SGS Environmental Services, Inc.

Method: 8260-W/APIX-W

Initial Cal. Curve: VMS3752/VMS3715

Matrix: Water

Batch: **VMS3772**

FILENAME	SAMPLE ID / DILUTION	DATE / TIME	COMMENTS	pH	METHOD	OPER
1022801.D	TUNE	10/22/2015 13:15	TUNE PASS	✓	8260W+APIX	JHL
1022802.D	QCK010	10/22/2015 13:41	8260 CCV PASS	✓	8260W+APIX	JHL
1022803.D	183489 LCS	10/22/2015 14:06	LCS PASS	✓	8260W+APIX	JHL
1022804.D	183490 LCSD	10/22/2015 14:32	LCSD PASS	✓	8260W+APIX	JHL
1022805.D	CCAPX9	10/22/2015 14:57	APIX CCV PASS	✓	8260W+APIX	JHL
1022806.D	R	10/22/2015 15:23	✓	✓	8260W+APIX	JHL
1022807.D	183491 MB	10/22/2015 15:48	✓	✓	8260W+APIX	JHL
1022808.D	1928_8 A	10/22/2015 16:38	✓	✓	8260W+APIX	JHL
1022809.D	1926_9 A	10/22/2015 17:04	✓	✓	8260W+APIX	JHL
1022810.D	1926_8 A	10/22/2015 17:29	✓	✓	8260W+APIX	JHL
1022811.D	1926_5 A	10/22/2015 17:55	✓	✓	8260W+APIX	JHL
1022812.D	1928_1 A	10/22/2015 18:20	✓	✓	8260W+APIX	JHL
1022813.D	1928_3 A	10/22/2015 18:45	✓	✓	8260W+APIX	JHL
1022814.D	1928_6 A	10/22/2015 19:11	✓	✓	8260W+APIX	JHL
1022815.D	1928_7 A	10/22/2015 19:36	✓	✓	8260W+APIX	JHL
1022816.D	1928_2 x20 A	10/22/2015 20:02	✓	✓	8260W+APIX	JHL
1022817.D	1926_2 x40 A	10/22/2015 20:28	✓	✓	8260W+APIX	JHL
1022818.D	1926_6 x50 A	10/22/2015 20:53	✓	✓	8260W+APIX	JHL
1022819.D	1926_7 x100 A	10/22/2015 21:19	✓	✓	8260W+APIX	JHL
1022820.D	1926_3 x40 A-MS	10/22/2015 21:44	✓	✓	8260W+APIX	JHL
1022821.D	1926_4 x40 A-MSD	10/22/2015 22:10	✓	✓	8260W+APIX	JHL
1022822.D	1928_4 A-MS	10/22/2015 22:35	✓	✓	8260W+APIX	JHL
1022823.D	1928_5 A-MSD	10/22/2015 23:01	✓	✓	8260W+APIX	JHL

Soil Stds: Curve=V12-290A/B/V12-290A/B QC=V12-291A/B/V12-291A/B
Water Stds: Curve=V12-290C/V12-290D-II QC=V12-291C/V12-291D-II
Air Stds: Primary= Secondary=

Review Analyst: CW

Page Number: 2182

SW-846 8260B
Initial Calibration Data

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: SGS Environmental Services Inc. Contract:

Lab Code: NC00919 Case No.: SAS No.: SDG No.:

Instrument ID: MSD8 Calibration Date(s): 09/23/15

Heated Purge: (Y/N) N Calibration Times: 19:18

GC Column: DB-624 ID: 0.2 (mm)

LAB FILE ID: RRF0.5 = 0923804.D RRF1.0 = 0923805.D

RRF2.0 = 0923806.D RRF5.0 = 0923807.D RRF10.0 = 0923808.D

COMPOUND	RRF 0.5	RRF 1.0	RRF 2.0	RRF 5.0	RRF 10.0	ICAL RRF	% RSD
dichlorodifluoromethane	1.11	1.07	1.02	0.875	1.10	1.06	7.60
chloromethane	1.45	1.32	1.23	1.04	1.30	1.28	8.89
vinyl chloride	1.20	1.15	1.08	0.944	1.18	1.14	7.69
bromomethane	0.841	0.782	0.682	0.507	0.620	0.663	15.8
chloroethane	0.777	0.732	0.693	0.569	0.693	0.678	11.5
trichlorofluoromethane	1.40	1.39	1.34	1.20	1.50	1.41	7.38
acrolein	0.217	0.191	0.169	0.153	0.195	0.196	13.2
1,1-dichloroethene	1.08	0.938	0.886	0.826	0.980	0.960	8.30
acetone	0.240	0.222	0.211	0.192	0.221	0.217	6.48
methylene chloride	1.15	1.01	0.939	0.861	0.994	0.992	8.21
trans-1,2-dichloroethene	0.827	0.838	0.875	0.746	0.894	0.868	7.48
acrylonitrile	0.457	0.436	0.432	0.390	0.496	0.469	10.5
MTBE	2.47	2.26	2.24	2.09	2.54	2.48	11.4
1,1-dichloroethane	1.96	1.90	1.84	1.61	1.90	1.87	6.10
DIPE	2.89	2.99	2.85	2.72	3.39	3.23	13.4
2,2-dichloropropane	1.48	1.28	1.26	1.13	1.34	1.34	8.86
cis-1,2-dichloroethene	0.945	0.994	0.891	0.802	0.980	0.956	8.28
2-butanone	0.172	0.164	0.168	0.152	0.187	0.178	9.65
bromochloromethane	0.575	0.574	0.574	0.498	0.609	0.584	7.05
chloroform	1.69	1.66	1.69	1.51	1.74	1.70	5.40
1,1,1-trichloroethane	1.43	1.42	1.37	1.25	1.49	1.44	7.16
carbon tetrachloride	1.21	1.16	1.14	1.01	1.20	1.20	8.70
Dibromofluoromethane	0.881	0.888	0.886	0.887	0.896	0.894	1.49
1,1-dichloropropene	1.25	1.34	1.16	1.15	1.40	1.35	11.3
1,2-dichloroethane-d4	1.21	1.21	1.21	1.22	1.23	1.20	2.57
benzene	4.04	3.72	3.79	3.43	4.08	3.97	7.88
1,2-dichloroethane	1.42	1.40	1.35	1.16	1.37	1.35	6.25
trichloroethene	1.10	0.964	0.959	0.841	1.01	1.01	8.93
1,2-dichloropropane	1.04	1.09	0.987	0.883	1.08	1.05	7.71
dibromomethane	0.592	0.544	0.533	0.470	0.564	0.548	6.96
bromodichloromethane	1.16	1.13	1.08	1.00	1.21	1.18	9.75
2-chloroethyl vinyl ether	0.192	0.186	0.201	0.190	0.257	0.205	14.3
cis-1,3-dichloropropene	1.48	1.43	1.35	1.27	1.58	1.52	11.7
4-methyl-2-pentanone	0.120	0.106	0.115	0.109	0.136	0.125	13.7
toluene-d8	3.73	3.76	3.75	3.79	3.77	3.78	1.48
toluene	2.71	2.44	2.47	2.19	2.58	2.56	8.08
iodomethane	1.30	1.30	1.32	1.21	1.53	1.44	12.5
trans-1,3-dichloropropene	1.48	1.43	1.35	1.27	1.58	1.52	11.7
Vinyl acetate	2.03	1.99	1.94	1.80	2.16	2.04	7.16
carbon disulfide	4.14	3.61	3.41	3.02	3.53	3.58	9.02

6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: SGS Environmental Services Inc. Contract:

Lab Code: NC00919 Case No.: SAS No.: SDG No.:

Instrument ID: MSD8 Calibration Date(s): 09/23/15

Heated Purge: (Y/N) N Calibration Times: 19:18

GC Column: DB-624 ID: 0.2 (mm)

LAB FILE ID: RRF0.5 = 0923804.D RRF1.0 = 0923805.D

RRF2.0 = 0923806.D RRF5.0 = 0923807.D RRF10.0 = 0923808.D

COMPOUND	RRF 0.5	RRF 1.0	RRF 2.0	RRF 5.0	RRF 10.0	ICAL RRF	% RSD
1,1,2-trichloroethane	0.414	0.408	0.408	0.360	0.424	0.411	5.86
tetrachloroethene	0.617	0.609	0.624	0.550	0.641	0.634	7.44
1,3-dichloropropane	0.829	0.803	0.784	0.715	0.828	0.816	6.39
2-hexanone	0.242	0.224	0.244	0.235	0.301	0.258	13.6
dibromochloromethane	0.457	0.402	0.418	0.381	0.471	0.463	13.5
1,2-dibromoethane	0.447	0.409	0.422	0.388	0.463	0.447	8.76
chlorobenzene	1.55	1.51	1.42	1.32	1.57	1.56	9.73
1,1,1,2-tetrachloroethane	0.510	0.457	0.461	0.411	0.489	0.490	9.62
bromoform	0.270	0.270	0.277	0.258	0.324	0.291	12.0
4-bromofluorobenzene	0.866	0.856	0.848	0.860	0.861	0.865	1.27
bromobenzene	0.700	0.656	0.655	0.581	0.679	0.681	8.10
1,1,2,2-tetrachloroethane	0.652	0.613	0.628	0.557	0.637	0.632	5.64
1,2,3-trichloropropane	0.209	0.192	0.190	0.174	0.204	0.201	7.67
ethylbenzene	0.587	0.582	0.576	0.533	0.650	0.630	11.3
m/p-xylene	0.721	0.690	0.731	0.693	0.836	0.797	12.6
styrene	0.934	0.999	1.03	1.00	1.27	1.09	14.4
o-xylene	0.658	0.656	0.685	0.625	0.760	0.734	12.3
isopropylbenzene	1.69	1.71	1.75	1.66	2.08	1.95	14.4
n-propyl benzene	2.41	2.46	2.43	2.20	2.64	2.57	9.36
2-chlorotoluene	0.501	0.485	0.488	0.449	0.530	0.511	7.29
4-chlorotoluene	0.470	0.458	0.465	0.427	0.514	0.490	8.58
1,3,5-trimethylbenzene	1.44	1.42	1.46	1.36	1.73	1.60	14.5
tert-butylbenzene	1.27	1.27	1.33	1.25	1.55	1.46	13.8
1,2,4-trimethylbenzene	1.44	1.48	1.56	1.47	1.79	1.69	13.8
sec-butylbenzene	2.00	2.00	2.09	1.93	2.40	2.27	13.2
1,3-dichlorobenzene	1.07	0.982	0.968	0.871	1.02	1.02	7.42
4-isopropyltoluene	1.56	1.54	1.63	1.59	1.97	1.72	12.7
1,4-dichlorobenzene	0.975	0.945	0.938	0.859	1.03	1.00	8.78
1,2-dichlorobenzene	1.03	0.983	0.993	0.866	1.02	0.994	5.85
n-butylbenzene	1.49	1.50	1.55	1.49	1.89	1.64	12.8
1,2-dibromo-3-chloropropane	0.098	0.081	0.092	0.082	0.098	0.096	10.4
1,2,4-trichlorobenzene	0.577	0.568	0.547	0.496	0.588	0.590	10.3
hexachlorobutadiene	0.401	0.354	0.356	0.314	0.361	0.369	8.15
naphthalene	1.11	1.09	1.14	1.06	1.32	1.23	14.7
trans-1,4-Dichloro-2-butene	0.077	0.072	0.072	0.07	0.087	0.083	13.8
1,2,3-trichlorobenzene	0.527	0.475	0.481	0.421	0.513	0.509	9.64

MSD8 Runlog

SGS Environmental Services, Inc.

Method: 8260-W/APX9/ADDS

Initial Cal. Curve: VMS3752/VMS715/VMS3750

Matrix: Water

Batch: **VMS3752**

FILENAME	SAMPLE ID / DILUTION	DATE / TIME	COMMENTS	pH	METHOD	OPER
0923801.D	R	9/23/2015 18:01				JHL
0923802.D	R	9/23/2015 18:27				JHL
0923803.D	TUNE	9/23/2015 18:52	✓			JHL
0923804.D	ICAL1 0.5	9/23/2015 19:18	Curve Pass	N/A	8260/6200/624	JHL
0923805.D	ICAL2 1	9/23/2015 19:44				JHL
0923806.D	ICAL3 2	9/23/2015 20:09				JHL
0923807.D	ICAL4 5	9/23/2015 20:35				JHL
0923808.D	ICAL5 10	9/23/2015 21:01				JHL
0923809.D	ICAL6 20	9/23/2015 21:26				JHL
0923810.D	ICAL7 50	9/23/2015 21:52				JHL
0923811.D	ICAL8 70	9/23/2015 22:18				JHL
0923812.D	R	9/23/2015 22:44				JHL
0923813.D	QCK010	9/23/2015 23:10	✓	N/A	TCV	JHL
0923814.D	R	9/23/2015 23:36				JHL

Soil Stds: Curve=/ QC=/

Water Stds: Curve=V12-278C/V12-278D-I QC=V12-269B/V12-269D-IV

Air Stds: Primary~~97/173~~ Secondary=

Review Analyst: [signature]

8260-W ICAL

VXX: N/A

VMS: 3752

Revised Report

Sequence Pullsheet

SGS Environmental Laboratories. Inc.

Instrument: **MSD8**

Date: 09232015

Vial #	Sample ID	EXT	Dilution	Comment
1	R			
2	R			
3	TUNE			
4	ICAL 1	0.5		8260/6200/624
5	2	1		
6	3	2		
7	4	5		
8	5	10		
9	6	20		
10	7	50		
11	8	70		
12	R			
13	ICV (QCK010)			
14	R			
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				

Vial #	Sample ID	EXT	Dilution	Comment
26				
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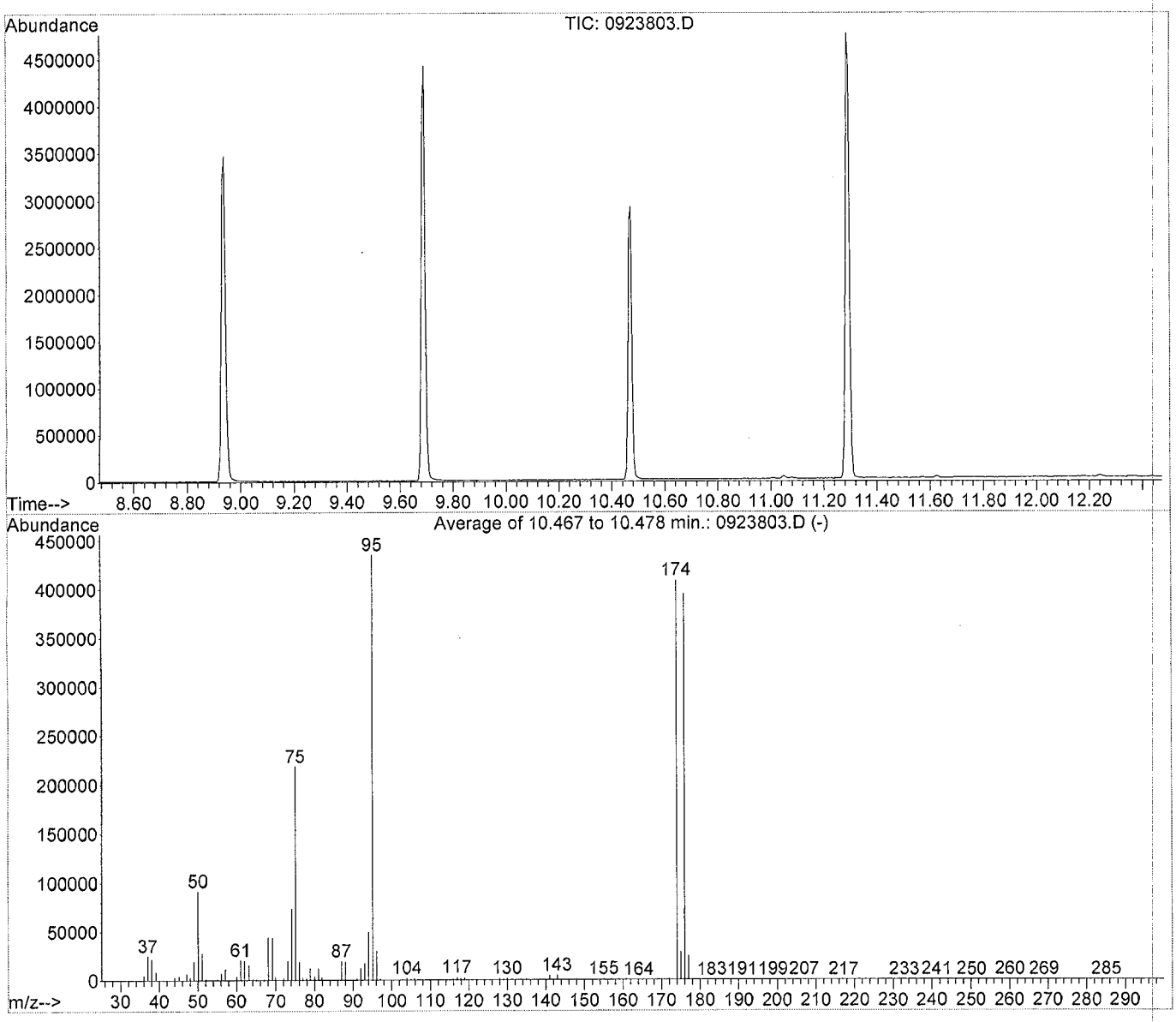
Data File : C:\MSDCHEM\1\DATA\VMS3752\0923803.D Vial: 3
Acq On : 23 Sep 2015 6:52 pm Operator: JHL
Sample : TUNE Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Method : C:\MSDCHEM\1\METHODS\8260W\VMS3706.M (RTE Integrator)
Title : VMS3706 Water ICAL 8260\624\6200



AutoFind: Scans 1514, 1515, 1516; Background Corrected with Scan 1509

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	21.0	91549	PASS
75	95	30	60	50.2	218577	PASS
95	95	100	100	100.0	435221	PASS
96	95	5	9	7.0	30486	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	94.0	409045	PASS
175	174	5	9	7.1	29167	PASS
176	174	95	101	96.6	395086	PASS
177	176	5	9	6.3	24976	PASS

✓
BWS
9.24.15

0923803.D VMS3706.M Thu Sep 24 08:57:42 2015

GC/MS QA-QC Check Report

Revised Report

Tune File : C:\MSDCHEM\1\DATA\VMS3752\0923803.D
Tune Time : 23 Sep 2015 6:52 pm

Daily Calibration File : C:\MSDCHEM\1\DATA\VMS3752\0923809.D

						360889	646301	823173
File	Sample	Surrogate Recovery %				Internal Standard Responses		
0923803.D	TUNE	99	100	98	99	372113	644366	807747
0923804.D	ICAL1	98	101	99	100	355082	614345	761543
0923805.D	ICAL2	99	101	99	99	347863	610616	751406
0923806.D	ICAL3	99	101	99	98	352874	621470	758697
0923807.D	ICAL4	99	102	100	99	366684	657807	815671
0923808.D	ICAL5	100	103	100	100	349593	634515	796273
0923809.D	ICAL6	99	97	99	101	360889	646301	823173
0923810.D	ICAL7	102	96	101	101	356483	650051	855237
0923811.D	ICAL8	103	98	103	102	364901	682691	905865
0923813.D	QCK010	99	101	99	100	371816	663987	832875

t - fails 12hr time check * - fails criteria

Created: Thu Sep 24 09:13:02 2015 MSD8

BWJ
9.24.15

Initial Calibration Report
Paradigm Analytical Labs

Revised Report

Instrument ; MSD8
Method ; VMS3752.M
Matrix ; Water
Cal. Date ; 23 Sep 2015 7:18 pm
Last Modified ; Thu Sep 24 09:10:32 2015
Number of levels ; 8

Cal Files by ID
0.5 ; C:\MSDCHEM\1\DATA\VMS3752\0923804.D
5 ; C:\MSDCHEM\1\DATA\VMS3752\0923807.D
1.0 ; C:\MSDCHEM\1\DATA\VMS3752\0923805.D
2.0 ; C:\MSDCHEM\1\DATA\VMS3752\0923806.D
10 ; C:\MSDCHEM\1\DATA\VMS3752\0923808.D
20 ; C:\MSDCHEM\1\DATA\VMS3752\0923809.D
50 ; C:\MSDCHEM\1\DATA\VMS3752\0923810.D
70 ; C:\MSDCHEM\1\DATA\VMS3752\0923811.D

Calibration Level ID	0.5	5	1.0	2.0	10	20	50	70		
Concentration (ppb)	0.5	5.0	1.0	2.0	10.0	20.0	50.0	70.0	AvgRF	%RSD
dichlorodifluoromethane	1.113	0.875	1.071	1.018	1.105	1.083	1.117	1.090	1.059	7.598
chloromethane	1.452	1.045	1.323	1.229	1.300	1.275	1.302	1.296	1.278	8.887
vinyl chloride	1.196	0.944	1.152	1.080	1.185	1.153	1.207	1.181	1.137	7.693
bromomethane	0.841	0.507	0.782	0.682	0.620	0.613	0.624	0.632	0.663	15.859
chloroethane	0.777	0.569	0.732	0.693	0.693	0.604			0.678	11.549
trichlorofluoromethane	1.405	1.195	1.395	1.338	1.500	1.458	1.504	1.481	1.409	7.383
acrolein	0.217	0.153	0.191	0.169	0.195	0.195	0.216	0.231	0.196	13.249
1,1-dichloroethene	1.077	0.826	0.938	0.886	0.980	0.944	1.021	1.011	0.960	8.295
acetone	0.240	0.192	0.222	0.211	0.221	0.208	0.216	0.225	0.217	6.482
methylene chloride	1.149	0.861	1.011	0.939	0.994	0.962	1.019	0.998	0.992	8.211
trans-1,2-dichloroethene	0.827	0.746	0.838	0.875	0.894	0.875	0.948	0.938	0.868	7.480
acrylonitrile	0.457	0.390	0.436	0.432	0.496	0.488	0.517	0.539	0.469	10.536
MTBE	2.469	2.092	2.260	2.241	2.537	2.527	2.857	2.879	2.483	11.419
1,1-dichloroethane	1.956	1.612	1.906	1.836	1.902	1.863	1.970	1.935	1.873	6.102
DIPE	2.893	2.715	2.988	2.848	3.393	3.402	3.829	3.795	3.233	13.415
2,2-dichloropropane	1.485	1.127	1.279	1.258	1.339	1.328	1.453	1.433	1.338	8.856
cis-1,2-dichloroethene	0.945	0.802	0.994	0.891	0.980	0.960	1.042	1.036	0.956	8.277
2-butanone	0.172	0.152	0.164	0.168	0.187	0.181	0.195	0.203	0.178	9.652
bromochloromethane	0.575	0.498	0.574	0.574	0.609	0.594	0.634	0.615	0.584	7.055
chloroform	1.692	1.511	1.665	1.687	1.737	1.691	1.821	1.775	1.698	5.402
1,1,1-trichloroethane	1.433	1.251	1.421	1.371	1.494	1.442	1.577	1.552	1.443	7.166
carbon tetrachloride	1.212	1.008	1.155	1.139	1.205	1.213	1.336	1.322	1.199	8.706
Dibromofluoromethane	0.881	0.887	0.888	0.886	0.896	0.889	0.908	0.921	0.894	1.492
1,1-dichloropropene	1.248	1.154	1.336	1.159	1.401	1.407	1.551	1.522	1.347	11.270
1,2-dichloroethane-d4	1.211	1.223	1.213	1.211	1.229	1.162	1.149	1.170	1.196	2.571
benzene	4.036	3.431	3.718	3.795	4.081	4.017	4.368	4.322	3.971	7.883
1,2-dichloroethane	1.420	1.159	1.400	1.351	1.370	1.313	1.414	1.362	1.349	6.252
trichloroethene	1.105	0.841	0.964	0.959	1.008	1.005	1.104	1.085	1.009	8.931
1,2-dichloropropane	1.040	0.883	1.093	0.987	1.085	1.035	1.129	1.115	1.046	7.713
dibromomethane	0.592	0.470	0.544	0.533	0.564	0.534	0.580	0.570	0.548	6.956
bromodichloromethane	1.162	1.005	1.127	1.084	1.213	1.197	1.346	1.325	1.182	9.750
2-chloroethyl vinyl ether	0.192	0.190	0.186	0.201	0.257				0.205	14.301

cis-1,3-dichloropropene	1.481	1.266	1.430	1.351	1.584	1.561	1.763	1.759	1.524	11.740
4-methyl-2-pentanone	0.120	0.109	0.106	0.115	0.136	0.135	0.153		0.125	13.662
toluene-d8	3.734	3.793	3.756	3.749	3.771	3.747	3.814	3.907	3.784	1.483
toluene	2.708	2.189	2.435	2.470	2.582	2.522	2.800	2.800	2.563	8.078
iodomethane	1.304	1.213	1.299	1.317	1.530	1.554	1.707	1.609	1.442	12.467
trans-1,3-dichloropropene	1.481	1.266	1.430	1.351	1.584	1.561	1.763	1.759	1.524	11.740
Vinyl acetate	2.032	1.796	1.993	1.940	2.162	2.131	2.267	1.989	2.039	7.158
carbon disulfide	4.144	3.023	3.610	3.410	3.528	3.446	3.742	3.740	3.580	9.024
1,1,2-trichloroethane	0.414	0.360	0.408	0.408	0.424	0.404	0.443	0.423	0.411	5.858
tetrachloroethene	0.617	0.550	0.609	0.624	0.641	0.650	0.705	0.679	0.634	7.443
1,3-dichloropropane	0.829	0.715	0.803	0.784	0.828	0.819	0.889	0.861	0.816	6.391
2-hexanone	0.242	0.235	0.224	0.244	0.301	0.305			0.258	13.587
dibromochloromethane	0.457	0.381	0.402	0.418	0.471	0.480	0.552	0.545	0.463	13.543
1,2-dibromoethane	0.447	0.388	0.409	0.422	0.463	0.457	0.499	0.494	0.447	8.761
chlorobenzene	1.549	1.319	1.512	1.423	1.567	1.567	1.771	1.752	1.558	9.731
1,1,1,2-tetrachloroethane	0.510	0.411	0.457	0.461	0.489	0.494	0.554	0.543	0.490	9.623
bromoform	0.270	0.258	0.270	0.277	0.324	0.345			0.291	12.013
4-bromofluorobenzene	0.866	0.860	0.856	0.848	0.861	0.871	0.878	0.880	0.865	1.271
bromobenzene	0.700	0.581	0.656	0.655	0.679	0.679	0.759	0.740	0.681	8.097
1,1,2,2-tetrachloroethane	0.652	0.557	0.613	0.628	0.637	0.633	0.673	0.660	0.632	5.645
1,2,3-trichloropropane	0.209	0.174	0.192	0.190	0.204	0.201	0.219	0.220	0.201	7.667
ethylbenzene	0.587	0.533	0.582	0.576	0.650	0.662	0.730	0.718	0.630	11.336
m/p-xylene	0.721	0.693	0.690	0.731	0.836	0.848	0.937	0.917	0.797	12.601
styrene	0.934	1.004	0.999	1.028	1.266	1.313			1.090	14.458
o-xylene	0.658	0.625	0.656	0.685	0.760	0.783	0.862	0.842	0.734	12.321
isopropylbenzene	1.690	1.663	1.708	1.754	2.076	2.126	2.339	2.287	1.955	14.442
n-propyl benzene	2.410	2.202	2.455	2.434	2.642	2.670	2.928	2.834	2.572	9.359
2-chlorotoluene	0.501	0.449	0.485	0.488	0.530	0.525	0.560	0.551	0.511	7.288
4-chlorotoluene	0.470	0.427	0.458	0.465	0.514	0.506	0.551	0.532	0.490	8.578
1,3,5-trimethylbenzene	1.439	1.362	1.426	1.464	1.733	1.783	1.975		1.597	14.515
tert-butylbenzene	1.268	1.250	1.266	1.326	1.548	1.582	1.724	1.698	1.458	13.842
1,2,4-trimethylbenzene	1.441	1.470	1.479	1.561	1.788	1.836	2.020	1.960	1.694	13.834
sec-butylbenzene	2.003	1.928	1.998	2.087	2.399	2.431	2.681	2.610	2.267	13.152
1,3-dichlorobenzene	1.069	0.871	0.982	0.968	1.023	1.022	1.109	1.075	1.015	7.422
4-isopropyltoluene	1.563	1.595	1.536	1.633	1.972	2.025			1.721	12.693
1,4-dichlorobenzene	0.975	0.859	0.945	0.938	1.030	1.036	1.126	1.091	1.000	8.781
1,2-dichlorobenzene	1.032	0.866	0.983	0.993	1.016	0.983	1.061	1.019	0.994	5.852
n-butylbenzene	1.493	1.493	1.501	1.553	1.895	1.934			1.645	12.799
1,2-dibromo-3-chloropropane	0.098	0.082	0.081	0.092	0.098	0.100	0.106	0.108	0.096	10.351
1,2,4-trichlorobenzene	0.577	0.496	0.568	0.547	0.588	0.599	0.687	0.661	0.590	10.297
hexachlorobutadiene	0.401	0.314	0.354	0.356	0.361	0.372	0.406	0.392	0.369	8.154
naphthalene	1.113	1.058	1.092	1.136	1.316	1.388	1.536		1.234	14.671
trans-1,4-Dichloro-2-butene	0.077	0.070	0.072	0.072	0.087	0.090	0.097	0.098	0.083	13.853
1,2,3-trichlorobenzene	0.527	0.421	0.475	0.481	0.513	0.519	0.573	0.560	0.509	9.635

Linear Regression
Correlation Coefficient Results
Revised Report

Method : VMS3752.M

Cal Files
0.5 : C:\MSDCHEM\1\DATA\VMS3752\0923804.D
5 : C:\MSDCHEM\1\DATA\VMS3752\0923807.D
1.0 : C:\MSDCHEM\1\DATA\VMS3752\0923805.D
2.0 : C:\MSDCHEM\1\DATA\VMS3752\0923806.D
10 : C:\MSDCHEM\1\DATA\VMS3752\0923808.D
20 : C:\MSDCHEM\1\DATA\VMS3752\0923809.D
50 : C:\MSDCHEM\1\DATA\VMS3752\0923810.D
70 : C:\MSDCHEM\1\DATA\VMS3752\0923811.D

Compound	Formula or RF	Method	Correlation Coefficient (r^2)
dichlorodifluoromethane	RF=1.059	Avg RF	
chloromethane	RF=1.278	Avg RF	
vinyl chloride	RF=1.137	Avg RF	
bromomethane	y=0.01358x2+ 0.60031x+ 0.00127	Quadratic	1.000
chloroethane	RF=0.678	Avg RF	
trichlorofluoromethane	RF=1.409	Avg RF	
acrolein	RF=0.196	Avg RF	
1,1-dichloroethene	RF=0.960	Avg RF	
acetone	RF=0.217	Avg RF	
methylene chloride	RF=0.992	Avg RF	
trans-1,2-dichloroethene	RF=0.868	Avg RF	
acrylonitrile	RF=0.469	Avg RF	
MTBE	RF=2.483	Avg RF	
1,1-dichloroethane	RF=1.873	Avg RF	
DIPE	RF=3.233	Avg RF	
2,2-dichloropropane	RF=1.338	Avg RF	
cis-1,2-dichloroethene	RF=0.956	Avg RF	
2-butanone	RF=0.178	Avg RF	
bromochloromethane	RF=0.584	Avg RF	
chloroform	RF=1.698	Avg RF	
1,1,1-trichloroethane	RF=1.443	Avg RF	
carbon tetrachloride	RF=1.199	Avg RF	
Dibromofluoromethane	RF=0.894	Avg RF	
1,1-dichloropropene	RF=1.347	Avg RF	
1,2-dichloroethane-d4	RF=1.196	Avg RF	
benzene	RF=3.971	Avg RF	
1,2-dichloroethane	RF=1.349	Avg RF	
trichloroethene	RF=1.009	Avg RF	
1,2-dichloropropane	RF=1.046	Avg RF	
dibromomethane	RF=0.548	Avg RF	
bromodichloromethane	RF=1.182	Avg RF	
2-chloroethyl vinyl ether	RF=0.205	Avg RF	
cis-1,3-dichloropropene	RF=1.524	Avg RF	
4-methyl-2-pentanone	RF=0.125	Avg RF	
toluene-d8	RF=3.784	Avg RF	
toluene	RF=2.563	Avg RF	
iodomethane	RF=1.442	Avg RF	
trans-1,3-dichloropropene	RF=1.524	Avg RF	
Vinyl acetate	RF=2.039	Avg RF	
carbon disulfide	RF=3.580	Avg RF	
1,1,2-trichloroethane	RF=0.411	Avg RF	
tetrachloroethene	RF=0.634	Avg RF	
1,3-dichloropropane	RF=0.816	Avg RF	
2-hexanone	RF=0.258	Avg RF	
dibromochloromethane	RF=0.463	Avg RF	
1,2-dibromoethane	RF=0.447	Avg RF	
chlorobenzene	RF=1.558	Avg RF	
1,1,1,2-tetrachloroethane	RF=0.490	Avg RF	
bromoform	RF=0.291	Avg RF	
4-bromofluorobenzene	RF=0.865	Avg RF	
bromobenzene	RF=0.681	Avg RF	
1,1,2,2-tetrachloroethane	RF=0.632	Avg RF	
1,2,3-trichloropropane	RF=0.201	Avg RF	
ethylbenzene	RF=0.630	Avg RF	
m/p-xylene	RF=0.797	Avg RF	
styrene	RF=1.090	Avg RF	

o-xylene	RF=0.734		Avg RF
isopropylbenzene	RF=1.955	Revised Report	Avg RF
n-propyl benzene	RF=2.572		Avg RF
2-chlorotoluene	RF=0.511		Avg RF
4-chlorotoluene	RF=0.490		Avg RF
1,3,5-trimethylbenzene	RF=1.640		Avg RF
tert-butylbenzene	RF=1.458		Avg RF
1,2,4-trimethylbenzene	RF=1.694		Avg RF
sec-butylbenzene	RF=2.267		Avg RF
1,3-dichlorobenzene	RF=1.015		Avg RF
4-isopropyltoluene	RF=1.721		Avg RF
1,4-dichlorobenzene	RF=1.000		Avg RF
1,2-dichlorobenzene	RF=0.994		Avg RF
n-butylbenzene	RF=1.645		Avg RF
1,2-dibromo-3-chloropropane	RF=0.096		Avg RF
1,2,4-trichlorobenzene	RF=0.590		Avg RF
hexachlorobutadiene	RF=0.369		Avg RF
naphthalene	RF=1.234		Avg RF
trans-1,4-Dichloro-2-butene	RF=0.083		Avg RF
1,2,3-trichlorobenzene	RF=0.509		Avg RF

* Correlation Coefficent is < 0.990

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923804.D Vial: 4
Acq On : 23 Sep 2015 7:18 pm Operator: JHL
Sample : ICAL1 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:18:57 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:10:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	355082	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	614345	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	761543	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	312682	29.54	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 98.47%				
26) 1,2-dichloroethane-d4	7.61	65	430152	30.39	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 101.30%				
36) toluene-d8	8.94	98	1325776	29.60	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 98.67%				
52) 4-bromofluorobenzene	10.47	95	531891	30.03	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 100.10%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	6586	0.53	ppb		94
3) chloromethane	2.74	50	8591	0.57	ppb		96
4) vinyl chloride	2.84	62	7076	0.53	ppb		92
5) bromomethane	3.30	94	4979	0.64	ppb		97
6) chloroethane	3.49	64	4600	0.57	ppb		97
7) trichlorofluoromethane	3.70	101	8313	0.50	ppb		92
8) acrolein	4.94	56	32152	13.88	ppb		100
9) 1,1-dichloroethene	4.46	96	6371	0.56	ppb	#	80
10) acetone	5.31	58	7093	2.76	ppb		74
11) methylene chloride	5.24	84	6797	0.58	ppb		93
12) trans-1,2-dichloroethene	5.44	96	4892	0.48	ppb		95
13) acrylonitrile	6.20	53	67592	12.17	ppb		97
14) MTBE	5.58	73	14610	0.50	ppb		93
15) 1,1-dichloroethane	6.14	63	11577	0.52	ppb	#	86
16) DIPE	6.01	45	17122	0.45	ppb		99
17) 2,2-dichloropropane	6.80	77	8791	0.56	ppb		99
18) cis-1,2-dichloroethene	6.69	96	5593	0.49	ppb		90
19) 2-butanone	7.25	72	5081	2.41	ppb		91
20) bromochloromethane	6.89	130	3400	0.49	ppb		94
21) chloroform	6.95	83	10013	0.50	ppb		84
22) 1,1,1-trichloroethane	7.16	97	8480	0.50	ppb		96
23) carbon tetrachloride	7.09	117	7172	0.51	ppb		96
25) 1,1-dichloropropene	7.27	75	7383	0.46	ppb		91
27) benzene	7.50	78	23888	0.51	ppb		97
28) 1,2-dichloroethane	7.67	62	8404	0.53	ppb	#	87
29) trichloroethene	7.97	95	6541	0.55	ppb		89
30) 1,2-dichloropropane	8.36	63	6157	0.50	ppb	#	96
31) dibromomethane	8.29	93	3503	0.54	ppb		93
32) bromodichloromethane	8.39	83	6874	0.49	ppb		96
33) 2-chloroethyl vinyl ether	8.76	106	28338	11.67	ppb		81
34) cis-1,3-dichloropropene	8.82	75	8764	0.49	ppb		96
35) 4-methyl-2-pentanone	9.19	100	3539	2.39	ppb	#	72
37) toluene	8.97	92	16027	0.53	ppb		98
38) iodomethane	4.66	142	7719	0.45	ppb		95
39) trans-1,3-dichloropropene	8.82	75	8764	0.49	ppb		96
40) Vinyl acetate	6.40	43	30064	1.25	ppb	#	96
41) carbon disulfide	4.49	76	24525	0.58	ppb	#	96

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923804.D Vial: 4
Acq On : 23 Sep 2015 7:18 pm Operator: JHL
Sample : ICAL1 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:18:57 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:10:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
43) 1,1,2-trichloroethane	9.32	83	4238	0.50	ppb		92
44) tetrachloroethene	9.21	166	6314	0.49	ppb		90
45) 1,3-dichloropropane	9.48	76	8487	0.51	ppb		97
46) 2-hexanone	9.66	58	12388	2.34	ppb	#	95
47) dibromochloromethane	9.43	129	4676	0.49	ppb		100
48) 1,2-dibromoethane	9.57	107	4572	0.50	ppb		95
49) chlorobenzene	9.86	112	15860	0.50	ppb		97
50) 1,1,1,2-tetrachloroethane	9.89	131	5224	0.52	ppb		89
51) bromoform	10.22	173	2764	0.46	ppb	#	80
53) bromobenzene	10.54	156	7166	0.51	ppb		97
54) 1,1,2,2-tetrachloroethane	10.55	83	6677	0.52	ppb	#	84
55) 1,2,3-trichloropropane	10.64	110	2137	0.52	ppb	#	64
57) ethylbenzene	9.86	106	7453	0.47	ppb		95
58) m/p-xylene	9.93	106	18303	0.91	ppb		97
59) styrene	10.18	104	11858	0.43	ppb		94
60) o-xylene	10.16	106	8357	0.45	ppb		88
61) isopropylbenzene	10.31	105	21452	0.43	ppb		99
62) n-propyl benzene	10.52	91	30592	0.47	ppb		97
63) 2-chlorotoluene	10.62	126	6362	0.49	ppb		96
64) 4-chlorotoluene	10.70	126	5966	0.48	ppb		90
65) 1,3,5-trimethylbenzene	10.61	105	18266	0.45	ppb		98
66) tert-butylbenzene	10.78	119	16094	0.43	ppb		99
67) 1,2,4-trimethylbenzene	10.81	105	18284	0.43	ppb		94
68) sec-butylbenzene	10.87	105	25418	0.44	ppb		95
69) 1,3-dichlorobenzene	11.01	146	13568	0.53	ppb	#	89
70) 4-isopropyltoluene	10.93	119	19836	0.45	ppb		91
71) 1,4-dichlorobenzene	11.06	146	12373	0.49	ppb		97
72) 1,2-dichlorobenzene	11.29	146	13099	0.52	ppb	#	43
73) n-butylbenzene	11.16	91	18912	0.45	ppb		99
74) 1,2-dibromo-3-chloropropan	11.76	75	7485	3.08	ppb		95
75) 1,2,4-trichlorobenzene	12.20	180	7327	0.49	ppb		95
76) hexachlorobutadiene	12.15	225	5086	0.54	ppb		99
77) naphthalene	12.46	128	14129	0.45	ppb		96
78) trans-1,4-Dichloro-2-buten	10.64	88	4865	2.31	ppb		82
79) 1,2,3-trichlorobenzene	12.61	180	6685	0.52	ppb		87

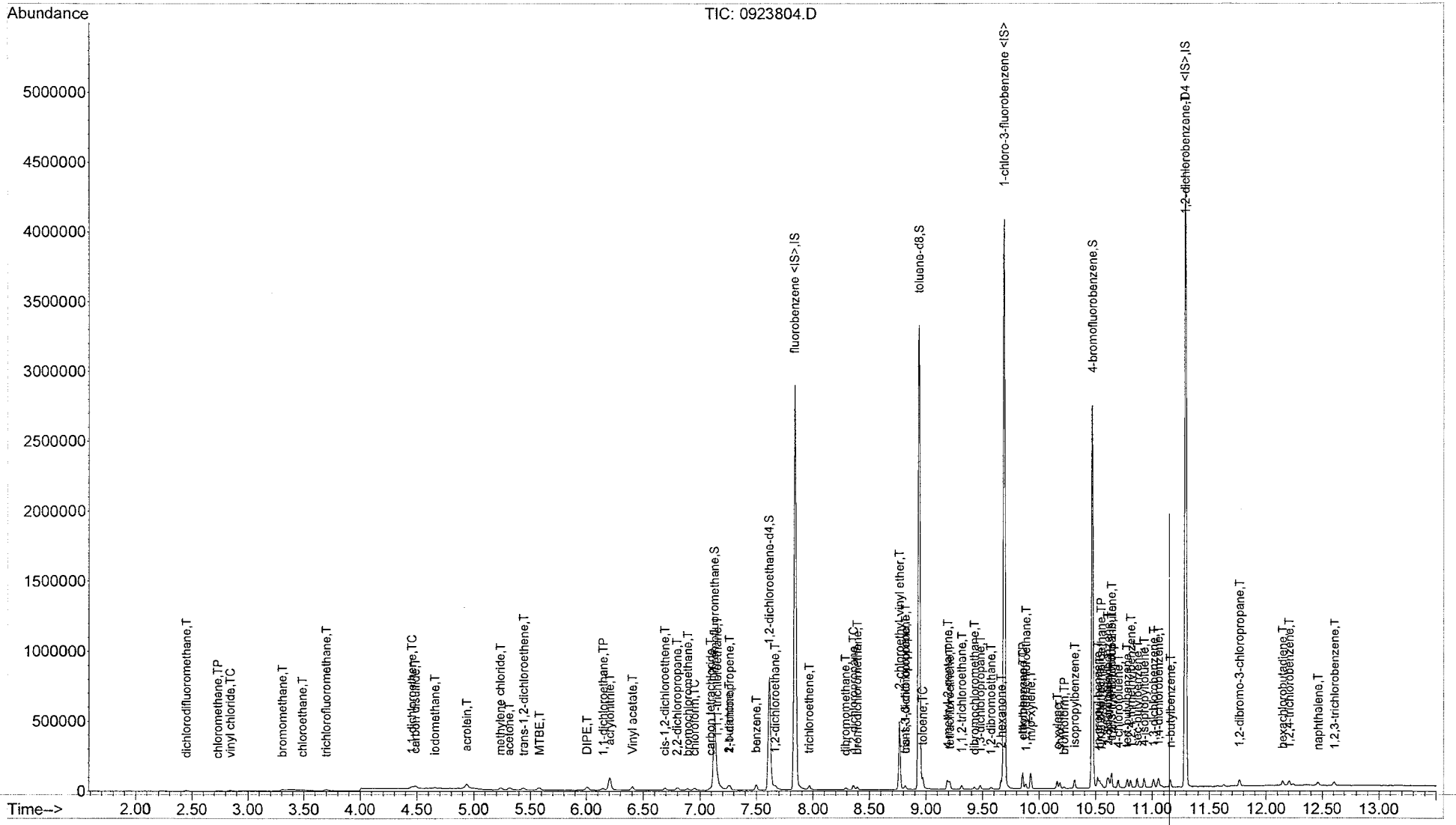
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923804.D Vial: 4
Acq On : 23 Sep 2015 7:18 pm Operator: JHL
Sample : ICAL1 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:18 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923805.D Vial: 5
Acq On : 23 Sep 2015 7:44 pm Operator: JHL
Sample : ICAL2 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:18:59 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	347863	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	610616	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	751406	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	309064	29.80	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 99.33%				
26) 1,2-dichloroethane-d4	7.61	65	421888	30.42	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 101.40%				
36) toluene-d8	8.94	98	1306640	29.78	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.27%				
52) 4-bromofluorobenzene	10.47	95	522531	29.68	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 98.93%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	12418	1.01	ppb		99
3) chloromethane	2.74	50	15345	1.04	ppb		99
4) vinyl chloride	2.84	62	13359	1.01	ppb		94
5) bromomethane	3.30	94	9068	1.24	ppb		90
6) chloroethane	3.49	64	8492	1.08	ppb	#	84
7) trichlorofluoromethane	3.69	101	16180	0.99	ppb		95
8) acrolein	4.94	56	55307	24.37	ppb		97
9) 1,1-dichloroethene	4.46	96	10874	0.98	ppb		92
10) acetone	5.31	58	12889	5.13	ppb		86
11) methylene chloride	5.24	84	11723	1.02	ppb		96
12) trans-1,2-dichloroethene	5.44	96	9712	0.97	ppb		97
13) acrylonitrile	6.20	53	126349	23.22	ppb		99
14) MTBE	5.58	73	26207	0.91	ppb		98
15) 1,1-dichloroethane	6.15	63	22105	1.02	ppb		99
16) DIPE	6.01	45	34650	0.92	ppb		95
17) 2,2-dichloropropane	6.80	77	14836	0.96	ppb		98
18) cis-1,2-dichloroethene	6.69	96	11525	1.04	ppb		88
19) 2-butanone	7.25	72	9533	4.62	ppb		80
20) bromochloromethane	6.89	130	6655	0.98	ppb		87
21) chloroform	6.95	83	19309	0.98	ppb		97
22) 1,1,1-trichloroethane	7.16	97	16475	0.98	ppb	#	90
23) carbon tetrachloride	7.09	117	13391	0.96	ppb		97
25) 1,1-dichloropropene	7.27	75	15495	0.99	ppb		99
27) benzene	7.50	78	43108	0.94	ppb		100
28) 1,2-dichloroethane	7.67	62	16239	1.04	ppb	#	94
29) trichloroethene	7.97	95	11178	0.96	ppb		93
30) 1,2-dichloropropane	8.36	63	12679	1.05	ppb	#	96
31) dibromomethane	8.29	93	6305	0.99	ppb		89
32) bromodichloromethane	8.39	83	13070	0.95	ppb		99
33) 2-chloroethyl vinyl ether	8.76	106	54008	22.71	ppb	#	78
34) cis-1,3-dichloropropene	8.82	75	16579	0.94	ppb		98
35) 4-methyl-2-pentanone	9.19	100	6167	4.25	ppb		78
37) toluene	8.97	92	28230	0.95	ppb		92
38) iodomethane	4.66	142	15066	0.90	ppb		100
39) trans-1,3-dichloropropene	8.82	75	16579	0.94	ppb		98
40) Vinyl acetate	6.40	43	57769	2.44	ppb		99
41) carbon disulfide	4.49	76	41859	1.01	ppb	#	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923805.D Vial: 5
Acq On : 23 Sep 2015 7:44 pm Operator: JHL
Sample : ICAL2 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:18:59 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
43)	1,1,2-trichloroethane	9.32	83	8312	0.99	ppb		97
44)	tetrachloroethene	9.20	166	12399	0.96	ppb		97
45)	1,3-dichloropropane	9.48	76	16339	0.98	ppb		99
46)	2-hexanone	9.66	58	22776	4.33	ppb		95
47)	dibromochloromethane	9.43	129	8186	0.87	ppb		97
48)	1,2-dibromoethane	9.57	107	8322	0.91	ppb		95
49)	chlorobenzene	9.86	112	30778	0.97	ppb		99
50)	1,1,1,2-tetrachloroethane	9.89	131	9307	0.93	ppb		87
51)	bromoform	10.22	173	5498	0.93	ppb	#	83
53)	bromobenzene	10.54	156	13350	0.96	ppb		97
54)	1,1,2,2-tetrachloroethane	10.55	83	12477	0.97	ppb	#	94
55)	1,2,3-trichloropropane	10.64	110	3903	0.95	ppb	#	63
57)	ethylbenzene	9.86	106	14577	0.92	ppb		93
58)	m/p-xylene	9.93	106	34578	1.73	ppb		97
59)	styrene	10.18	104	25013	0.92	ppb		99
60)	o-xylene	10.16	106	16437	0.89	ppb		93
61)	isopropylbenzene	10.31	105	42774	0.87	ppb		98
62)	n-propyl benzene	10.52	91	61492	0.95	ppb		100
63)	2-chlorotoluene	10.62	126	12158	0.95	ppb		98
64)	4-chlorotoluene	10.70	126	11475	0.93	ppb		81
65)	1,3,5-trimethylbenzene	10.61	105	35725	0.89	ppb		97
66)	tert-butylbenzene	10.78	119	31700	0.87	ppb		97
67)	1,2,4-trimethylbenzene	10.81	105	37040	0.87	ppb		100
68)	sec-butylbenzene	10.87	105	50050	0.88	ppb		94
69)	1,3-dichlorobenzene	11.01	146	24588	0.97	ppb		96
70)	4-isopropyltoluene	10.93	119	38465	0.89	ppb		98
71)	1,4-dichlorobenzene	11.06	146	23678	0.95	ppb		98
72)	1,2-dichlorobenzene	11.30	146	24618	0.99	ppb	#	84
73)	n-butylbenzene	11.16	91	37564	0.91	ppb		99
74)	1,2-dibromo-3-chloropropan	11.76	75	12195	5.09	ppb		98
75)	1,2,4-trichlorobenzene	12.20	180	14219	0.96	ppb		92
76)	hexachlorobutadiene	12.15	225	8860	0.96	ppb		89
77)	naphthalene	12.46	128	27362	0.89	ppb	#	97
78)	trans-1,4-Dichloro-2-buten	10.64	88	9064	4.36	ppb		91
79)	1,2,3-trichlorobenzene	12.61	180	11893	0.93	ppb		89

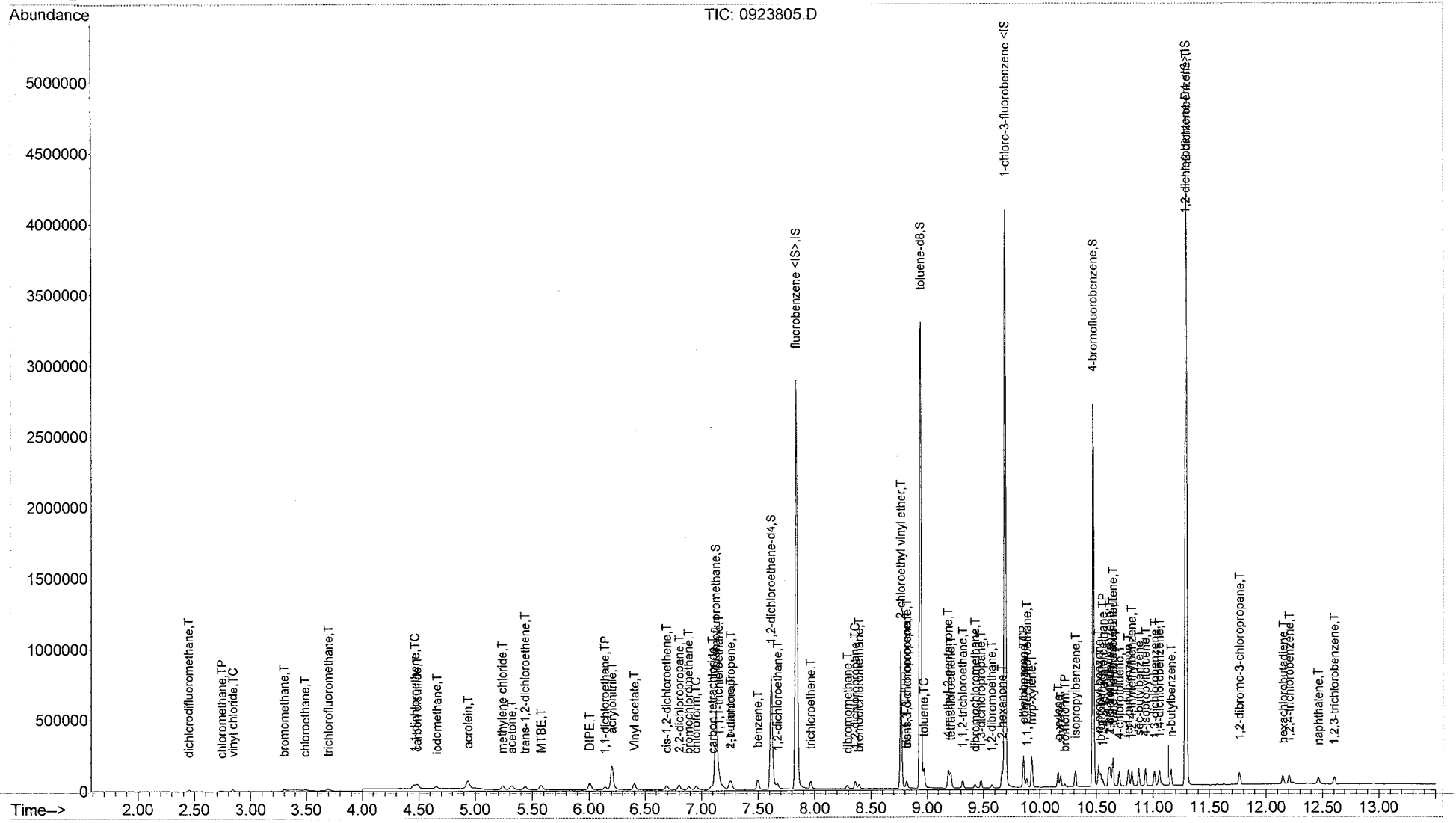
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923805.D Vial: 5
Acq On : 23 Sep 2015 7:44 pm Operator: JHL
Sample : ICAL2 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:18 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923806.D Vial: 6
Acq On : 23 Sep 2015 8:09 pm Operator: JHL
Sample : ICAL3 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:01 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	352874	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	621470	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	758697	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	312794	29.73	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 99.10%			
26) 1,2-dichloroethane-d4	7.61	65	427158	30.37	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 101.23%			
36) toluene-d8	8.94	98	1323091	29.73	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.10%			
52) 4-bromofluorobenzene	10.47	95	527048	29.42	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 98.07%			
Target Compounds						Qvalue
2) dichlorodifluoromethane	2.45	85	23956	1.92	ppb	93
3) chloromethane	2.74	50	28909	1.92	ppb	99
4) vinyl chloride	2.84	62	25404	1.90	ppb	100
5) bromomethane	3.30	94	16041	2.20	ppb	87
6) chloroethane	3.49	64	16306	2.04	ppb	95
7) trichlorofluoromethane	3.70	101	31467	1.90	ppb	94
8) acrolein	4.94	56	99155	43.07	ppb	100
9) 1,1-dichloroethene	4.46	96	20850	1.85	ppb	94
10) acetone	5.32	58	24764	9.71	ppb	91
11) methylene chloride	5.24	84	22100	1.89	ppb	95
12) trans-1,2-dichloroethene	5.44	96	20584	2.02	ppb	89
13) acrylonitrile	6.20	53	254033	46.02	ppb	100
14) MTBE	5.58	73	52729	1.81	ppb	98
15) 1,1-dichloroethane	6.14	63	43201	1.96	ppb	98
16) DIPE	6.01	45	67004	1.76	ppb	93
17) 2,2-dichloropropane	6.80	77	29594	1.88	ppb	98
18) cis-1,2-dichloroethene	6.69	96	20966	1.86	ppb	89
19) 2-butanone	7.26	72	19750	9.44	ppb	85
20) bromochloromethane	6.89	130	13501	1.97	ppb	99
21) chloroform	6.96	83	39697	1.99	ppb	99
22) 1,1,1-trichloroethane	7.16	97	32250	1.90	ppb	96
23) carbon tetrachloride	7.09	117	26803	1.90	ppb	95
25) 1,1-dichloropropene	7.27	75	27276	1.72	ppb	95
27) benzene	7.50	78	89268	1.91	ppb	98
28) 1,2-dichloroethane	7.67	62	31788	2.00	ppb	98
29) trichloroethene	7.97	95	22566	1.90	ppb	95
30) 1,2-dichloropropane	8.36	63	23228	1.89	ppb	93
31) dibromomethane	8.29	93	12535	1.94	ppb	96
32) bromodichloromethane	8.39	83	25492	1.83	ppb	99
33) 2-chloroethyl vinyl ether	8.76	106	118190	48.99	ppb	87
34) cis-1,3-dichloropropene	8.82	75	31789	1.77	ppb	97
35) 4-methyl-2-pentanone	9.19	100	13566	9.22	ppb	79
37) toluene	8.97	92	58114	1.93	ppb	94
38) iodomethane	4.66	142	30974	1.83	ppb	100
39) trans-1,3-dichloropropene	8.82	75	31789	1.77	ppb	97
40) Vinyl acetate	6.40	43	114114	4.76	ppb	98
41) carbon disulfide	4.49	76	80229	1.91	ppb #	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923806.D Vial: 6
Acq On : 23 Sep 2015 8:09 pm Operator: JHL
Sample : ICAL3 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:01 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit		Qvalue
43)	1,1,2-trichloroethane	9.32	83	16909	1.99	ppb		96
44)	tetrachloroethene	9.20	166	25841	1.97	ppb		97
45)	1,3-dichloropropane	9.48	76	32482	1.92	ppb		97
46)	2-hexanone	9.66	58	50611	9.45	ppb		98
47)	dibromochloromethane	9.43	129	17303	1.80	ppb		98
48)	1,2-dibromoethane	9.57	107	17504	1.89	ppb	#	99
49)	chlorobenzene	9.86	112	58975	1.83	ppb		98
50)	1,1,1,2-tetrachloroethane	9.89	131	19113	1.88	ppb		96
51)	bromoform	10.22	173	11485	1.91	ppb		99
53)	bromobenzene	10.54	156	27117	1.92	ppb		96
54)	1,1,2,2-tetrachloroethane	10.55	83	26036	1.99	ppb		95
55)	1,2,3-trichloropropane	10.64	110	7887	1.89	ppb		77
57)	ethylbenzene	9.86	106	29117	1.83	ppb		99
58)	m/p-xylene	9.93	106	73941	3.67	ppb		97
59)	styrene	10.18	104	51996	1.89	ppb		99
60)	o-xylene	10.16	106	34638	1.87	ppb		96
61)	isopropylbenzene	10.31	105	88740	1.79	ppb		97
62)	n-propyl benzene	10.52	91	123088	1.89	ppb		99
63)	2-chlorotoluene	10.62	126	24674	1.91	ppb		99
64)	4-chlorotoluene	10.70	126	23506	1.90	ppb		95
65)	1,3,5-trimethylbenzene	10.61	105	74059	1.83	ppb		99
66)	tert-butylbenzene	10.78	119	67085	1.82	ppb		95
67)	1,2,4-trimethylbenzene	10.81	105	78976	1.84	ppb		98
68)	sec-butylbenzene	10.87	105	105560	1.84	ppb		100
69)	1,3-dichlorobenzene	11.01	146	48937	1.91	ppb		98
70)	4-isopropyltoluene	10.93	119	82580	1.90	ppb		97
71)	1,4-dichlorobenzene	11.06	146	47429	1.88	ppb		99
72)	1,2-dichlorobenzene	11.30	146	50251	2.00	ppb		98
73)	n-butylbenzene	11.16	91	78493	1.89	ppb		97
74)	1,2-dibromo-3-chloropropan	11.76	75	27795	11.49	ppb		91
75)	1,2,4-trichlorobenzene	12.20	180	27682	1.85	ppb		99
76)	hexachlorobutadiene	12.15	225	18016	1.93	ppb		99
77)	naphthalene	12.46	128	57462	1.84	ppb		99
78)	trans-1,4-Dichloro-2-buten	10.64	88	18298	8.73	ppb		91
79)	1,2,3-trichlorobenzene	12.60	180	24309	1.89	ppb		98

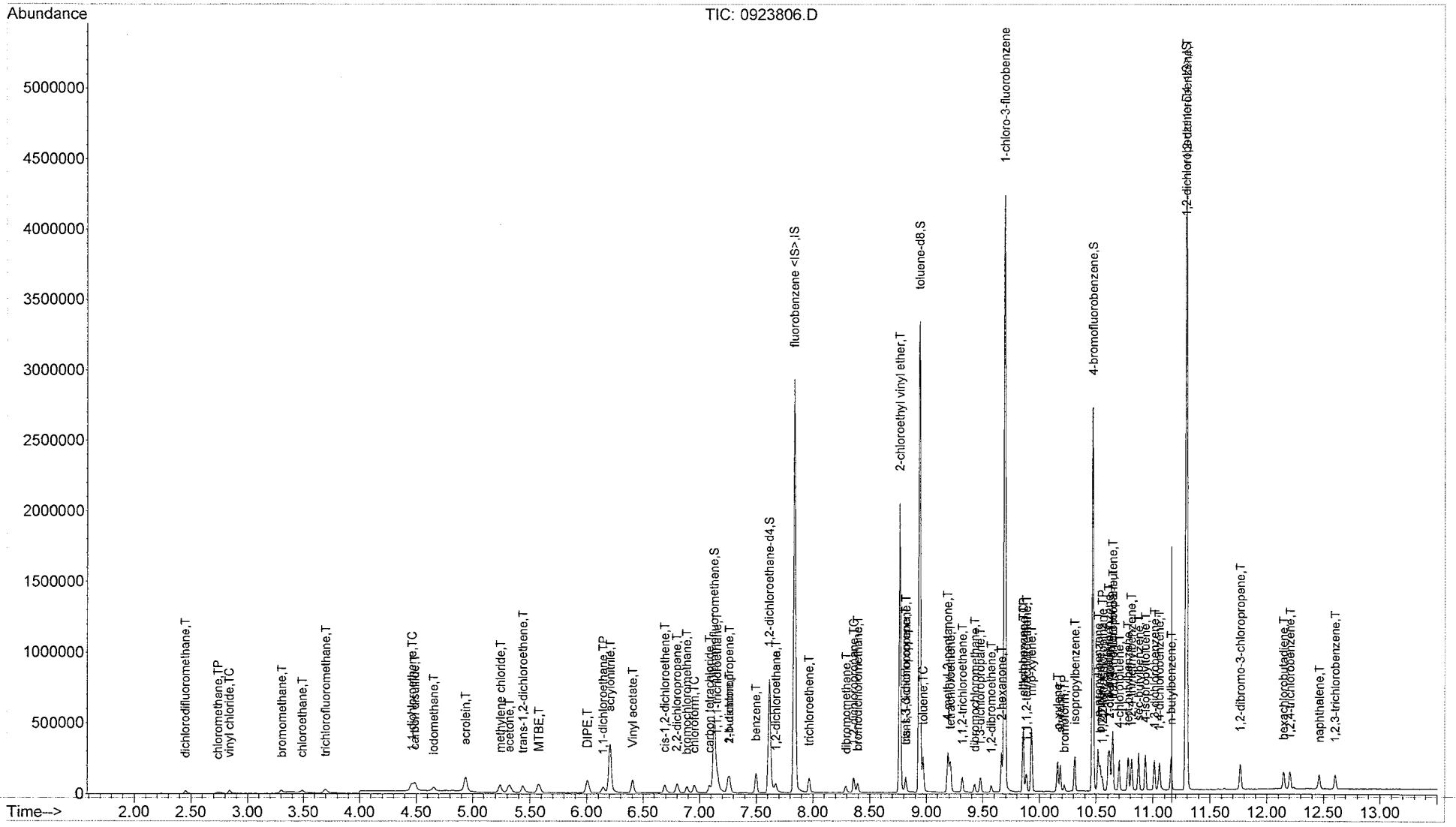
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923806.D Vial: 6
Acq On : 23 Sep 2015 8:09 pm Operator: JHL
Sample : ICAL3 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:19 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923807.D Vial: 7
Acq On : 23 Sep 2015 8:35 pm Operator: JHL
Sample : ICAL4 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:03 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	366684	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	657807	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	815671	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	325156	29.74	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 99.13%			
26) 1,2-dichloroethane-d4	7.61	65	448504	30.68	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 102.27%			
36) toluene-d8	8.94	98	1390726	30.07	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 100.23%			
52) 4-bromofluorobenzene	10.47	95	565457	29.82	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.40%			
Target Compounds						Qvalue
2) dichlorodifluoromethane	2.45	85	53504	4.13	ppb	99
3) chloromethane	2.74	50	63870	4.09	ppb	97
4) vinyl chloride	2.84	62	57687	4.15	ppb	98
5) bromomethane	3.30	94	30996	4.15	ppb	95
6) chloroethane	3.49	64	34744	4.19	ppb	91
7) trichlorofluoromethane	3.70	101	73051	4.24	ppb	94
8) acrolein	4.93	56	233603	97.64	ppb	100
9) 1,1-dichloroethene	4.46	96	50496	4.30	ppb	96
10) acetone	5.32	58	58593	22.11	ppb	89
11) methylene chloride	5.24	84	52627	4.34	ppb	99
12) trans-1,2-dichloroethene	5.44	96	45610	4.30	ppb	100
13) acrylonitrile	6.20	53	595835	103.88	ppb	100
14) MTBE	5.58	73	127837	4.21	ppb	97
15) 1,1-dichloroethane	6.14	63	98543	4.31	ppb	99
16) DIPE	6.01	45	165945	4.20	ppb	97
17) 2,2-dichloropropane	6.80	77	68883	4.21	ppb	99
18) cis-1,2-dichloroethene	6.69	96	49018	4.19	ppb	98
19) 2-butanone	7.25	72	46297	21.31	ppb	94
20) bromochloromethane	6.89	130	30440	4.26	ppb	88
21) chloroform	6.95	83	92356	4.45	ppb	99
22) 1,1,1-trichloroethane	7.16	97	76476	4.34	ppb	95
23) carbon tetrachloride	7.09	117	61596	4.20	ppb	98
25) 1,1-dichloropropene	7.27	75	70516	4.28	ppb	96
27) benzene	7.50	78	209671	4.32	ppb	99
28) 1,2-dichloroethane	7.67	62	70851	4.30	ppb	97
29) trichloroethene	7.97	95	51373	4.17	ppb	98
30) 1,2-dichloropropane	8.36	63	53987	4.22	ppb	91
31) dibromomethane	8.29	93	28728	4.29	ppb	99
32) bromodichloromethane	8.39	83	61411	4.25	ppb	99
33) 2-chloroethyl vinyl ether	8.76	106	290418	115.84	ppb	80
34) cis-1,3-dichloropropene	8.82	75	77395	4.15	ppb	96
35) 4-methyl-2-pentanone	9.19	100	33416	21.86	ppb	100
37) toluene	8.97	92	133780	4.27	ppb	99
38) iodomethane	4.66	142	74116	4.21	ppb	97
39) trans-1,3-dichloropropene	8.82	75	77395	4.15	ppb	96
40) Vinyl acetate	6.40	43	274431	11.01	ppb	99
41) carbon disulfide	4.48	76	184745	4.22	ppb	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923807.D Vial: 7
Acq On : 23 Sep 2015 8:35 pm Operator: JHL
Sample : ICAL4 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:03 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43)	1,1,2-trichloroethane	9.32	83	39422	4.38	ppb	98
44)	tetrachloroethene	9.20	166	60253	4.33	ppb	99
45)	1,3-dichloropropane	9.48	76	78416	4.38	ppb	100
46)	2-hexanone	9.66	58	128748	22.72	ppb	100
47)	dibromochloromethane	9.43	129	41820	4.12	ppb	98
48)	1,2-dibromoethane	9.57	107	42554	4.34	ppb	98
49)	chlorobenzene	9.86	112	144558	4.23	ppb	99
50)	1,1,1,2-tetrachloroethane	9.89	131	45019	4.19	ppb	97
51)	bromoform	10.22	173	28276	4.44	ppb	99
53)	bromobenzene	10.54	156	63700	4.27	ppb	98
54)	1,1,2,2-tetrachloroethane	10.55	83	61030	4.41	ppb	98
55)	1,2,3-trichloropropane	10.64	110	19098	4.33	ppb	75
57)	ethylbenzene	9.86	106	72487	4.23	ppb	94
58)	m/p-xylene	9.93	106	188334	8.70	ppb	98
59)	styrene	10.18	104	136444	4.60	ppb	99
60)	o-xylene	10.16	106	84992	4.26	ppb	99
61)	isopropylbenzene	10.31	105	226056	4.25	ppb	98
62)	n-propyl benzene	10.52	91	299345	4.28	ppb	100
63)	2-chlorotoluene	10.62	126	60986	4.39	ppb	97
64)	4-chlorotoluene	10.70	126	57997	4.35	ppb	99
65)	1,3,5-trimethylbenzene	10.61	105	185175	4.26	ppb	98
66)	tert-butylbenzene	10.78	119	169999	4.29	ppb	96
67)	1,2,4-trimethylbenzene	10.81	105	199801	4.34	ppb	100
68)	sec-butylbenzene	10.87	105	262146	4.25	ppb	99
69)	1,3-dichlorobenzene	11.01	146	118361	4.29	ppb	98
70)	4-isopropyltoluene	10.93	119	216878	4.64	ppb	98
71)	1,4-dichlorobenzene	11.06	146	116725	4.29	ppb	99
72)	1,2-dichlorobenzene	11.29	146	117728	4.36	ppb	95
73)	n-butylbenzene	11.16	91	202827	4.54	ppb	98
74)	1,2-dibromo-3-chloropropan	11.76	75	67232	25.85	ppb	94
75)	1,2,4-trichlorobenzene	12.20	180	67428	4.20	ppb	98
76)	hexachlorobutadiene	12.15	225	42721	4.25	ppb	97
77)	naphthalene	12.46	128	143794	4.29	ppb	98
78)	trans-1,4-Dichloro-2-buten	10.64	88	47533	21.08	ppb	89
79)	1,2,3-trichlorobenzene	12.60	180	57287	4.14	ppb	94

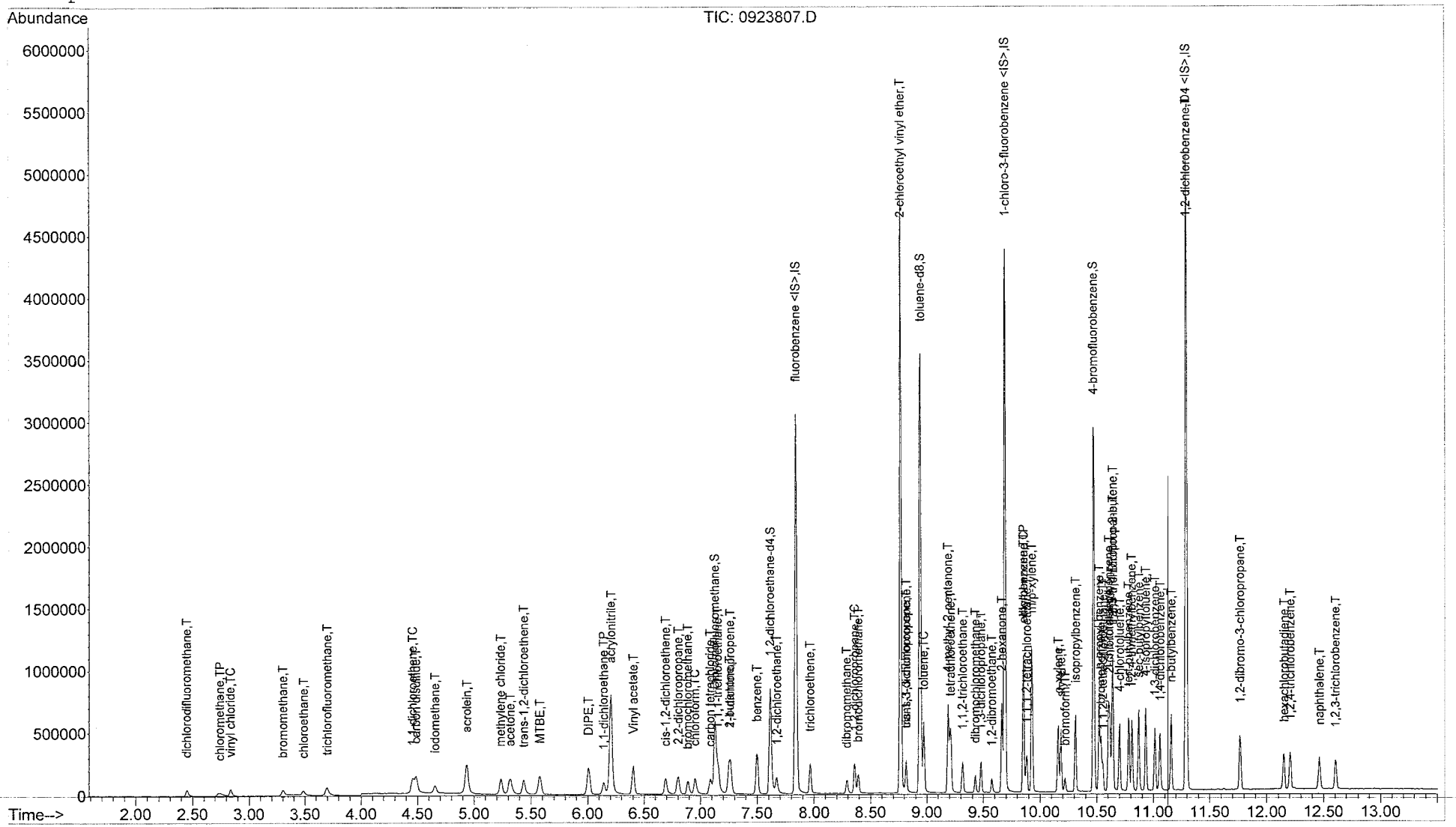
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923807.D Vial: 7
Acq On : 23 Sep 2015 8:35 pm Operator: JHL
Sample : ICAL4 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:19 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923808.D Vial: 8
Acq On : 23 Sep 2015 9:01 pm Operator: JHL
Sample : ICAL5 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:05 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BW 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	349593	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	634515	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	796273	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	313197	30.05	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 100.17%			
26) 1,2-dichloroethane-d4	7.61	65	429616	30.83	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 102.77%			
36) toluene-d8	8.94	98	1318305	29.90	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.67%			
52) 4-bromofluorobenzene	10.47	95	546160	29.86	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.53%			
Target Compounds						Qvalue
2) dichlorodifluoromethane	2.45	85	128740	10.43	ppb	95
3) chloromethane	2.74	50	151481	10.17	ppb	96
4) vinyl chloride	2.84	62	138064	10.42	ppb	96
5) bromomethane	3.30	94	72278	10.19	ppb	94
6) chloroethane	3.49	64	80710	10.21	ppb	95
7) trichlorofluoromethane	3.69	101	174778	10.64	ppb	100
8) acrolein	4.94	56	567472	248.79	ppb	99
9) 1,1-dichloroethene	4.46	96	114172	10.20	ppb	98
10) acetone	5.31	58	128744	50.95	ppb	93
11) methylene chloride	5.24	84	115790	10.02	ppb	97
12) trans-1,2-dichloroethene	5.44	96	104220	10.31	ppb	97
13) acrylonitrile	6.20	53	1445487	264.32	ppb	100
14) MTBE	5.58	73	295677	10.22	ppb	99
15) 1,1-dichloroethane	6.14	63	221684	10.16	ppb	98
16) DIPE	6.01	45	395365	10.49	ppb	97
17) 2,2-dichloropropane	6.80	77	156035	10.01	ppb	100
18) cis-1,2-dichloroethene	6.69	96	114249	10.25	ppb	97
19) 2-butanone	7.25	72	109029	52.63	ppb	98
20) bromochloromethane	6.89	130	70964	10.43	ppb	94
21) chloroform	6.95	83	202444	10.23	ppb	98
22) 1,1,1-trichloroethane	7.16	97	174141	10.36	ppb	99
23) carbon tetrachloride	7.09	117	140402	10.05	ppb	96
25) 1,1-dichloropropene	7.27	75	163297	10.40	ppb	98
27) benzene	7.50	78	475530	10.28	ppb	100
28) 1,2-dichloroethane	7.67	62	159613	10.16	ppb	98
29) trichloroethene	7.97	95	117460	9.99	ppb	96
30) 1,2-dichloropropane	8.36	63	126422	10.37	ppb	97
31) dibromomethane	8.29	93	65731	10.29	ppb	97
32) bromodichloromethane	8.39	83	141341	10.26	ppb	98
33) 2-chloroethyl vinyl ether	8.76	106	747829	312.87	ppb	84
34) cis-1,3-dichloropropene	8.82	75	184630	10.39	ppb	98
35) 4-methyl-2-pentanone	9.19	100	79305	54.41	ppb	96
37) toluene	8.97	92	300894	10.07	ppb	97
38) iodomethane	4.66	142	178324	10.61	ppb	97
39) trans-1,3-dichloropropene	8.82	75	184630	10.39	ppb	98
40) Vinyl acetate	6.40	43	629759	26.51	ppb	99
41) carbon disulfide	4.49	76	411161	9.85	ppb	98

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923808.D Vial: 8
Acq On : 23 Sep 2015 9:01 pm Operator: JHL
Sample : ICAL5 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:05 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43)	1,1,2-trichloroethane	9.32	83	89764	10.34	ppb	98
44)	tetrachloroethene	9.20	166	135557	10.10	ppb	98
45)	1,3-dichloropropane	9.48	76	175054	10.14	ppb	98
46)	2-hexanone	9.66	58	317903	58.16	ppb	98
47)	dibromochloromethane	9.43	129	99515	10.16	ppb	98
48)	1,2-dibromoethane	9.57	107	97940	10.35	ppb	95
49)	chlorobenzene	9.86	112	331514	10.06	ppb	99
50)	1,1,1,2-tetrachloroethane	9.89	131	103457	9.98	ppb	99
51)	bromoform	10.22	173	68435	11.14	ppb	97
53)	bromobenzene	10.54	156	143708	9.98	ppb	99
54)	1,1,2,2-tetrachloroethane	10.55	83	134710	10.08	ppb	99
55)	1,2,3-trichloropropane	10.64	110	43135	10.14	ppb	95
57)	ethylbenzene	9.86	106	172467	10.32	ppb	99
58)	m/p-xylene	9.93	106	443980	21.00	ppb	98
59)	styrene	10.18	104	335960	11.61	ppb	100
60)	o-xylene	10.16	106	201730	10.35	ppb	100
61)	isopropylbenzene	10.31	105	551150	10.62	ppb	99
62)	n-propyl benzene	10.52	91	701371	10.27	ppb	100
63)	2-chlorotoluene	10.62	126	140574	10.36	ppb	100
64)	4-chlorotoluene	10.70	126	136473	10.49	ppb	96
65)	1,3,5-trimethylbenzene	10.61	105	459860	10.85	ppb	99
66)	tert-butylbenzene	10.78	119	410770	10.62	ppb	97
67)	1,2,4-trimethylbenzene	10.81	105	474703	10.56	ppb	98
68)	sec-butylbenzene	10.87	105	636705	10.58	ppb	99
69)	1,3-dichlorobenzene	11.01	146	271418	10.08	ppb	100
70)	4-isopropyltoluene	10.93	119	523382	11.46	ppb	100
71)	1,4-dichlorobenzene	11.06	146	273309	10.30	ppb	98
72)	1,2-dichlorobenzene	11.29	146	269586	10.22	ppb	98
73)	n-butylbenzene	11.16	91	502721	11.52	ppb	100
74)	1,2-dibromo-3-chloropropan	11.76	75	156524	61.65	ppb	99
75)	1,2,4-trichlorobenzene	12.20	180	156051	9.96	ppb	98
76)	hexachlorobutadiene	12.15	225	95826	9.77	ppb	98
77)	naphthalene	12.46	128	349369	10.67	ppb	100
78)	trans-1,4-Dichloro-2-buten	10.64	88	115884	52.66	ppb	97
79)	1,2,3-trichlorobenzene	12.60	180	136039	10.08	ppb	99

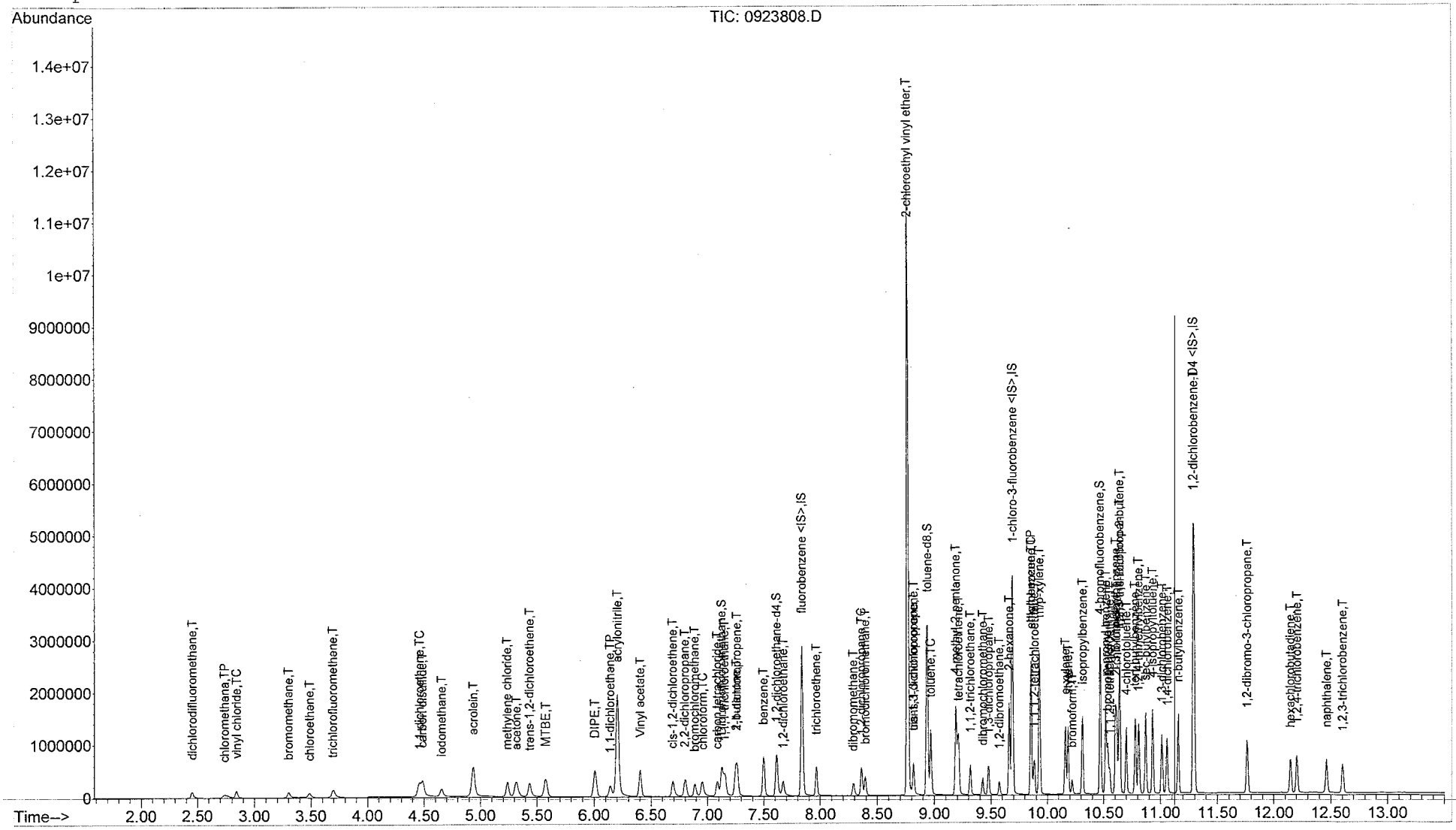
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923808.D Vial: 8
Acq On : 23 Sep 2015 9:01 pm Operator: JHL
Sample : ICAL5 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:19 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923809.D Vial: 9
Acq On : 23 Sep 2015 9:26 pm Operator: JHL
Sample : ICAL6 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:07 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 9-24-15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	360889	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	646301	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	823173	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	320782	29.81	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 99.37%			
26) 1,2-dichloroethane-d4	7.61	65	419369	29.15	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 97.17%			
36) toluene-d8	8.94	98	1352395	29.71	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.03%			
52) 4-bromofluorobenzene	10.47	95	562851	30.21	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 100.70%			
Target Compounds						Qvalue
2) dichlorodifluoromethane	2.45	85	260477	20.45	ppb	100
3) chloromethane	2.74	50	306787	19.96	ppb	100
4) vinyl chloride	2.84	62	277395	20.28	ppb	100
5) bromomethane	3.30	94	147546	20.06	ppb	100
6) chloroethane	3.49	64	145412	17.83	ppb	100
7) trichlorofluoromethane	3.69	101	350701	20.68	ppb	100
8) acrolein	4.94	56	1171406	497.48	ppb	100
9) 1,1-dichloroethene	4.46	96	227152	19.66	ppb	100
10) acetone	5.31	58	250649	96.09	ppb	100
11) methylene chloride	5.24	84	231535	19.41	ppb	100
12) trans-1,2-dichloroethene	5.44	96	210466	20.17	ppb	100
13) acrylonitrile	6.20	53	2934771	519.86	ppb	100
14) MTBE	5.58	73	607966	20.36	ppb	100
15) 1,1-dichloroethane	6.14	63	448207	19.90	ppb	100
16) DIPE	6.01	45	818607	21.05	ppb	100
17) 2,2-dichloropropane	6.80	77	319558	19.86	ppb	100
18) cis-1,2-dichloroethene	6.69	96	230869	20.07	ppb	100
19) 2-butanone	7.25	72	217646	101.77	ppb	100
20) bromochloromethane	6.89	130	142896	20.34	ppb	100
21) chloroform	6.95	83	406887	19.92	ppb	100
22) 1,1,1-trichloroethane	7.16	97	346817	19.99	ppb	100
23) carbon tetrachloride	7.09	117	291813	20.24	ppb	100
25) 1,1-dichloropropene	7.27	75	338583	20.89	ppb	100
27) benzene	7.50	78	966498	20.23	ppb	100
28) 1,2-dichloroethane	7.67	62	316007	19.48	ppb	100
29) trichloroethene	7.97	95	241863	19.93	ppb	100
30) 1,2-dichloropropane	8.36	63	248900	19.78	ppb	100
31) dibromomethane	8.29	93	128561	19.49	ppb	100
32) bromodichloromethane	8.39	83	287988	20.25	ppb	100
33) 2-chloroethyl vinyl ether	8.77	106	1635337	662.75	ppb	100
34) cis-1,3-dichloropropene	8.82	75	375460	20.47	ppb	100
35) 4-methyl-2-pentanone	9.19	100	162967	108.30	ppb	100
37) toluene	8.97	92	606751	19.68	ppb	100
38) iodomethane	4.66	142	373955	21.56	ppb	100
39) trans-1,3-dichloropropene	8.82	75	375460	20.47	ppb	100
40) Vinyl acetate	6.40	43	1281999	52.27	ppb	100
41) carbon disulfide	4.49	76	828981	19.25	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923809.D Vial: 9
Acq On : 23 Sep 2015 9:26 pm Operator: JHL
Sample : ICAL6 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:07 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43)	1,1,2-trichloroethane	9.32	83	174097	19.69	ppb	100
44)	tetrachloroethene	9.20	166	280047	20.49	ppb	100
45)	1,3-dichloropropane	9.48	76	352691	20.07	ppb	100
46)	2-hexanone	9.66	58	656868	117.99	ppb	100
47)	dibromochloromethane	9.43	129	206781	20.72	ppb	100
48)	1,2-dibromoethane	9.57	107	197032	20.44	ppb	100
49)	chlorobenzene	9.86	112	675102	20.12	ppb	100
50)	1,1,1,2-tetrachloroethane	9.89	131	212889	20.17	ppb	100
51)	bromoform	10.22	173	148458	23.72	ppb	100
53)	bromobenzene	10.54	156	292413	19.93	ppb	100
54)	1,1,2,2-tetrachloroethane	10.55	83	272826	20.05	ppb	100
55)	1,2,3-trichloropropane	10.64	110	86773	20.02	ppb	100
57)	ethylbenzene	9.86	106	363128	21.02	ppb	100
58)	m/p-xylene	9.93	106	930530	42.57	ppb	100
59)	styrene	10.18	104	720277	24.07	ppb	100
60)	o-xylene	10.16	106	429635	21.33	ppb	100
61)	isopropylbenzene	10.31	105	1166713	21.74	ppb	100
62)	n-propyl benzene	10.52	91	1465162	20.76	ppb	100
63)	2-chlorotoluene	10.62	126	288177	20.55	ppb	100
64)	4-chlorotoluene	10.70	126	277449	20.62	ppb	100
65)	1,3,5-trimethylbenzene	10.61	105	978536	22.32	ppb	100
66)	tert-butylbenzene	10.78	119	867970	21.70	ppb	100
67)	1,2,4-trimethylbenzene	10.81	105	1007637	21.67	ppb	100
68)	sec-butylbenzene	10.87	105	1333834	21.44	ppb	100
69)	1,3-dichlorobenzene	11.01	146	560800	20.14	ppb	100
70)	4-isopropyltoluene	10.93	119	1111458	23.54	ppb	100
71)	1,4-dichlorobenzene	11.06	146	568401	20.72	ppb	100
72)	1,2-dichlorobenzene	11.29	146	539627	19.78	ppb	100
73)	n-butylbenzene	11.16	91	1061155	23.51	ppb	100
74)	1,2-dibromo-3-chloropropan	11.76	75	328127	125.02	ppb	100
75)	1,2,4-trichlorobenzene	12.20	180	328558	20.28	ppb	100
76)	hexachlorobutadiene	12.15	225	204011	20.12	ppb	100
77)	naphthalene	12.46	128	761644	22.49	ppb	100
78)	trans-1,4-Dichloro-2-buten	10.64	88	245744	108.01	ppb	100
79)	1,2,3-trichlorobenzene	12.60	180	285085	20.43	ppb	100

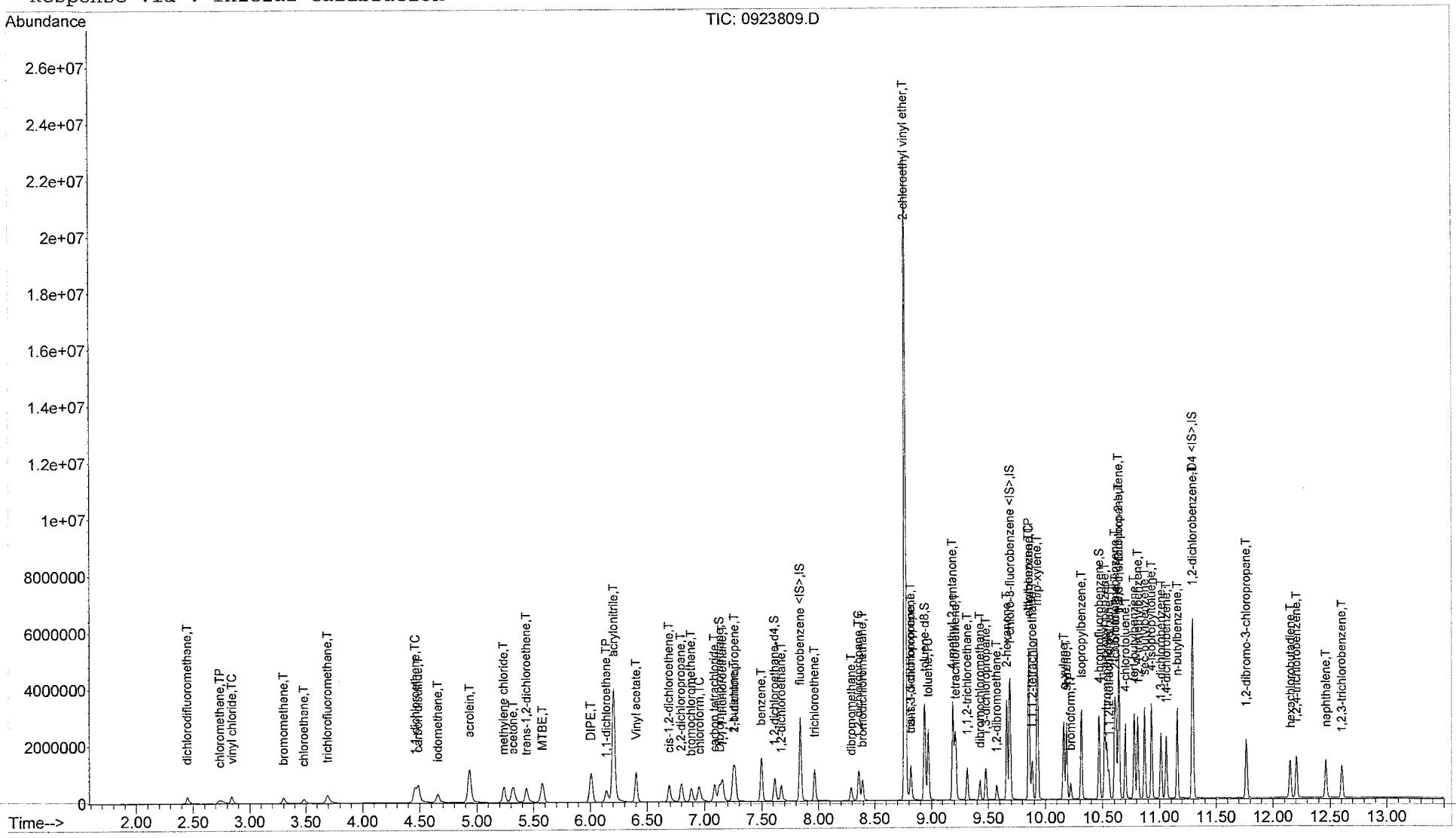
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923809.D Vial: 9
Acq On : 23 Sep 2015 9:26 pm Operator: JHL
Sample : ICAL6 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:19 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923810.D Vial: 10
Acq On : 23 Sep 2015 9:52 pm Operator: JHL
Sample : ICAL7 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:09 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	356483	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	650051	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	855237	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	323666	30.45	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 101.50%			
26) 1,2-dichloroethane-d4	7.61	65	409472	28.81	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 96.03%			
36) toluene-d8	8.94	98	1359615	30.24	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 100.80%			
52) 4-bromofluorobenzene	10.47	95	570474	30.44	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 101.47%			
Target Compounds						Qvalue
2) dichlorodifluoromethane	2.45	85	663391	52.72	ppb	100
3) chloromethane	2.74	50	773427	50.94	ppb	97
4) vinyl chloride	2.84	62	717210	53.08	ppb	99
5) bromomethane	3.30	94	370910	50.04	ppb	98
6) chloroethane	3.48	64	182569	22.66	ppb	98
7) trichlorofluoromethane	3.69	101	893609	53.36	ppb	96
8) acrolein	4.94	56	3205555	1378.19	ppb	99
9) 1,1-dichloroethene	4.46	96	606886	53.18	ppb	97
10) acetone	5.32	58	641352	248.90	ppb	90
11) methylene chloride	5.24	84	605552	51.39	ppb	99
12) trans-1,2-dichloroethene	5.44	96	563029	54.62	ppb	98
13) acrylonitrile	6.21	53	7674813	1376.31	ppb	98
14) MTBE	5.58	73	1697410	57.54	ppb	100
15) 1,1-dichloroethane	6.14	63	1170292	52.59	ppb	100
16) DIPE	6.01	45	2274900	59.22	ppb	99
17) 2,2-dichloropropane	6.80	77	863150	54.30	ppb	100
18) cis-1,2-dichloroethene	6.69	96	619094	54.48	ppb	98
19) 2-butanone	7.25	72	579564	274.36	ppb	95
20) bromochloromethane	6.89	130	376896	54.31	ppb	98
21) chloroform	6.95	83	1082177	53.65	ppb	100
22) 1,1,1-trichloroethane	7.16	97	936662	54.64	ppb	99
23) carbon tetrachloride	7.09	117	793541	55.71	ppb	100
25) 1,1-dichloropropene	7.27	75	921752	57.57	ppb	100
27) benzene	7.50	78	2594948	55.00	ppb	100
28) 1,2-dichloroethane	7.67	62	840159	52.42	ppb	100
29) trichloroethene	7.97	95	655688	54.70	ppb	97
30) 1,2-dichloropropane	8.36	63	671053	53.98	ppb	100
31) dibromomethane	8.29	93	344539	52.88	ppb	98
32) bromodichloromethane	8.39	83	799541	56.91	ppb	100
33) 2-chloroethyl vinyl ether	8.77	106	4166271	1709.34	ppb	84
34) cis-1,3-dichloropropene	8.82	75	1047169	57.81	ppb	99
35) 4-methyl-2-pentanone	9.19	100	455619	306.53	ppb	83
37) toluene	8.97	92	1663402	54.61	ppb	100
38) iodomethane	4.66	142	1014254	59.20	ppb	98
39) trans-1,3-dichloropropene	8.82	75	1047169	57.81	ppb	99
40) Vinyl acetate	6.40	43	3367554	139.00	ppb	99
41) carbon disulfide	4.48	76	2223356	52.26	ppb	100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923810.D Vial: 10
Acq On : 23 Sep 2015 9:52 pm Operator: JHL
Sample : ICAL7 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:09 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43)	1,1,2-trichloroethane	9.32	83	479751	53.93	ppb	98
44)	tetrachloroethene	9.20	166	764239	55.60	ppb	99
45)	1,3-dichloropropane	9.48	76	963607	54.51	ppb	100
46)	2-hexanone	9.66	58	1802193	321.86	ppb	99
47)	dibromochloromethane	9.43	129	598507	59.62	ppb	97
48)	1,2-dibromoethane	9.57	107	540558	55.76	ppb	100
49)	chlorobenzene	9.86	112	1918751	56.85	ppb	100
50)	1,1,1,2-tetrachloroethane	9.89	131	600491	56.56	ppb	98
51)	bromoform	10.22	173	438223	69.61	ppb	98
53)	bromobenzene	10.54	156	822670	55.75	ppb	99
54)	1,1,2,2-tetrachloroethane	10.55	83	728599	53.24	ppb	99
55)	1,2,3-trichloropropane	10.64	110	236915	54.36	ppb	95
57)	ethylbenzene	9.86	106	1041198	58.00	ppb	97
58)	m/p-xylene	9.93	106	2671990	117.66	ppb	98
59)	styrene	10.18	104	2098030	67.49	ppb	99
60)	o-xylene	10.16	106	1229290	58.75	ppb	98
61)	isopropylbenzene	10.31	105	3333681	59.80	ppb	98
62)	n-propyl benzene	10.52	91	4172873	56.91	ppb	99
63)	2-chlorotoluene	10.62	126	797787	54.76	ppb	97
64)	4-chlorotoluene	10.70	126	785827	56.22	ppb	97
65)	1,3,5-trimethylbenzene	10.61	105	2814905	61.81	ppb	99
66)	tert-butylbenzene	10.78	119	2457039	59.13	ppb	92
67)	1,2,4-trimethylbenzene	10.81	105	2879594	59.61	ppb	100
68)	sec-butylbenzene	10.87	105	3821042	59.12	ppb	99
69)	1,3-dichlorobenzene	11.01	146	1581473	54.67	ppb	100
70)	4-isopropyltoluene	10.93	119	3236727	65.99	ppb	99
71)	1,4-dichlorobenzene	11.06	146	1605609	56.32	ppb	99
72)	1,2-dichlorobenzene	11.29	146	1512540	53.36	ppb	98
73)	n-butylbenzene	11.16	91	3088307	65.86	ppb	100
74)	1,2-dibromo-3-chloropropan	11.76	75	907920	332.96	ppb	99
75)	1,2,4-trichlorobenzene	12.20	180	979086	58.17	ppb	99
76)	hexachlorobutadiene	12.15	225	578137	54.89	ppb	98
77)	naphthalene	12.46	128	2188854	62.21	ppb	100
78)	trans-1,4-Dichloro-2-buten	10.64	88	691860	292.70	ppb	98
79)	1,2,3-trichlorobenzene	12.60	180	817443	56.38	ppb	98

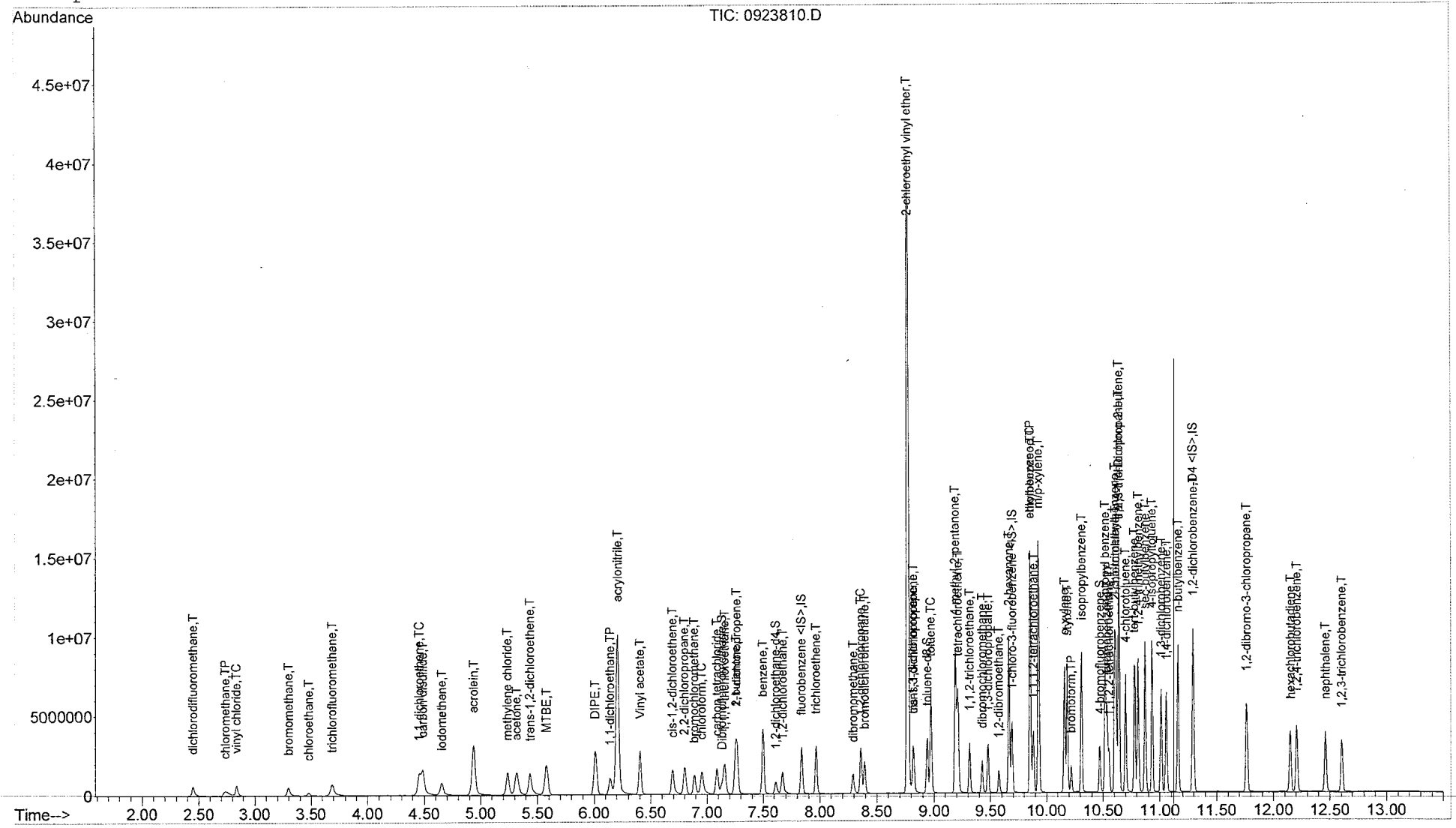
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923810.D Vial: 10
Acq On : 23 Sep 2015 9:52 pm Operator: JHL
Sample : ICAL7 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:19 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923811.D Vial: 11
Acq On : 23 Sep 2015 10:18 pm Operator: JHL
Sample : ICAL8 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:11 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	364901	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	682691	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	905865	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	335903	30.88	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 102.93%				
26) 1,2-dichloroethane-d4	7.61	65	426948	29.35	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 97.83%				
36) toluene-d8	8.94	98	1425560	30.97	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 103.23%				
52) 4-bromofluorobenzene	10.47	95	600959	30.54	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 101.80%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	928126	72.06	ppb		98
3) chloromethane	2.74	50	1103813	71.02	ppb		97
4) vinyl chloride	2.84	62	1005171	72.67	ppb		99
5) bromomethane	3.30	94	538360	69.97	ppb		99
6) chloroethane	3.48	64	210900	25.57	ppb		97
7) trichlorofluoromethane	3.67	101	1260950	73.55	ppb		97
8) acrolein	4.94	56	4916235	2064.91	ppb		100
9) 1,1-dichloroethene	4.46	96	860930	73.70	ppb		96
10) acetone	5.32	58	958957	363.57	ppb		92
11) methylene chloride	5.24	84	849404	70.42	ppb		98
12) trans-1,2-dichloroethene	5.44	96	798670	75.69	ppb		97
13) acrylonitrile	6.21	53	11469530	2009.36	ppb		98
14) MTBE	5.58	73	2451094	81.17	ppb		99
15) 1,1-dichloroethane	6.14	63	1647416	72.33	ppb		99
16) DIPE	6.01	45	3231217	82.17	ppb		98
17) 2,2-dichloropropane	6.80	77	1219806	74.96	ppb		99
18) cis-1,2-dichloroethene	6.69	96	882134	75.84	ppb		98
19) 2-butanone	7.25	72	866309	400.64	ppb		97
20) bromochloromethane	6.89	130	523504	73.69	ppb		100
21) chloroform	6.96	83	1511283	73.19	ppb		100
22) 1,1,1-trichloroethane	7.16	97	1321203	75.30	ppb		99
23) carbon tetrachloride	7.09	117	1125646	77.21	ppb		99
25) 1,1-dichloropropene	7.27	75	1295706	79.06	ppb		99
27) benzene	7.50	78	3679720	76.19	ppb		99
28) 1,2-dichloroethane	7.67	62	1159684	70.69	ppb		99
29) trichloroethene	7.97	95	923615	75.27	ppb		97
30) 1,2-dichloropropane	8.36	63	949593	74.63	ppb		100
31) dibromomethane	8.29	93	485137	72.74	ppb		90
32) bromodichloromethane	8.39	83	1128435	78.47	ppb		100
33) 2-chloroethyl vinyl ether	8.78	106	5496335	2203.02	ppb	#	73
34) cis-1,3-dichloropropene	8.82	75	1498038	80.79	ppb		97
35) 4-methyl-2-pentanone	9.19	100	696675	457.89	ppb		84
37) toluene	8.97	92	2383748	76.46	ppb		100
38) iodomethane	4.66	142	1369889	78.12	ppb		97
39) trans-1,3-dichloropropene	8.82	75	1498038	80.79	ppb		97
40) Vinyl acetate	6.40	43	4232709	170.69	ppb		99
41) carbon disulfide	4.48	76	3184281	73.12	ppb		100

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923811.D Vial: 11
Acq On : 23 Sep 2015 10:18 pm Operator: JHL
Sample : ICAL8 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:11 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43)	1,1,2-trichloroethane	9.32	83	673696	72.11	ppb	100
44)	tetrachloroethene	9.21	166	1082113	74.96	ppb	93
45)	1,3-dichloropropane	9.48	76	1370834	73.83	ppb	100
46)	2-hexanone	9.66	58	2757976	469.00	ppb	100
47)	dibromochloromethane	9.43	129	868580	82.39	ppb	99
48)	1,2-dibromoethane	9.57	107	786298	77.24	ppb	100
49)	chlorobenzene	9.86	112	2790815	78.74	ppb	99
50)	1,1,1,2-tetrachloroethane	9.89	131	865036	77.58	ppb	99
51)	bromoform	10.22	173	648741	98.12	ppb	98
53)	bromobenzene	10.54	156	1178512	76.04	ppb	98
54)	1,1,2,2-tetrachloroethane	10.55	83	1051288	73.14	ppb	99
55)	1,2,3-trichloropropane	10.64	110	350720	76.62	ppb	85
57)	ethylbenzene	9.86	106	1517410	79.80	ppb	97
58)	m/p-xylene	9.93	106	3874940	161.09	ppb	94
59)	styrene	10.18	104	3048378	92.58	ppb	99
60)	o-xylene	10.16	106	1779879	80.31	ppb	99
61)	isopropylbenzene	10.31	105	4833637	81.86	ppb	98
62)	n-propyl benzene	10.52	91	5990285	77.14	ppb	99
63)	2-chlorotoluene	10.62	126	1165015	75.49	ppb	99
64)	4-chlorotoluene	10.70	126	1123586	75.90	ppb	96
65)	1,3,5-trimethylbenzene	10.61	105	4102166	85.04	ppb	98
66)	tert-butylbenzene	10.78	119	3588785	81.54	ppb	92
67)	1,2,4-trimethylbenzene	10.81	105	4142486	80.97	ppb	99
68)	sec-butylbenzene	10.87	105	5517166	80.60	ppb	99
69)	1,3-dichlorobenzene	11.01	146	2271337	74.13	ppb	99
70)	4-isopropyltoluene	10.93	119	4686059	90.19	ppb	98
71)	1,4-dichlorobenzene	11.06	146	2306663	76.39	ppb	99
72)	1,2-dichlorobenzene	11.30	146	2154829	71.78	ppb	96
73)	n-butylbenzene	11.16	91	4397793	88.55	ppb	99
74)	1,2-dibromo-3-chloropropan	11.76	75	1365249	472.70	ppb	96
75)	1,2,4-trichlorobenzene	12.20	180	1397757	78.41	ppb	99
76)	hexachlorobutadiene	12.15	225	829216	74.33	ppb	98
77)	naphthalene	12.46	128	3264816	87.61	ppb	100
78)	trans-1,4-Dichloro-2-buten	10.64	88	1036252	413.89	ppb	94
79)	1,2,3-trichlorobenzene	12.60	180	1182972	77.03	ppb	99

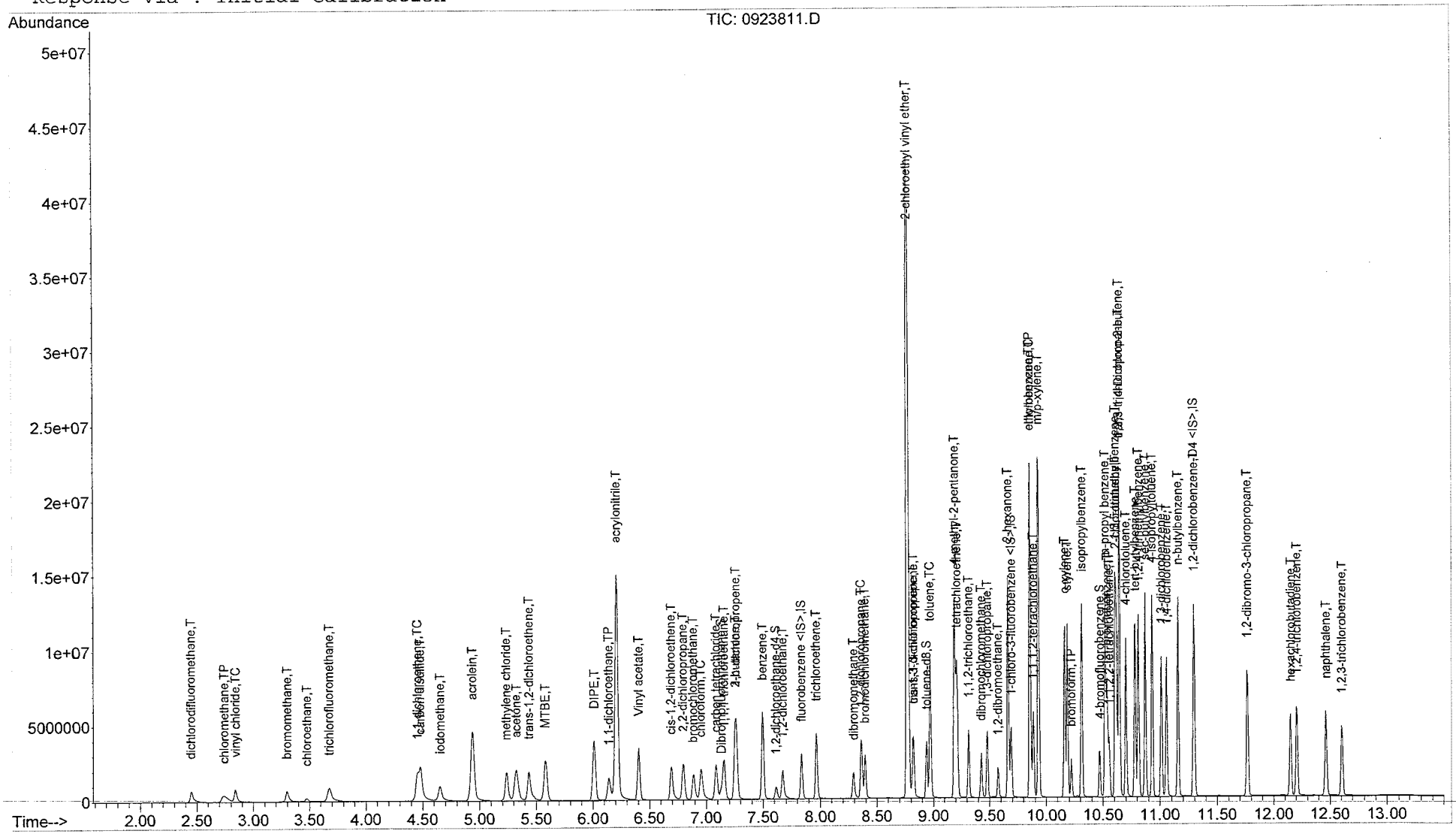
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923811.D Vial: 11
Acq On : 23 Sep 2015 10:18 pm Operator: JHL
Sample : ICAL8 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:19 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923813.D Vial: 13
Acq On : 23 Sep 2015 11:10 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration

ICV

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IS	fluorobenzene <IS>	1.000	1.000	0.0	106	0.00
2	T	dichlorodifluoromethane	1.059	1.073	-1.3	103	0.00
3	TP	chloromethane	1.278	1.255	1.8	103	0.00
4	TC	vinyl chloride	1.137	1.159	-1.9	104	0.00
5	T	bromomethane	0.663	0.741	-11.8	127	0.00
6	T	chloroethane	0.678	0.664	2.1	102	0.00
7	T	trichlorofluoromethane	1.409	1.468	-4.2	104	0.00
8	T	acrolein	0.196	0.227	-15.8	124	0.00
9	TC	1,1-dichloroethene	0.960	0.959	0.1	104	0.00
10	T	acetone	0.217	0.227	-4.6	109	0.00
11	T	methylene chloride	0.992	0.965	2.7	103	0.00
12	T	trans-1,2-dichloroethene	0.868	0.856	1.4	102	0.00
13	T	acrylonitrile	0.469	0.520	-10.9	112	0.00
14	T	MTBE	2.483	2.541	-2.3	107	0.00
15	TP	1,1-dichloroethane	1.873	1.853	1.1	104	0.00
16	T	DIPE	3.233	3.336	-3.2	105	0.00
17	T	2,2-dichloropropane	1.338	1.250	6.6	99	0.00
18	T	cis-1,2-dichloroethene	0.956	0.937	2.0	102	0.00
19	T	2-butanone	0.178	0.197	-10.7	112	0.00
20	T	bromochloromethane	0.584	0.607	-3.9	106	0.00
21	TC	chloroform	1.698	1.678	1.2	103	0.00
22	T	1,1,1-trichloroethane	1.443	1.433	0.7	102	0.00
23	T	carbon tetrachloride	1.199	1.172	2.3	103	0.00
24	S	Dibromofluoromethane	0.894	0.889	0.6	106	0.00
25	T	1,1-dichloropropene	1.347	1.376	-2.2	104	0.00
26	S	1,2-dichloroethane-d4	1.196	1.210	-1.2	105	0.00
27	T	benzene	3.971	3.934	0.9	103	0.00
28	T	1,2-dichloroethane	1.349	1.348	0.1	105	0.00
29	T	trichloroethene	1.009	0.997	1.2	105	0.00
30	TC	1,2-dichloropropane	1.046	1.025	2.0	100	0.00
31	T	dibromomethane	0.548	0.542	1.1	102	0.00
32	T	bromodichloromethane	1.182	1.160	1.9	102	0.00
33	T	2-chloroethyl vinyl ether	0.205	0.264	-28.8#	109	0.00
34	T	cis-1,3-dichloropropene	1.524	1.559	-2.3	105	0.00
35	T	4-methyl-2-pentanone	0.125	0.144	-15.2	113	0.00
36	S	toluene-d8	3.784	3.747	1.0	106	0.00
37	TC	toluene	2.563	2.470	3.6	102	0.00
38	T	iodomethane	1.442	1.261	12.6	88	0.00
39	T	trans-1,3-dichloropropene	1.524	1.559	-2.3	105	0.00
40	T	Vinyl acetate	2.039	1.878	7.9	92	0.00
41	T	carbon disulfide	3.580	3.498	2.3	105	0.00
42	IS	1-chloro-3-fluorobenzene <I	1.000	1.000	0.0	105	0.00
43	T	1,1,2-trichloroethane	0.411	0.407	1.0	100	0.00
44	T	tetrachloroethene	0.634	0.621	2.1	101	0.00
45	T	1,3-dichloropropane	0.816	0.828	-1.5	105	0.00
46	T	2-hexanone	0.258	0.318	-23.3#	111	0.00
47	T	dibromochloromethane	0.463	0.466	-0.6	104	0.00
48	T	1,2-dibromoethane	0.447	0.448	-0.2	101	0.00
49	TP	chlorobenzene	1.558	1.527	2.0	102	0.00
50	T	1,1,1,2-tetrachloroethane	0.490	0.486	0.8	104	0.00

(#) = Out of Range

Evaluate Continuing Calibration Report

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923813.D Vial: 13
Acq On : 23 Sep 2015 11:10 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
51	TP	bromoform	0.291	0.329	-13.1	106	0.00
52	S	4-bromofluorobenzene	0.865	0.867	-0.2	105	0.00
53	T	bromobenzene	0.681	0.662	2.8	102	0.00
54	TP	1,1,2,2-tetrachloroethane	0.632	0.638	-0.9	105	0.00
55	T	1,2,3-trichloropropane	0.201	0.203	-1.0	104	0.00
56	IS	1,2-dichlorobenzene-D4 <IS>	1.000	1.000	0.0	105	0.00
57	TC	ethylbenzene	0.630	0.641	-1.7	103	0.00
58	T	m/p-xylene	0.797	0.815	-2.3	102	0.00
59	T	styrene	1.090	1.249	-14.6	103	0.00
60	T	o-xylene	0.734	0.755	-2.9	104	0.00
61	T	isopropylbenzene	1.955	2.016	-3.1	102	0.00
62	T	n-propyl benzene	2.572	2.559	0.5	101	0.00
63	T	2-chlorotoluene	0.511	0.528	-3.3	104	0.00
64	T	4-chlorotoluene	0.490	0.501	-2.2	102	0.00
65	T	1,3,5-trimethylbenzene	1.597	1.681	-5.3	101	0.00
66	T	tert-butylbenzene	1.458	1.551	-6.4	105	0.00
67	T	1,2,4-trimethylbenzene	1.694	1.757	-3.7	103	0.00
68	T	sec-butylbenzene	2.267	2.347	-3.5	102	0.00
69	T	1,3-dichlorobenzene	1.015	1.013	0.2	104	0.00
70	T	4-isopropyltoluene	1.721	1.961	-13.9	104	0.00
71	T	1,4-dichlorobenzene	1.000	1.013	-1.3	103	0.00
72	T	1,2-dichlorobenzene	0.994	0.991	0.3	102	0.00
73	T	n-butylbenzene	1.645	1.850	-12.5	102	0.00
74	T	1,2-dibromo-3-chloropropane	0.096	0.104	-8.3	111	0.00
75	T	1,2,4-trichlorobenzene	0.590	0.602	-2.0	107	0.00
76	T	hexachlorobutadiene	0.369	0.378	-2.4	109	0.00
77	T	naphthalene	1.234	1.405	-13.9	112	0.00
78	T	trans-1,4-Dichloro-2-butene	0.083	0.088	-6.0	106	0.00
79	T	1,2,3-trichlorobenzene	0.509	0.536	-5.3	109	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
0923813.D VMS3752.M Thu Sep 24 09:19:34 2015 Page 2

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923813.D Vial: 13
Acq On : 23 Sep 2015 11:10 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:13 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

ICV

BWS 9.24.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	371816	30.00	ppb	0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	663987	30.00	ppb	0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	832875	30.00	ppb	0.00
System Monitoring Compounds						
24) Dibromofluoromethane	7.13	113	330487	29.81	ppb	0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 99.37%			
26) 1,2-dichloroethane-d4	7.61	65	449870	30.35	ppb	0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 101.17%			
36) toluene-d8	8.93	98	1393353	29.71	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.03%			
52) 4-bromofluorobenzene	10.47	95	575530	30.07	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 100.23%			
Target Compounds						Qvalue
2) dichlorodifluoromethane	2.45	85	132940	10.13	ppb	99
3) chloromethane	2.74	50	155594	9.82	ppb	96
4) vinyl chloride	2.84	62	143616	10.19	ppb	97
5) bromomethane	3.30	94	91826	12.17	ppb	99
6) chloroethane	3.49	64	82345	9.80	ppb	92
7) trichlorofluoromethane	3.69	101	181920	10.41	ppb	99
8) acrolein	4.94	56	704729	290.49	ppb	99
9) 1,1-dichloroethene	4.46	96	118867	9.99	ppb	97
10) acetone	5.32	58	140630	52.33	ppb	98
11) methylene chloride	5.24	84	119578	9.73	ppb	97
12) trans-1,2-dichloroethene	5.44	96	106147	9.87	ppb	98
13) acrylonitrile	6.20	53	1612684	277.27	ppb	98
14) MTBE	5.58	73	314978	10.24	ppb	98
15) 1,1-dichloroethane	6.14	63	229711	9.90	ppb	98
16) DIPE	6.01	45	413442	10.32	ppb	98
17) 2,2-dichloropropane	6.80	77	154877	9.34	ppb	98
18) cis-1,2-dichloroethene	6.69	96	116087	9.79	ppb	98
19) 2-butanone	7.25	72	122261	55.49	ppb	93
20) bromochloromethane	6.89	130	75261	10.40	ppb	93
21) chloroform	6.95	83	208003	9.89	ppb	100
22) 1,1,1-trichloroethane	7.16	97	177582	9.93	ppb	99
23) carbon tetrachloride	7.09	117	145290	9.78	ppb	95
25) 1,1-dichloropropene	7.27	75	170482	10.21	ppb	100
27) benzene	7.50	78	487575	9.91	ppb	100
28) 1,2-dichloroethane	7.67	62	167051	9.99	ppb	100
29) trichloroethene	7.97	95	123575	9.88	ppb	96
30) 1,2-dichloropropane	8.36	63	127052	9.80	ppb	100
31) dibromomethane	8.29	93	67115	9.88	ppb	97
32) bromodichloromethane	8.39	83	143757	9.81	ppb	99
33) 2-chloroethyl vinyl ether	8.76	106	817243	321.47	ppb	85
34) cis-1,3-dichloropropene	8.82	75	193191	10.23	ppb	97
35) 4-methyl-2-pentanone	9.19	100	89346	57.63	ppb	97
37) toluene	8.97	92	306138	9.64	ppb	99
38) iodomethane	4.66	142	156286	8.75	ppb	99
39) trans-1,3-dichloropropene	8.82	75	193191	10.23	ppb	97
40) Vinyl acetate	6.40	43	581881	23.03	ppb	99
41) carbon disulfide	4.48	76	433478	9.77	ppb	99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923813.D Vial: 13
Acq On : 23 Sep 2015 11:10 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 09:19:13 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

	Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43)	1,1,2-trichloroethane	9.32	83	90121	9.92	ppb	99
44)	tetrachloroethene	9.20	166	137535	9.80	ppb	98
45)	1,3-dichloropropane	9.48	76	183270	10.15	ppb	100
46)	2-hexanone	9.66	58	351906	61.53	ppb	98
47)	dibromochloromethane	9.43	129	103143	10.06	ppb	95
48)	1,2-dibromoethane	9.57	107	99120	10.01	ppb	100
49)	chlorobenzene	9.86	112	337957	9.80	ppb	99
50)	1,1,1,2-tetrachloroethane	9.89	131	107638	9.93	ppb	99
51)	bromoform	10.22	173	72733	11.31	ppb	97
53)	bromobenzene	10.54	156	146609	9.73	ppb	95
54)	1,1,2,2-tetrachloroethane	10.55	83	141256	10.10	ppb	98
55)	1,2,3-trichloropropane	10.64	110	44952	10.10	ppb	98
57)	ethylbenzene	9.86	106	177913	10.18	ppb	97
58)	m/p-xylene	9.93	106	452543	20.46	ppb	99
59)	styrene	10.18	104	346813	11.46	ppb	100
60)	o-xylene	10.16	106	209548	10.28	ppb	100
61)	isopropylbenzene	10.31	105	559679	10.31	ppb	100
62)	n-propyl benzene	10.52	91	710387	9.95	ppb	99
63)	2-chlorotoluene	10.62	126	146507	10.33	ppb	96
64)	4-chlorotoluene	10.70	126	138992	10.21	ppb	98
65)	1,3,5-trimethylbenzene	10.61	105	466729	10.52	ppb	99
66)	tert-butylbenzene	10.78	119	430477	10.64	ppb	90
67)	1,2,4-trimethylbenzene	10.81	105	487884	10.37	ppb	99
68)	sec-butylbenzene	10.87	105	651664	10.35	ppb	99
69)	1,3-dichlorobenzene	11.01	146	281126	9.98	ppb	99
70)	4-isopropyltoluene	10.93	119	544500	11.40	ppb	100
71)	1,4-dichlorobenzene	11.06	146	281339	10.13	ppb	99
72)	1,2-dichlorobenzene	11.29	146	275231	9.97	ppb	97
73)	n-butylbenzene	11.16	91	513681	11.25	ppb	99
74)	1,2-dibromo-3-chloropropan	11.76	75	173402	65.30	ppb	98
75)	1,2,4-trichlorobenzene	12.20	180	167174	10.20	ppb	99
76)	hexachlorobutadiene	12.15	225	104882	10.23	ppb	98
77)	naphthalene	12.46	128	390177	11.39	ppb	99
78)	trans-1,4-Dichloro-2-buten	10.64	88	122652	53.28	ppb	100
79)	1,2,3-trichlorobenzene	12.60	180	148804	10.54	ppb	96

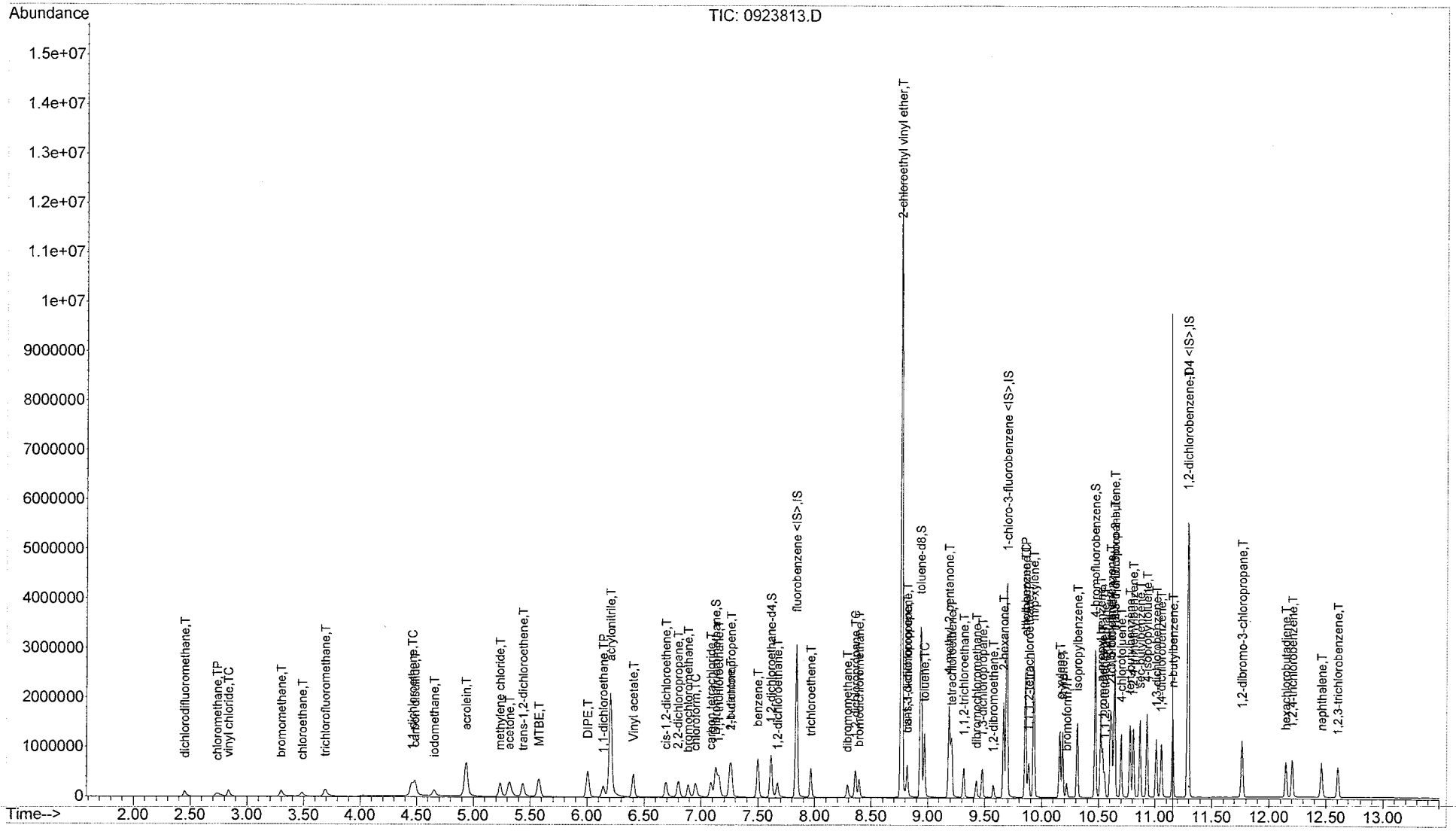
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3752\0923813.D Vial: 13
Acq On : 23 Sep 2015 11:10 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Sep 24 9:19 2015 Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration



6A

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name: SGS Environmental Services Inc. Contract:

Lab Code: NC00919 Case No.: SAS No.: SDG No.:

Instrument ID: MSD8 Calibration Date(s): 08/14/15

Heated Purge: (Y/N) N Calibration Times: 19:15

GC Column: DB-624 ID: 0.2 (mm)

LAB FILE ID: RRF0.5 = 0814822.D RRF1.0 = 0814824.D

RRF2.0 = 0814825.D RRF5.0 = 0814823.D RRF10.0 = 0814826.D

COMPOUND	RRF 0.5	RRF 1.0	RRF 2.0	RRF 5.0	RRF 10.0	ICAL RRF	% RSD
Acetonitrile	0.097	0.128	0.115	0.119	0.102	0.115	9.84
Allyl chloride	0.792	1.08	0.898	0.999	0.814	0.931	11.2
Chloroprene	0.763	0.913	0.802	0.819	0.763	0.853	10.5
Propionitrile	0.107	0.134	0.123	0.122	0.108	0.122	9.39
Methacrylonitrile	0.384	0.526	0.490	0.461	0.450	0.484	11.8
Isobutyl alcohol	0.02	0.029	0.026	0.025	0.025	0.027	16.0
1,2-dichloroethane-d4	1.18	1.19	1.15	1.19	1.17	1.18	1.16
1,4-Dioxane	0.004	0.006	0.006	0.006	0.006	0.006	16.8
Methyl methacrylate	0.483	0.587	0.560	0.581	0.511	0.575	11.7
toluene-d8	3.98	3.99	3.98	3.97	3.96	3.98	0.408
Ethyl methacrylate	0.561	0.708	0.682	0.674	0.671	0.727	17.9
4-bromofluorobenzene	0.939	0.929	0.918	0.928	0.928	0.929	0.679
Pentachloroethane	0.041	0.03	0.017	0.029	0.014	0.021	59.7

MSD8 Runlog

SGS Environmental Services, Inc.

Method: 8260-W/APX9 Initial Cal. Curve: VMS3706/VMS715

Matrix: Water Batch: **VMS3715**

FILENAME	SAMPLE ID / DILUTION	DATE / TIME	COMMENTS	pH	METHOD	OPER
0814821.D	TUNE	8/14/2015 18:49				BWS
0814822.D	ICAL1 0.5	8/14/2015 19:15			APX9	BWS
0814823.D	ICAL2 1	8/14/2015 19:40			↓	BWS
0814824.D	ICAL3 2	8/14/2015 20:06				BWS
0814825.D	ICAL4 5	8/14/2015 20:31				BWS
0814826.D	ICAL5 10	8/14/2015 20:57				BWS
0814827.D	ICAL6 20	8/14/2015 21:22				BWS
0814828.D	ICAL7 50	8/14/2015 21:47				BWS
0814829.D	R	8/14/2015 22:13				BWS
0814830.D	CCAPX9 5	8/14/2015 22:39			ICV	BWS

Soil Stds: Curve=/ QC=/

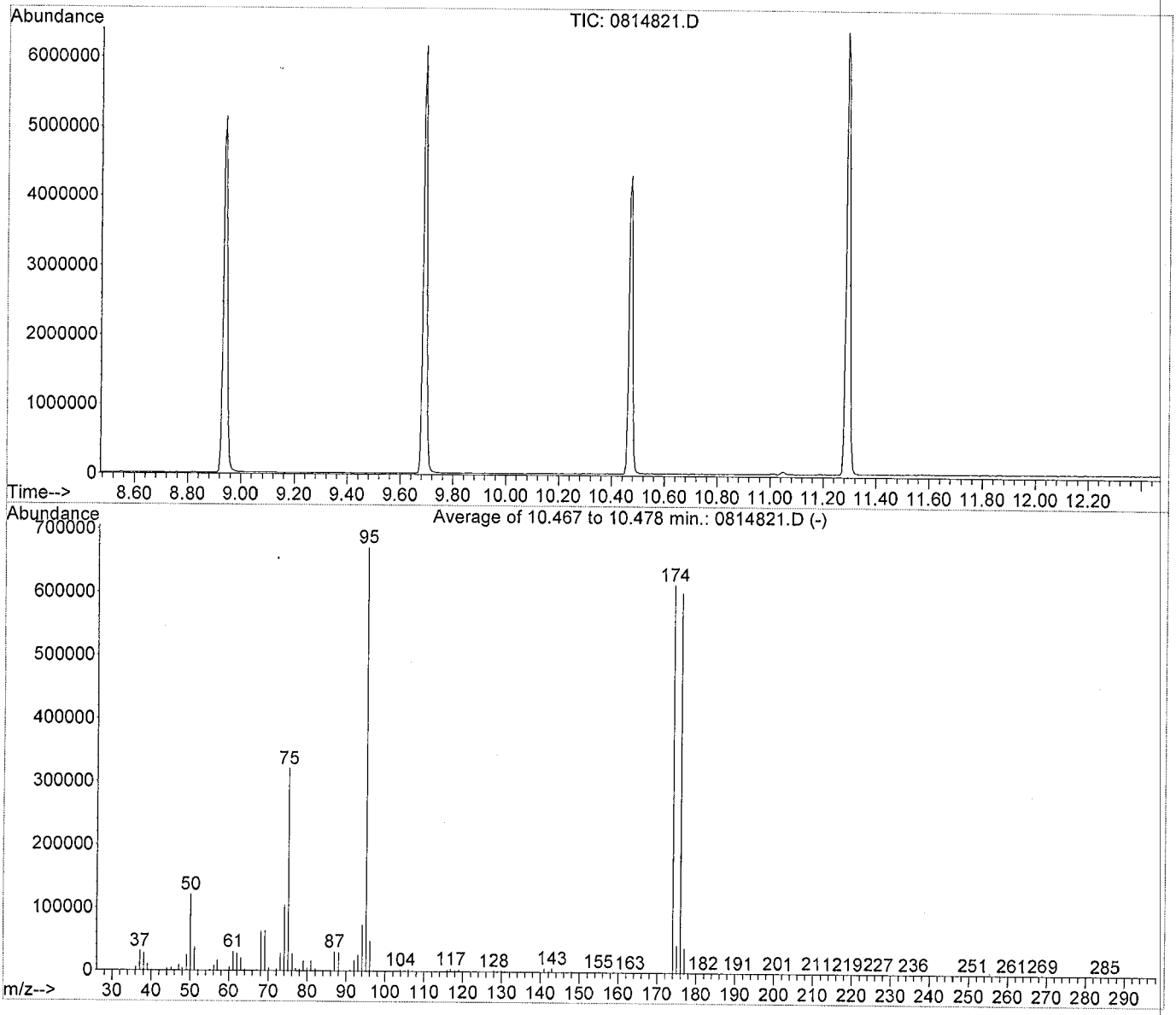
Water Stds: Curve=V12-263C/V12-263D-II QC=V12-250C/V12-250D-IV

Air Stds: Primary=~~Secondary=~~

Review Analyst: [signature]

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814821.D
Acq On : 14 Aug 2015 6:49 pm
Sample : TUNE
Misc :
MS Integration Params: RTEINT.P
Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3682 APIX Water ICAL

Vial: 21
Operator: BWS
Inst : MSD8
Multiplr: 1.00



AutoFind: Scans 1514, 1515, 1516; Background Corrected with Scan 1508

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.1	121570	PASS
75	95	30	60	47.8	321292	PASS
95	95	100	100	100.0	671620	PASS
96	95	5	9	7.0	47214	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	91.6	615338	PASS
175	174	5	9	7.1	43728	PASS
176	174	95	101	97.8	602069	PASS
177	176	5	9	6.5	39057	PASS

BWS
8.17.15

0814821.D VMS3682.M Mon Aug 17 11:30:57 2015

GC/MS QA-QC Check Report

Revised Report

Tune File : C:\MSDCHEM\1\DATA\VMS3715\0814821.D
Tune Time : 14 Aug 2015 6:49 pm

Daily Calibration File : C:\MSDCHEM\1\DATA\VMS3715\0814827.D

					535712	971690	1207670
File	Sample	Surrogate Recovery %			Internal Standard Responses		
0814821.D	TUNE	99	100	100	509132	914811	1114834
0814822.D	ICAL1	100	100	101	537793	962893	1192984
0814823.D	ICAL2	101	100	100	474600	847764	1044015
0814824.D	ICAL3	101	100	100	488266	874604	1064210
0814825.D	ICAL4	98	100	99	548710	967753	1172515
0814826.D	ICAL5	99	99	100	622960	1121450	1390134
0814827.D	ICAL6	100	101	100	535712	971690	1207674
0814828.D	ICAL7	100	100	100	519220	939528	1156189
0814830.D	CCAPX9	101	101	101	598945	1083676	1354373

t - fails 12hr time check * - fails criteria

Created: Mon Aug 17 11:42:50 2015 MSD8

BWS
8.17.15

Initial Calibration Report
Paradigm Analytical Labs

Revised Report

Instrument ; MSD8
Method ; VMS3715.M
Matrix ; Water
Cal. Date ; 14 Aug 2015 7:15 pm
Last Modified ; Mon Aug 17 11:32:52 2015
Number of levels ; 8

Cal Files by ID
0.5 ; C:\MSDCHEM\1\DATA\VMS3715\0814822.D
1 ; C:\MSDCHEM\1\DATA\VMS3715\0814823.D
2 ; C:\MSDCHEM\1\DATA\VMS3715\0814824.D
5 ; C:\MSDCHEM\1\DATA\VMS3715\0814825.D
10 ; C:\MSDCHEM\1\DATA\VMS3715\0814826.D
20 ; C:\MSDCHEM\1\DATA\VMS3715\0814827.D
50 ; C:\MSDCHEM\1\DATA\VMS3715\0814828.D
70 ; C:\MSDCHEM\1\DATA\VMS3682\0714811.D

Calibration Level ID	0.5	1	2	5	10	20	50	70		
Concentration (ppb)	10.0	20.0	40.0	100.0	200.0	400.0	1000.0	1400.0	AvgRF	%RSD
Acetonitrile	0.097	0.119	0.128	0.115	0.102	0.117	0.125		0.115	9.840
Allyl chloride	0.792	0.999	1.086	0.898	0.814	0.953	0.978		0.931	11.214
Chloroprene	0.763	0.819	0.913	0.802	0.763	0.913	0.998		0.853	10.508
Propionitrile	0.107	0.122	0.134	0.123	0.108	0.127	0.136		0.122	9.390
Methacrylonitrile	0.384	0.461	0.526	0.490	0.450	0.526	0.549		0.484	11.765
Isobutyl alcohol	0.020	0.025	0.029	0.026	0.025	0.031	0.033		0.027	15.959
1,2-dichloroethane-d4	1.184	1.191	1.192	1.153	1.169	1.179	1.180		1.178	1.164
1,4-Dioxane	0.004	0.006	0.006	0.006	0.006	0.007	0.007		0.006	16.798
Methyl methacrylate	0.483	0.581	0.587	0.560	0.511	0.612	0.688		0.575	11.709
toluene-d8	3.980	3.967	3.992	3.980	3.960	4.009	3.986		3.982	0.408
Ethyl methacrylate	0.561	0.674	0.708	0.682	0.671	0.836	0.958		0.727	17.866
4-bromofluorobenzene	0.939	0.928	0.929	0.918	0.928	0.931	0.928		0.929	0.679
~~Pentachloroethane~~	0.041	0.029	0.030	0.017	0.014	0.009	0.007		0.021	59.678

Linear Regression
Correlation Coefficient Results
Revised Report

Method : VMS3715.M

Cal Files
0.5 : C:\MSDCHEM\1\DATA\VMS3715\0814822.D
1 : C:\MSDCHEM\1\DATA\VMS3715\0814823.D
2 : C:\MSDCHEM\1\DATA\VMS3715\0814824.D
5 : C:\MSDCHEM\1\DATA\VMS3715\0814825.D
10 : C:\MSDCHEM\1\DATA\VMS3715\0814826.D
20 : C:\MSDCHEM\1\DATA\VMS3715\0814827.D
50 : C:\MSDCHEM\1\DATA\VMS3715\0814828.D
70 : C:\MSDCHEM\1\DATA\VMS3682\0714811.D

Compound	Formula or RF	Method	Correlation Coefficient (r^2)
Acetonitrile	RF=0.115	Avg RF	
Allyl chloride	RF=0.931	Avg RF	
Chloroprene	RF=0.853	Avg RF	
Propionitrile	RF=0.122	Avg RF	
Methacrylonitrile	RF=0.484	Avg RF	
Isobutyl alcohol	y=0.00007x2+ 0.02746x- 0.01102	Quadratic	0.999 ✓
1,2-dichloroethane-d4	RF=1.178	Avg RF	
1,4-Dioxane	y=0.00001x2+ 0.00630x- 0.00647	Quadratic	0.999 ✓
Methyl methacrylate	RF=0.575	Avg RF	
toluene-d8	RF=3.982	Avg RF	
Ethyl methacrylate	y=0.14381x2+ 0.72340x- 0.00692	Quadratic	0.999 ✓
4-bromofluorobenzene	RF=0.929	Avg RF	
~~Pentachloroethane~~	RF=0.021	Avg RF	

GJS 8.17.15

* Correlation Coefficent is < 0.990

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814822.D Vial: 22
Acq On : 14 Aug 2015 7:15 pm Operator: BWS
Sample : ICAL1 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33:11 2015 Quant Results File: VMS3682.RES

Quant Method : C:\MSDCHEM\1...\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	537793	30.00	ppb		0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	962893	30.00	ppb		0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1192984	30.00	ppb		0.00
System Monitoring Compounds							
8) 1,2-dichloroethane-d4	7.61	65	636723	30.13	ppb		0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 100.43%				
11) toluene-d8	8.94	98	2140217	29.78	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.27%				
14) 4-bromofluorobenzene	10.47	95	904506	30.25	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 100.83%				
Target Compounds							Qvalue
2) Acetonitrile	5.87	41	17466	8.29	ppb		95
3) Allyl chloride	5.11	41	7099	0.42	ppb	#	88
4) Chloroprene	6.11	53	6841	0.42	ppb		93
5) Propionitrile	7.53	54	19177	8.43	ppb		94
6) Methacrylonitrile	7.54	41	34448	3.65	ppb		97
7) Isobutyl alcohol	7.66	43	9023	16.44	ppb		97
9) 1,4-Dioxane	8.54	88	3668	30.10	ppb		88
10) Methyl methacrylate	8.49	41	4326	0.39	ppb		95
12) Ethyl methacrylate	9.29	69	5025	0.34	ppb		100
15) Pentachloroethane	10.81	167	650	2.27	ppb		89

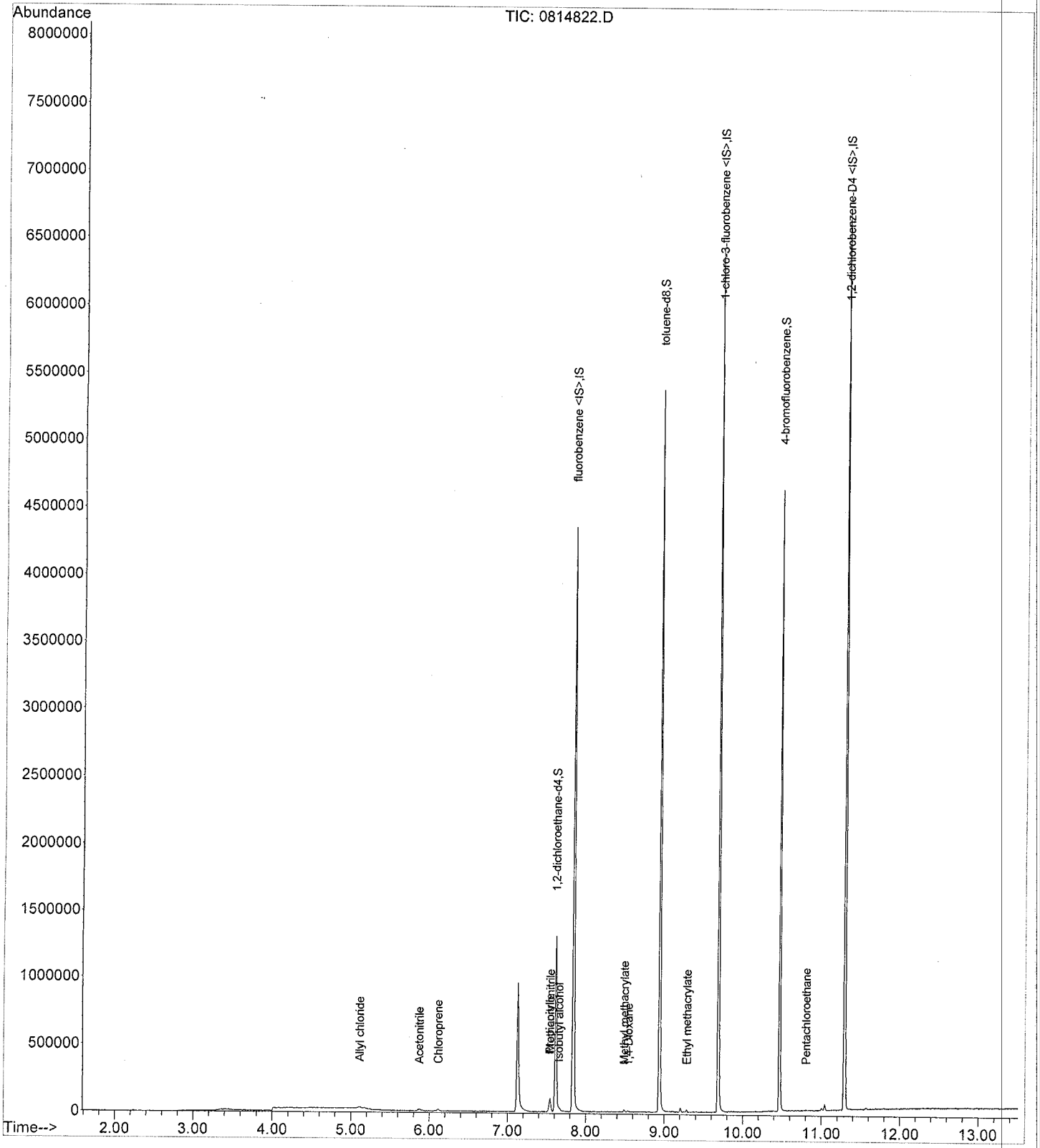
(#) = qualifier out of range (m) = manual integration (+) = signals summed
0814822.D VMS3682.M Mon Aug 17 11:33:11 2015

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814822.D Vial: 22
Acq On : 14 Aug 2015 7:15 pm Operator: BWS
Sample : ICAL1 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33 2015 Quant Results File: VMS3682.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814823.D Vial: 23
Acq On : 14 Aug 2015 7:40 pm Operator: BWS
Sample : ICAL2 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33:12 2015 Quant Results File: VMS3682.RES

Quant Method : C:\MSDCHEM\1...\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	474600	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	847764	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1044015	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	565450	30.32	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 101.07%			
11) toluene-d8	8.94	98	1882771	29.69	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 98.97%			
14) 4-bromofluorobenzene	10.47	95	786811	29.89	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.63%			
Target Compounds						Qvalue
2) Acetonitrile	5.87	41	37634	20.25	ppb	94
3) Allyl chloride	5.11	41	15799	1.05	ppb	99
4) Chloroprene	6.11	53	12951	0.90	ppb	98
5) Propionitrile	7.53	54	38597	19.22	ppb	100
6) Methacrylonitrile	7.54	41	72907	8.76	ppb	97
7) Isobutyl alcohol	7.66	43	20112	41.53	ppb	93
9) 1,4-Dioxane	8.54	88	9364	87.07	ppb	93
10) Methyl methacrylate	8.49	41	9194	0.95	ppb	93
12) Ethyl methacrylate	9.29	69	10655	0.81	ppb	97
15) Pentachloroethane	10.81	167	816	3.24	ppb	88

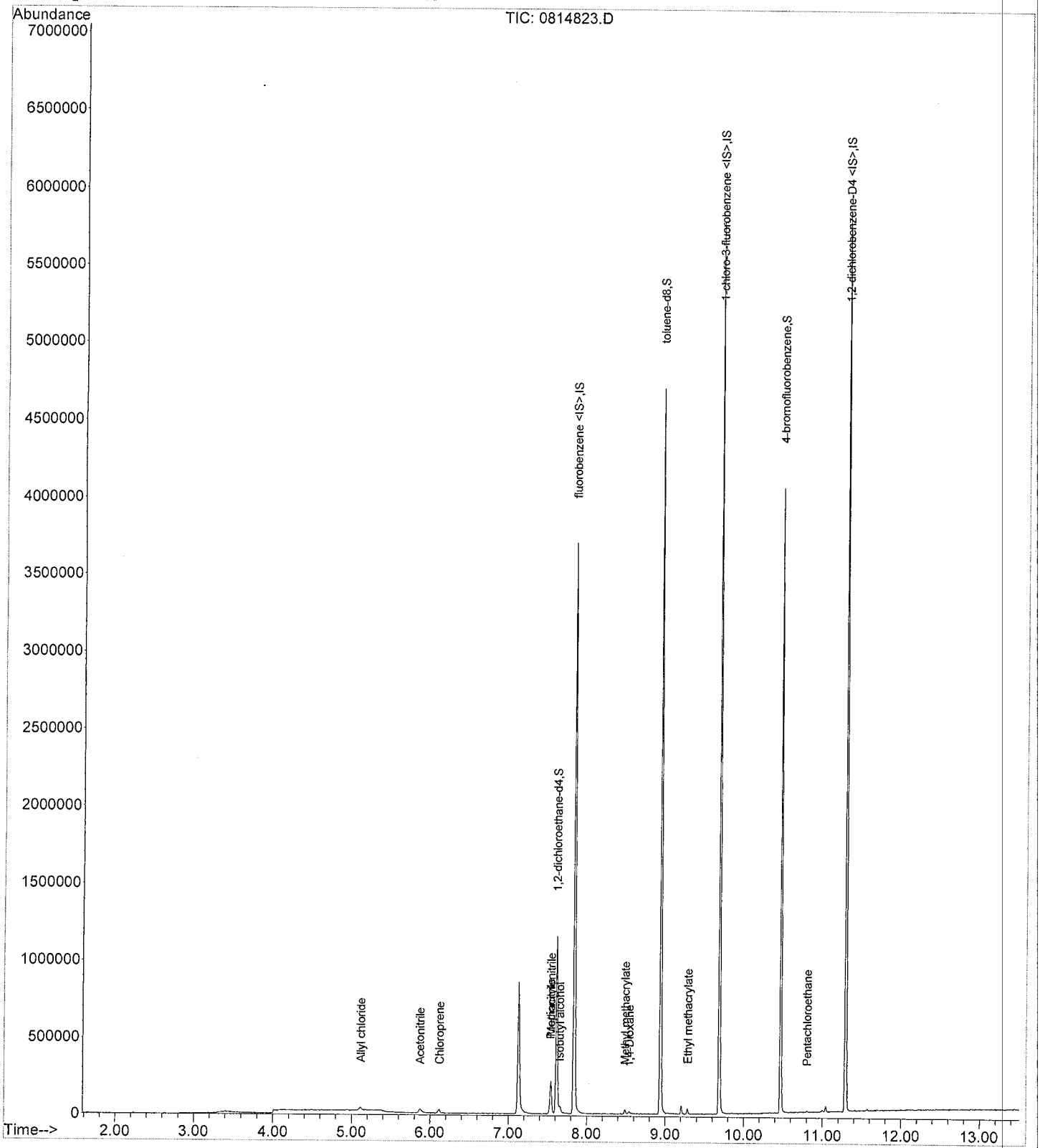
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814823.D Vial: 23
Acq On : 14 Aug 2015 7:40 pm Operator: BWS
Sample : ICAL2 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33 2015 Quant Results File: VMS3682.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814824.D Vial: 24
Acq On : 14 Aug 2015 8:06 pm Operator: BWS
Sample : ICAL3 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33:14 2015 Quant Results File: VMS3682.RES

Quant Method : C:\MSDCHEM\1...\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	488266	30.00	ppb		0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	874604	30.00	ppb		0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1064210	30.00	ppb		0.00
System Monitoring Compounds							
8) 1,2-dichloroethane-d4	7.61	65	582192	30.34	ppb		0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 101.13%				
11) toluene-d8	8.94	98	1948921	29.87	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.57%				
14) 4-bromofluorobenzene	10.47	95	812841	29.93	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.77%				
Target Compounds							Qvalue
2) Acetonitrile	5.87	41	83331	43.58	ppb		97
3) Allyl chloride	5.11	41	35361	2.28	ppb	#	95
4) Chloroprene	6.11	53	29720	2.00	ppb		96
5) Propionitrile	7.53	54	87541	42.37	ppb		100
6) Methacrylonitrile	7.54	41	171123	19.98	ppb		99
7) Isobutyl alcohol	7.65	43	46606	93.55	ppb		97
9) 1,4-Dioxane	8.54	88	20930	189.16	ppb		97
10) Methyl methacrylate	8.49	41	19114	1.92	ppb		97
12) Ethyl methacrylate	9.29	69	23045	1.69	ppb		90
15) Pentachloroethane	10.81	167	1776	6.83	ppb		84

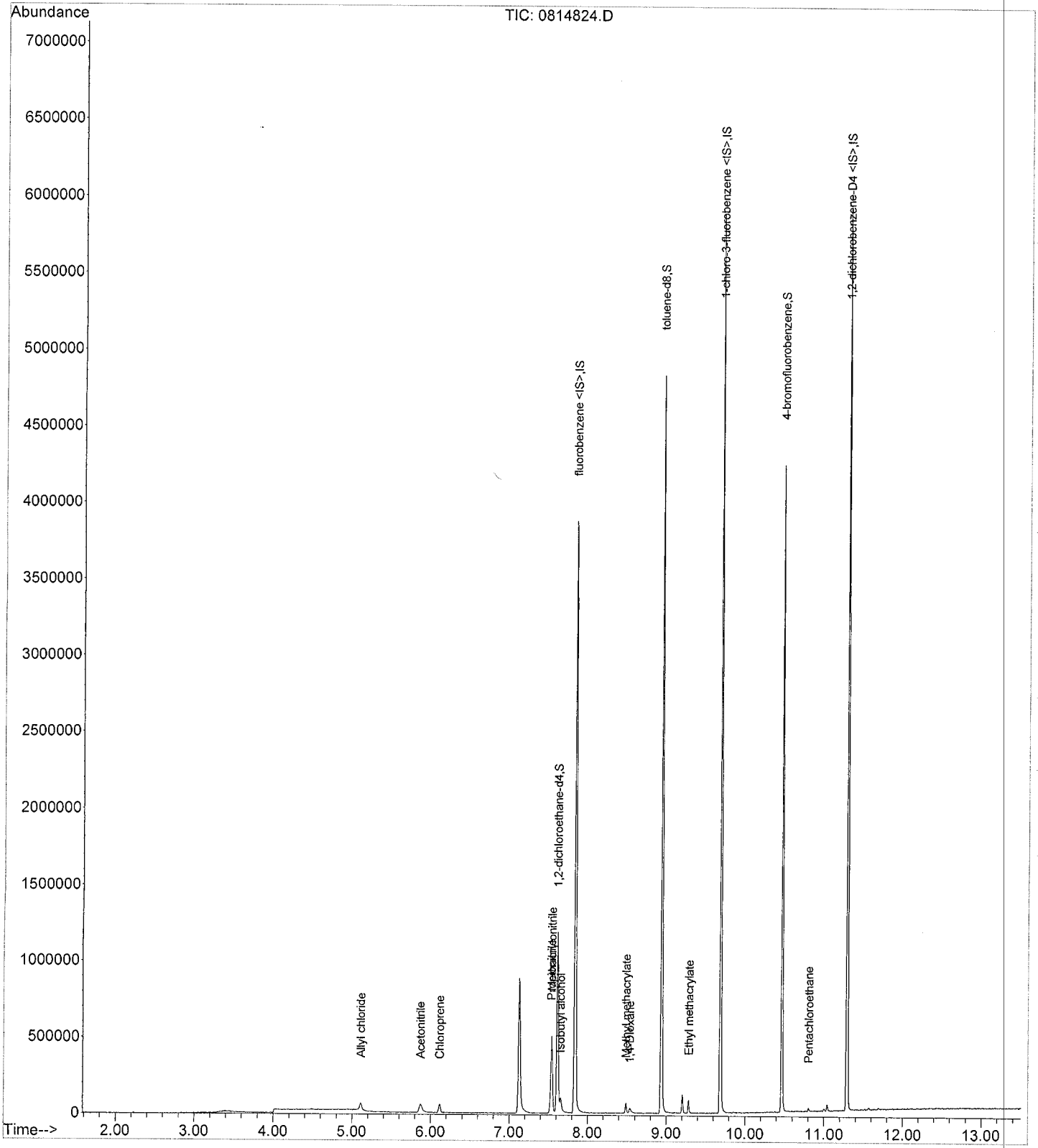
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814824.D Vial: 24
Acq On : 14 Aug 2015 8:06 pm Operator: BWS
Sample : ICAL3 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33 2015 Quant Results File: VMS3682.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814825.D Vial: 25
Acq On : 14 Aug 2015 8:31 pm Operator: BWS
Sample : ICAL4 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33:16 2015 Quant Results File: VMS3682.RES

Quant Method : C:\MSDCHEM\1...\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	548710	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	967753	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1172515	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	632670	29.34	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery =	97.80%		
11) toluene-d8	8.94	98	2184132	29.79	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery =	99.30%		
14) 4-bromofluorobenzene	10.47	95	888305	29.56	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery =	98.53%		
Target Compounds						Qvalue
2) Acetonitrile	5.87	41	210249	97.85	ppb	97
3) Allyl chloride	5.11	41	82147	4.71	ppb	98
4) Chloroprene	6.11	53	73309	4.39	ppb	97
5) Propionitrile	7.53	54	224078	96.51	ppb	99
6) Methacrylonitrile	7.54	41	447916	46.53	ppb	99
7) Isobutyl alcohol	7.66	43	120708	215.61	ppb	97
9) 1,4-Dioxane	8.54	88	52108	419.06	ppb	99
10) Methyl methacrylate	8.49	41	51245	4.58	ppb	95
12) Ethyl methacrylate	9.29	69	62394	4.08	ppb	100
15) Pentachloroethane	10.81	167	2795	9.72	ppb	98

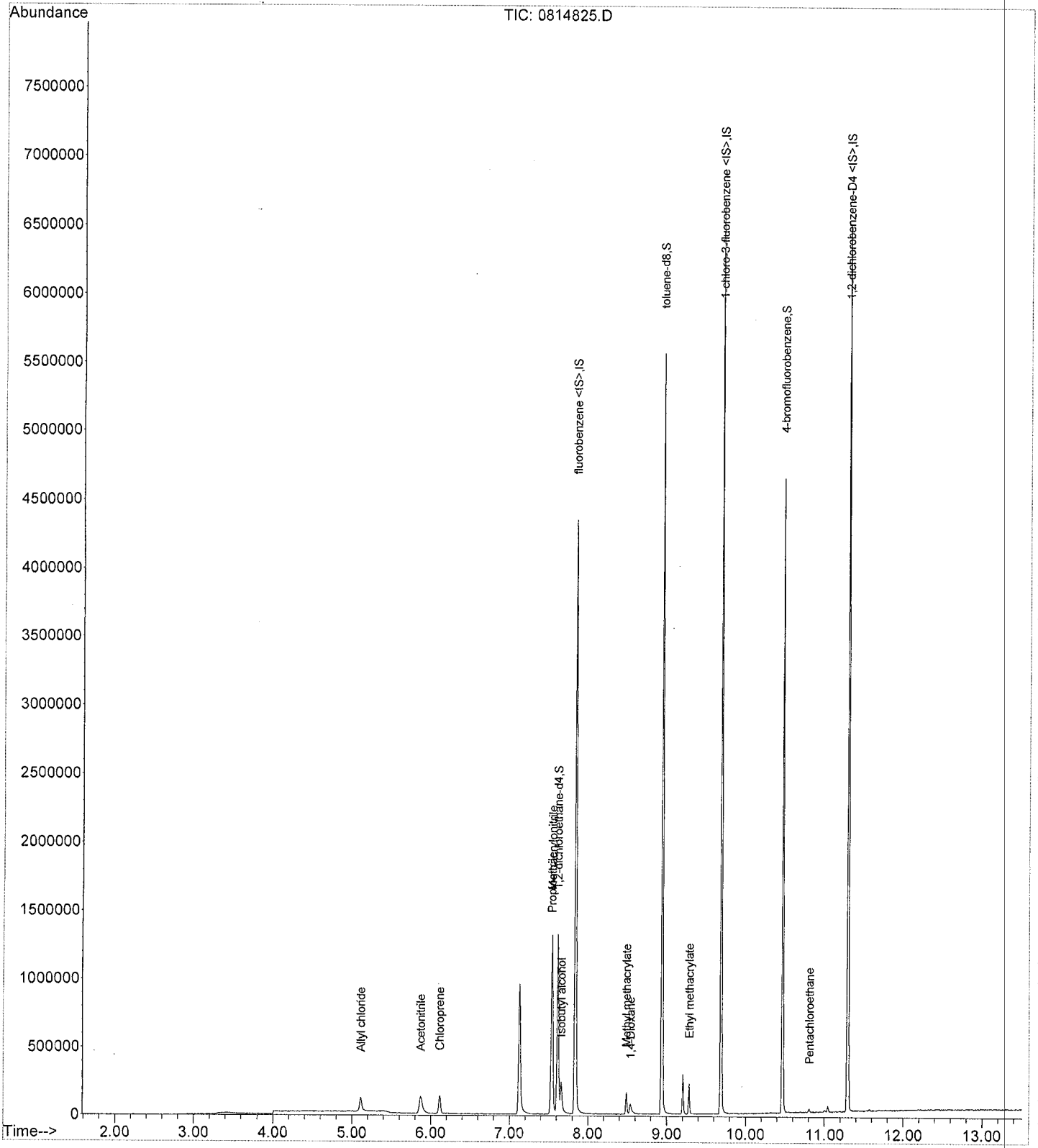
(#) = qualifier out of range (m) = manual integration (+) = signals summed
0814825.D VMS3682.M Mon Aug 17 11:33:16 2015 Page 1

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814825.D Vial: 25
Acq On : 14 Aug 2015 8:31 pm Operator: BWS
Sample : ICAL4 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33 2015 Quant Results File: VMS3682.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814826.D Vial: 26
Acq On : 14 Aug 2015 8:57 pm Operator: BWS
Sample : ICAL5 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33:18 2015 Quant Results File: VMS3682.RES

Quant Method : C:\MSDCHEM\1...\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	622960	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	1121450	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1390134	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	728366	29.75	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 99.17%			
11) toluene-d8	8.94	98	2466621	29.63	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 98.77%			
14) 4-bromofluorobenzene	10.47	95	1041205	29.90	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.67%			
Target Compounds						Qvalue
2) Acetonitrile	5.87	41	424532	174.03	ppb	99
3) Allyl chloride	5.11	41	169040	8.54	ppb	98
4) Chloroprene	6.11	53	158526	8.36	ppb	96
5) Propionitrile	7.53	54	448426	170.11	ppb	100
6) Methacrylonitrile	7.54	41	934057	85.46	ppb	99
7) Isobutyl alcohol	7.66	43	256863	404.13	ppb	97
9) 1,4-Dioxane	8.54	88	114374	810.18	ppb	100
10) Methyl methacrylate	8.49	41	106147	8.36	ppb	96
12) Ethyl methacrylate	9.29	69	139247	8.02	ppb	99
15) Pentachloroethane	10.81	167	5128	15.39	ppb	98

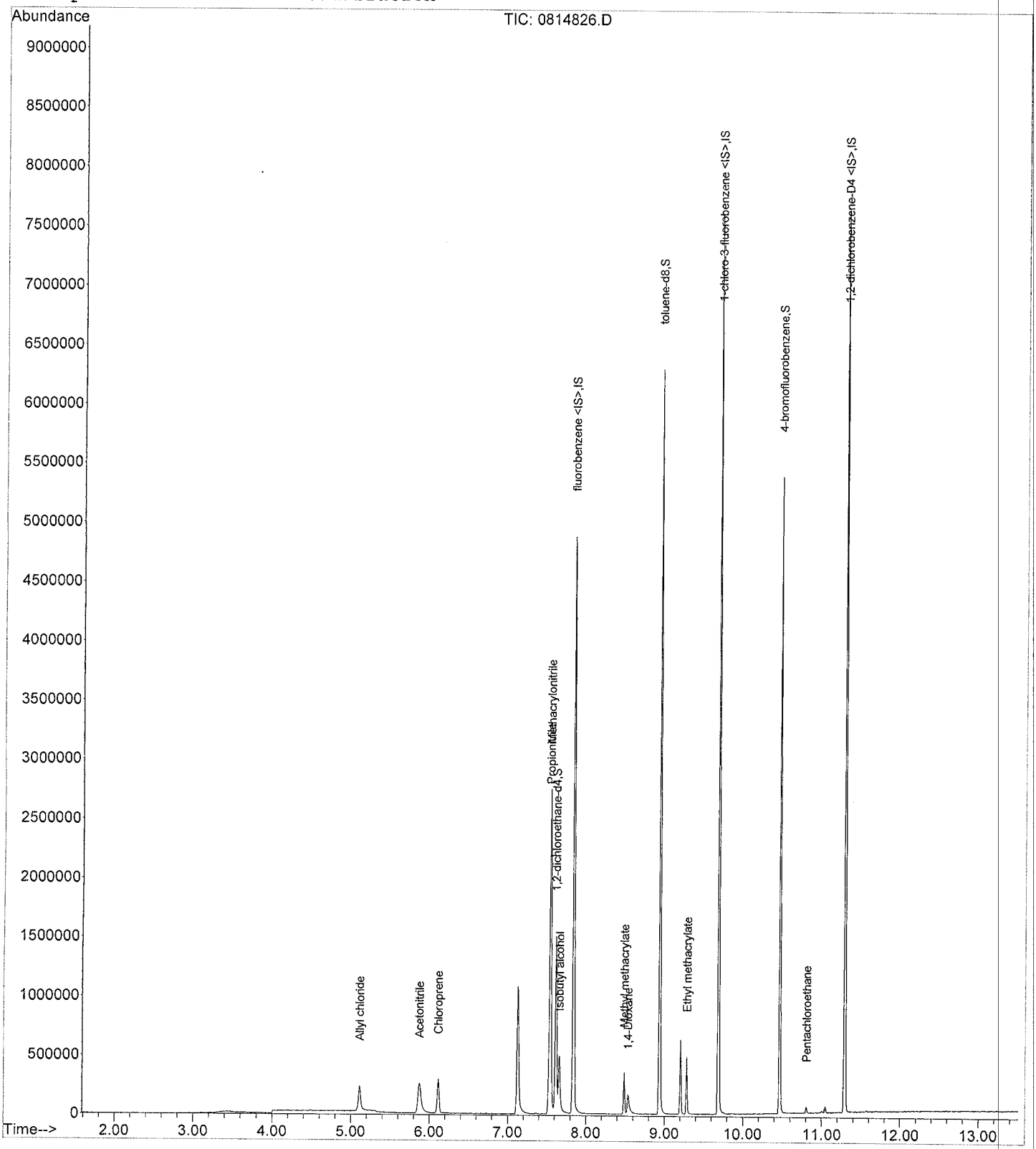
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814826.D Vial: 26
Acq On : 14 Aug 2015 8:57 pm Operator: BWS
Sample : ICAL5 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33 2015 Quant Results File: VMS3682.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814827.D Vial: 27
Acq On : 14 Aug 2015 9:22 pm Operator: BWS
Sample : ICAL6 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33:20 2015 Quant Results File: VMS3682.RES

Quant Method : C:\MSDCHEM\1...\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	535712	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	971690	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1207674	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	631580	30.00	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery =	100.00%		
11) toluene-d8	8.94	98	2147743	30.00	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery =	100.00%		
14) 4-bromofluorobenzene	10.47	95	905102	30.00	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery =	100.00%		
Target Compounds						Qvalue
2) Acetonitrile	5.87	41	839124	400.00	ppb	100
3) Allyl chloride	5.11	41	340383	20.00	ppb	100
4) Chloroprene	6.11	53	325963	20.00	ppb	100
5) Propionitrile	7.53	54	906737	400.00	ppb	100
6) Methacrylonitrile	7.54	41	1879712	200.00	ppb	100
7) Isobutyl alcohol	7.66	43	546584	1000.00	ppb	100
9) 1,4-Dioxane	8.54	88	242799	2000.00	ppb	100
10) Methyl methacrylate	8.49	41	218490	20.00	ppb	100
12) Ethyl methacrylate	9.29	69	298435	20.00	ppb	100
15) Pentachloroethane	10.81	167	5774	20.00	ppb	100

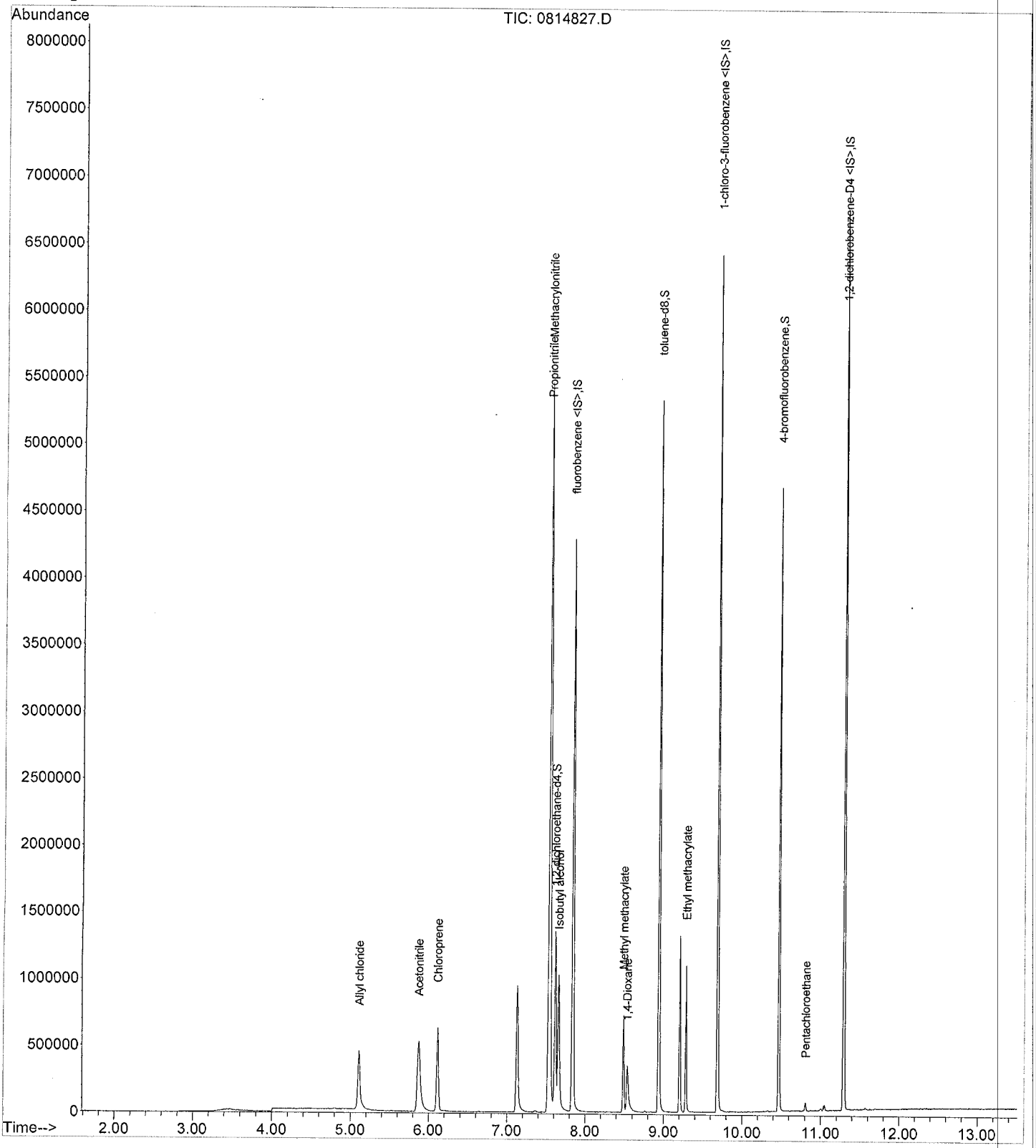
(#) = qualifier out of range (m) = manual integration (+) = signals summed
0814827.D VMS3682.M Mon Aug 17 11:33:20 2015 Page 1

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814827.D Vial: 27
Acq On : 14 Aug 2015 9:22 pm Operator: BWS
Sample : ICAL6 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33 2015 Quant Results File: VMS3682.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814828.D Vial: 28
Acq On : 14 Aug 2015 9:47 pm Operator: BWS
Sample : ICAL7 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33:21 2015 Quant Results File: VMS3682.RES

Quant Method : C:\MSDCHEM\1...\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	519220	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	939528	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1156189	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	612851	30.04	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 100.13%			
11) toluene-d8	8.94	98	2069869	29.83	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 99.43%			
14) 4-bromofluorobenzene	10.47	95	871846	29.89	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.63%			
Target Compounds						Qvalue
2) Acetonitrile	5.87	41	2167072	1065.83	ppb	100
3) Allyl chloride	5.11	41	846348	51.31	ppb	100
4) Chloroprene	6.11	53	863972	54.69	ppb	98
5) Propionitrile	7.53	54	2350578	1069.88	ppb	99
6) Methacrylonitrile	7.54	41	4750981	521.56	ppb	98
7) Isobutyl alcohol	7.66	43	1445410	2728.44	ppb	99
9) 1,4-Dioxane	8.54	88	613641	5215.28	ppb	98
10) Methyl methacrylate	8.49	41	595508	56.24	ppb	99
12) Ethyl methacrylate	9.29	69	828920	57.32	ppb	98
15) Pentachloroethane	10.81	167	10988	39.36	ppb	96

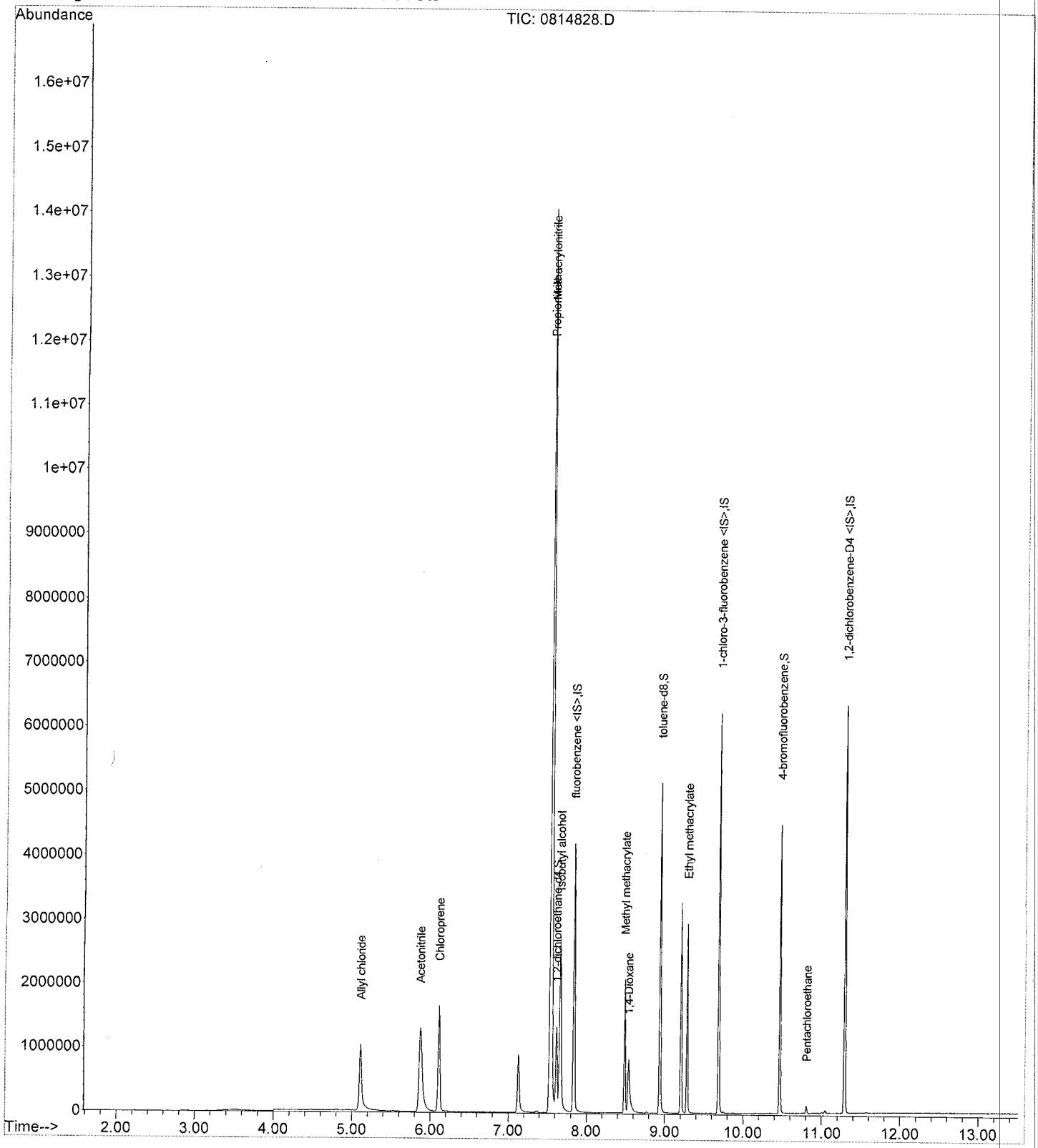
(#) = qualifier out of range (m) = manual integration (+) = signals summed

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814828.D Vial: 28
Acq On : 14 Aug 2015 9:47 pm Operator: BWS
Sample : ICAL7 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:33 2015 Quant Results File: VMS3682.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3682.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:32:52 2015
Response via : Initial Calibration



Evaluate Continuing Calibration Report

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814830.D Vial: 30
Acq On : 14 Aug 2015 10:39 pm Operator: BWS
Sample : CCAPX9 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IS	fluorobenzene <IS>	1.000	1.000	0.0	109	0.00
2		Acetonitrile	0.101	0.104	-3.0	99	0.00
3		Allyl chloride	0.815	0.856	-5.0	104	0.00
4		Chloroprene	0.746	0.764	-2.4	104	0.00
5		Propionitrile	0.107	0.114	-6.5	101	0.00
6		Methacrylonitrile	0.423	0.455	-7.6	101	0.00
7		Isobutyl alcohol	0.024	0.023	4.2	95	0.00
8	S	1,2-dichloroethane-d4	1.031	1.186	-15.0	112	0.00
9		1,4-Dioxane	0.005	0.005	0.0	98	0.00
10		Methyl methacrylate	0.503	0.506	-0.6	99	0.00
11	S	toluene-d8	3.484	4.002	-14.9	110	0.00
12		Ethyl methacrylate	0.636	0.632	0.6	101	0.00
13	IS	1-chloro-3-fluorobenzene <I	1.000	1.000	0.0	112	0.00
14	S	4-bromofluorobenzene	0.813	0.934	-14.9	114	0.00
15		~~Pentachloroethane~~	0.018	0.007	61.1#	48#	0.00
16	IS	1,2-dichlorobenzene-D4 <IS>	1.000	1.000	0.0	116	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
0814830.D VMS3715.M Mon Aug 17 16:28:26 2015 Page 1

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814830.D Vial: 30
Acq On : 14 Aug 2015 10:39 pm Operator: BWS
Sample : CCAPX9 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:39:26 2015 Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

ICV

BWS 8.17.15

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) fluorobenzene <IS>	7.84	70	598945	30.00	ppb	0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	1083676	30.00	ppb	0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	1354373	30.00	ppb	0.00
System Monitoring Compounds						
8) 1,2-dichloroethane-d4	7.61	65	710245	30.19	ppb	0.00
Spiked Amount 30.000	Range 64 - 140		Recovery =	100.63%		
11) toluene-d8	8.94	98	2397249	30.15	ppb	0.00
Spiked Amount 30.000	Range 82 - 117		Recovery =	100.50%		
14) 4-bromofluorobenzene	10.47	95	1011763	30.15	ppb	0.00
Spiked Amount 30.000	Range 85 - 115		Recovery =	100.50%		
Target Compounds						Qvalue
2) Acetonitrile	5.87	41	207916	90.64	ppb	99
3) Allyl chloride	5.11	41	85480	4.60	ppb	98
4) Chloroprene	6.12	53	76280	4.48	ppb	96
5) Propionitrile	7.53	54	226665	92.77	ppb	100
6) Methacrylonitrile	7.54	41	453840	47.00	ppb	99
7) Isobutyl alcohol	7.65	43	114472	216.68	ppb	98
9) 1,4-Dioxane	8.54	88	50973	431.03	ppb	100
10) Methyl methacrylate	8.49	41	50493	4.40	ppb	96
12) Ethyl methacrylate	9.29	69	63064	4.52	ppb	100
15) Pentachloroethane	10.81	167	1353	~~1.79~~	ppb	93

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

Quantitation Report (Not Reviewed)

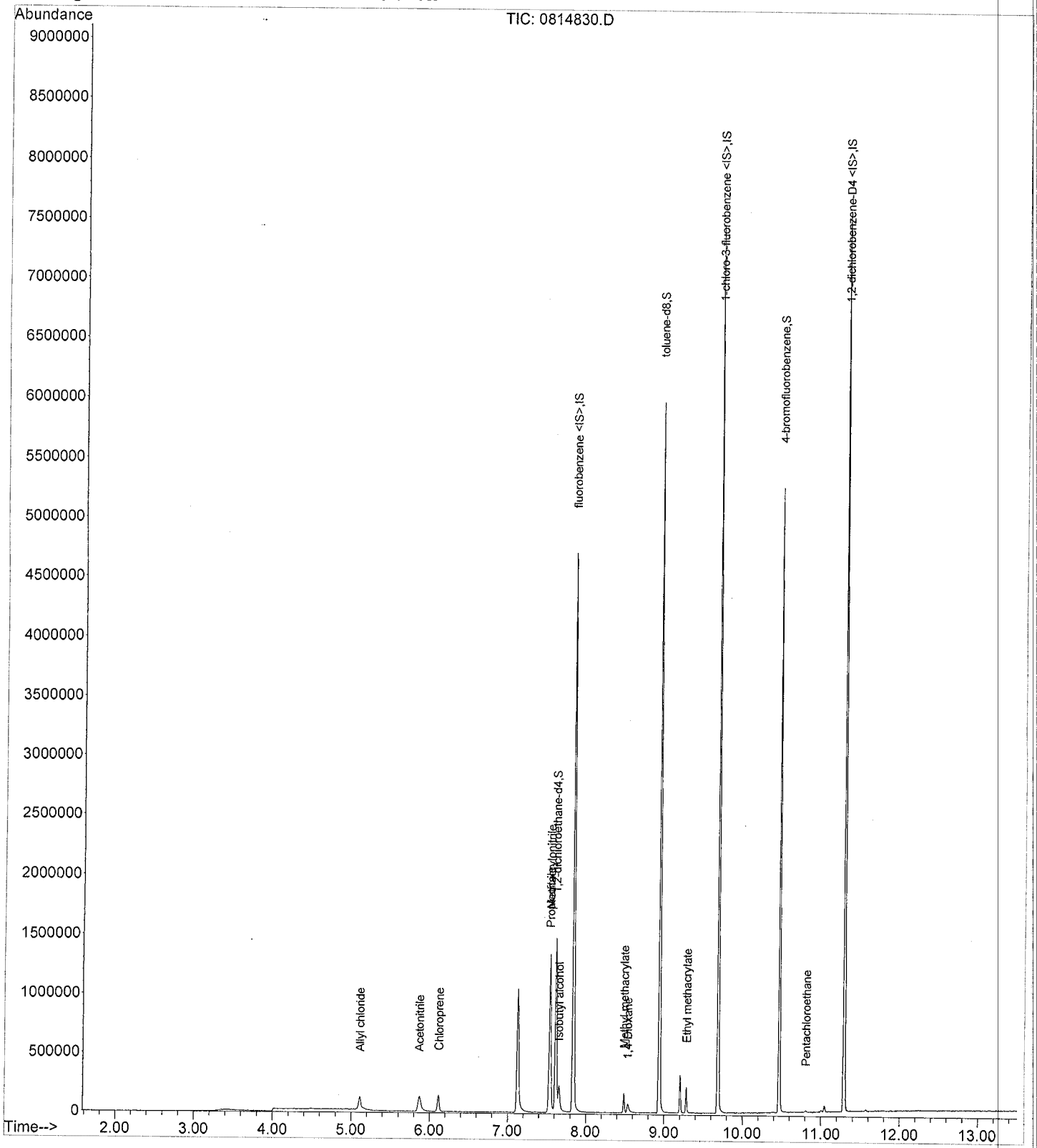
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3715\0814830.D
Acq On : 14 Aug 2015 10:39 pm
Sample : CCAPX9
Misc :
MS Integration Params: RTEINT.P
Quant Time: Aug 17 11:39 2015

Vial: 30
Operator: BWS
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



SW-846 8260B
Tune Data

Volatile Organic Instrument Performance Check — Form 5

Analytical Batch: VMS3772
Analyst: JHL
Analytical Date/Time: 10/22/2015 13:15
Instrument: MSD8
Filename: 1022801.D

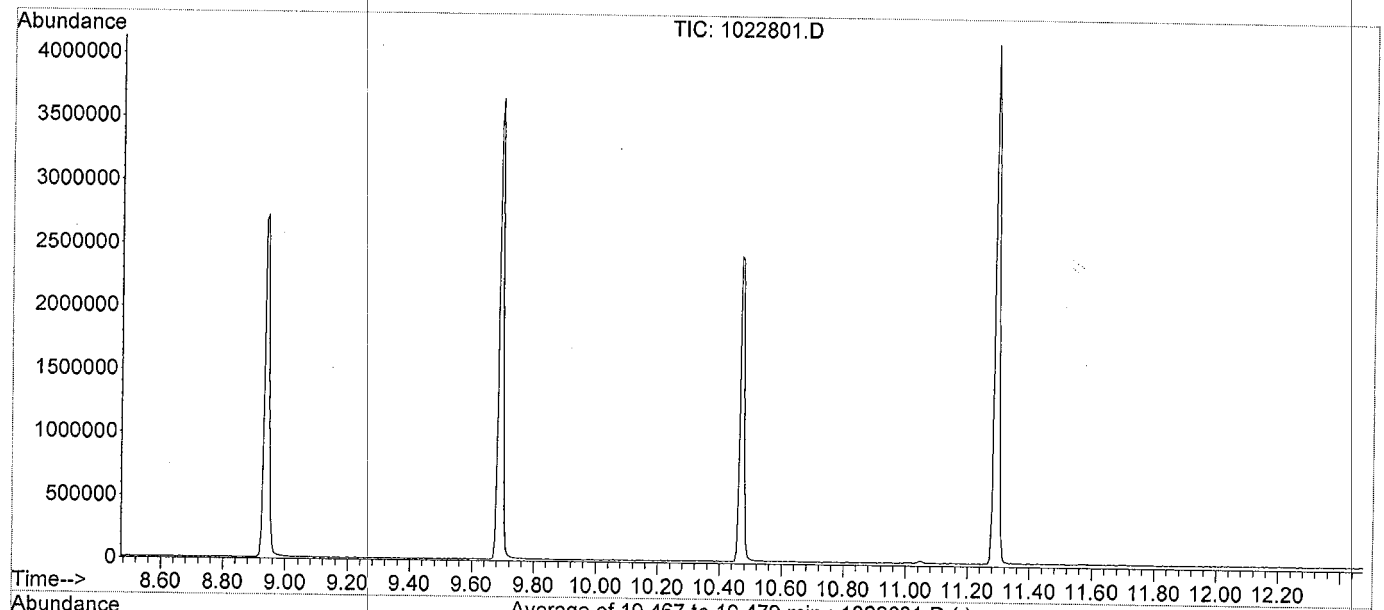
Bromofluorobenzene (BFB)

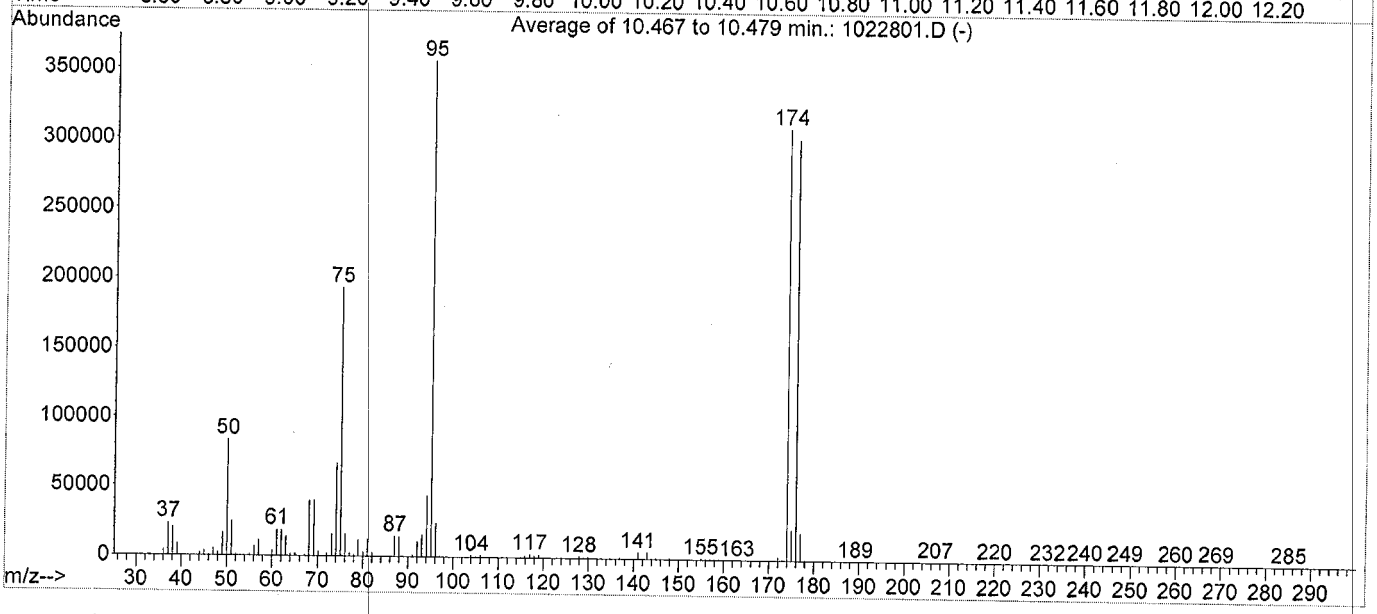
m/e	Ion Abundance Criteria	% Relative Abundance
50	15.0 - 40.0% of mass 95	23.50
75	30.0 - 60.0% of mass 95	54.30
95	Base peak, 100% relative abundance	100.00
96	5.0 - 9.0 of mass 95	6.90
173	Less than 2.0% of mass 174	0.30
174	50.0 - 100% of mass 95	87.00
175	5.0 - 9.0% of mass 174	7.10
176	95.0 - 101% of mass 174	97.40
177	5.0 - 9.0% of mass 176	6.50

Client Sample ID	Lab Sample ID	Analysis Date
LCS for HBN 95090 [VXX/6014]	183489	10/22/15 14:06
LCSD for HBN 95090 [VXX/6014]	183490	10/22/15 14:32
MB for HBN 95090 [VXX/6014]	183491	10/22/15 15:48
TB	31501928008	10/22/15 16:38
GMA4-7S-101915	31501928001	10/22/15 18:20
GMA4-8-101915	31501928003	10/22/15 18:45
GMA4-9-101915	31501928006	10/22/15 19:11
DUP-1-101915	31501928007	10/22/15 19:36
H78B-16-101915	31501928002	10/22/15 20:02
ES2-02AR-101915 MS	31501926003	10/22/15 21:44
ES2-02AR-101915 MSD	31501926004	10/22/15 22:10
GMA4-8-101915 MS	31501928004	10/22/15 22:35
GMA4-8-101915 MSD	31501928005	10/22/15 23:01

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022801.D
Acq On : 22 Oct 2015 1:15 pm
Sample : TUNE
Misc :
MS Integration Params: RTEINT.P
Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200

Vial: 1
Operator: JHL
Inst : MSD8
Multiplr: 1.00





AutoFind: Scans 1514, 1515, 1516; Background Corrected with Scan 1506

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	23.5	83703	PASS
75	95	30	60	54.3	193441	PASS
95	95	100	100	100.0	356480	PASS
96	95	5	9	6.9	24567	PASS
173	174	0.00	2	0.3	1028	PASS
174	95	50	100	87.0	309973	PASS
175	174	5	9	7.1	21922	PASS
176	174	95	101	97.4	302029	PASS
177	176	5	9	6.5	19639	PASS

10/28/15

1022801.D VMS3752.M Thu Oct 22 15:59:29 2015

SW-846 8260B
Continuing Calibration Data

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: SGS Environmental Services Inc. Contract:
Lab Code: NC00919 Case No.: SAS No.: SDG No.:
Instrument ID: MSD8 Calibration Date: 10/22/15 Time: 13:41
Lab File ID: 1022802.D Init. Calib. Date: 09/23/15
EPA Sample No.: QCK010 Init. Calib. Time: 19:18
Heated Purge: (Y/N) Y
GC Column: DB-624 ID: 0.2 (mm)

COMPOUND	ICAL RRF	CCAL RRF	MIN RRF	%D	MAX %D
1,1,1,2-tetrachloroethane	0.490	0.506		-3.3	
1,1,1-trichloroethane	1.44	1.677		-16.2	
1,1,2,2-tetrachloroethane	0.632	0.680	0.30	-7.6	
1,1,2-trichloroethane	0.411	0.398		3.2	
1,1-dichloroethane	1.87	1.999	0.10	-6.7	
1,1-dichloroethene	0.960	0.898		6.5	20.0
1,1-dichloropropene	1.35	1.397		-3.7	
1,2,3-trichlorobenzene	0.509	0.536		-5.3	
1,2,3-trichloropropane	0.201	0.213		-6.0	
1,2,4-trichlorobenzene	0.590	0.572		3.1	
1,2,4-trimethylbenzene	1.69	1.851		-9.3	
1,2-dibromo-3-chloropropane	0.096	0.118		-22.9	
1,2-dibromoethane	0.447	0.438		2.0	
1,2-dichlorobenzene	0.994	1.037		-4.3	
1,2-dichlorobenzene-D4 <IS>	1.00	1.000		0.0	
1,2-dichlorobenzene-D4 <IS>	1.00	1.000		0.0	
1,2-dichloroethane	1.35	1.565		-16.0	
1,2-dichloropropane	1.05	1.024		2.1	20.0
1,3,5-trimethylbenzene	1.60	1.714		-7.3	
1,3-dichlorobenzene	1.02	1.016		-0.1	
1,3-dichloropropane	0.816	0.798		2.2	
1,4-dichlorobenzene	1.00	1.013		-1.3	
1,4-Dioxane	0.005	0.003*		40.0	
1-chloro-3-fluorobenzene <I	1.00	1.000		0.0	
1-chloro-3-fluorobenzene <I	1.00	1.000		0.0	
2,2-dichloropropane	1.34	1.606		-20.0	
2-butanone	0.178	0.157		11.8	
2-chloroethyl vinyl ether	0.205	0.251		-22.4	
2-chlorotoluene	0.511	0.540		-5.7	
2-hexanone	0.258	0.257		0.4	
4-bromofluorobenzene	0.813	0.844		-3.8	
4-bromofluorobenzene	0.865	0.856		1.0	
4-chlorotoluene	0.490	0.488		0.4	
4-isopropyltoluene	1.72	1.985		-15.3	
4-methyl-2-pentanone	0.125	0.125		0.0	
acetone	0.217	0.186		14.3	
Acetonitrile	0.101	0.170		-68.3	
acrolein	0.196	0.210		-7.1	
acrylonitrile	0.469	0.521		-11.1	
Allyl chloride	0.815	1.496		-83.6	

7A

VOLATILE CONTINUING CALIBRATION CHECK

Lab Name: SGS Environmental Services Inc. Contract:
Lab Code: NC00919 Case No.: SAS No.: SDG No.:
Instrument ID: MSD8 Calibration Date: 10/22/15 Time: 13:41
Lab File ID: 1022802.D Init. Calib. Date: 09/23/15
EPA Sample No.: QCK010 Init. Calib. Time: 19:18
Heated Purge: (Y/N) Y
GC Column: DB-624 ID: 0.2 (mm)

COMPOUND	ICAL RRF	CCAL RRF	MIN RRF	%D	MAX %D
benzene	3.971	3.886		2.1	
bromobenzene	0.681	0.649		4.7	
bromochloromethane	0.584	0.575		1.5	
bromodichloromethane	1.182	1.373		-16.2	
bromoform	0.291	0.358	0.10	-23.0	
bromomethane	0.663	0.611		7.8	
carbon disulfide	3.580	3.516		1.8	
carbon tetrachloride	1.199	1.400		-16.8	
chlorobenzene	1.558	1.468	0.30	5.8	
chloroethane	0.678	0.731		-7.8	
chloroform	1.698	1.895		-11.6	20.0
chloromethane	1.278	1.405	0.10	-9.9	
Chloroprene	0.746	1.022		-37.0	
cis-1,2-dichloroethene	0.956	0.875		8.5	
cis-1,3-dichloropropene	1.524	1.654		-8.5	
dibromochloromethane	0.463	0.489		-5.6	
Dibromofluoromethane	0.894	0.908		-1.6	
dibromomethane	0.548	0.571		-4.2	
dichlorodifluoromethane	1.059	1.279		-20.8	
DIPE	3.233	3.079		4.8	
Ethyl methacrylate	0.636	0.667		-4.9	
ethylbenzene	0.630	0.598		5.1	20.0
fluorobenzene <IS>	1.000	1.000		0.0	
fluorobenzene <IS>	1.000	1.000		0.0	
hexachlorobutadiene	0.369	0.403		-9.2	
iodomethane	1.442	1.217		15.6	
Isobutyl alcohol	0.024	0.032		-33.3	
isopropylbenzene	1.955	1.974		-1.0	
m/p-xylene	0.797	0.801		-0.5	
Methacrylonitrile	0.423	0.751		-77.5	
Methyl methacrylate	0.503	0.666		-32.4	
methylene chloride	0.992	1.005		-1.3	
MTBE	2.483	2.333		6.0	
n-butylbenzene	1.645	1.933		-17.5	
n-propyl benzene	2.572	2.686		-4.4	
naphthalene	1.234	1.278		-3.6	
o-xylene	0.734	0.701		4.5	
1,2-dichloroethane-d4	1.20	1.349		-12.8	
4-bromofluorobenzene	0.865	0.856		1.0	
toluene-d8	3.78	3.670		3.0	

Revised Report

Results for 8260 CCV

BATCH: VMS3772
Filename: 1022802.D
ICAL Batch: VMS3752

Date Analyzed: 10/22/15
Instrument: MSD8

Compound	TV (ug/L)	Result (ug/L)	%Drift
bromomethane	10	10.04	0.4

Evaluate Continuing Calibration Report

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022802.D Vial: 2
Acq On : 22 Oct 2015 1:41 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 20% Max. Rel. Area : 150%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
51	TP	bromoform	0.291	0.358	-23.0#	103	0.00
52	S	4-bromofluorobenzene	0.865	0.856	1.0	93	0.00
53	T	bromobenzene	0.681	0.649	4.7	89	0.00
54	TP	1,1,2,2-tetrachloroethane	0.632	0.680	-7.6	100	0.00
55	T	1,2,3-trichloropropane	0.201	0.213	-6.0	98	0.00
56	IS	1,2-dichlorobenzene-D4 <IS>	1.000	1.000	0.0	91	0.00
57	TC	ethylbenzene	0.630	0.598	5.1	84	0.00
58	T	m/p-xylene	0.797	0.801	-0.5	87	0.00
59	T	styrene	1.090	1.222	-12.1	88	0.00
60	T	o-xylene	0.734	0.701	4.5	84	0.00
61	T	isopropylbenzene	1.955	1.974	-1.0	87	0.00
62	T	n-propyl benzene	2.572	2.686	-4.4	93	0.00
63	T	2-chlorotoluene	0.511	0.540	-5.7	93	0.00
64	T	4-chlorotoluene	0.490	0.488	0.4	87	0.00
65	T	1,3,5-trimethylbenzene	1.597	1.714	-7.3	90	0.00
66	T	tert-butylbenzene	1.458	1.517	-4.0	89	0.00
67	T	1,2,4-trimethylbenzene	1.694	1.851	-9.3	94	0.00
68	T	sec-butylbenzene	2.267	2.391	-5.5	91	0.00
69	T	1,3-dichlorobenzene	1.015	1.016	-0.1	91	0.00
70	T	4-isopropyltoluene	1.721	1.985	-15.3	92	0.00
71	T	1,4-dichlorobenzene	1.000	1.013	-1.3	90	0.00
72	T	1,2-dichlorobenzene	0.994	1.037	-4.3	93	0.00
73	T	n-butylbenzene	1.645	1.933	-17.5	93	0.00
74	T	1,2-dibromo-3-chloropropane	0.096	0.118	-22.9#	110	0.00
75	T	1,2,4-trichlorobenzene	0.590	0.572	3.1	89	0.00
76	T	hexachlorobutadiene	0.369	0.403	-9.2	102	0.00
77	T	naphthalene	1.234	1.278	-3.6	89	0.00
78	T	trans-1,4-Dichloro-2-butene	0.083	0.108	-30.1#	113	0.00
79	T	1,2,3-trichlorobenzene	0.509	0.536	-5.3	95	0.00

10/23/15

(#) = Out of Range SPCC's out = 0 CCC's out = 0

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022802.D Vial: 2
Acq On : 22 Oct 2015 1:41 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 12:56:01 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Oct 29 12:55:30 2015 ← UPDATED TARGETING FOR 1,2-DICHLOROETHANE-d4 HK 10/29/15
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	313259	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	592153	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	726474	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	284395	30.45	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 101.50%				
26) 1,2-dichloroethane-d4	7.61	65	422499	33.83	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 112.77%				
36) toluene-d8	8.94	98	1149796	29.10	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 97.00%				
52) 4-bromofluorobenzene	10.47	95	507026	29.70	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 99.00%				
Target Compounds							Qvalue
2) dichlorodifluoromethane	2.45	85	133518	12.07	ppb		98
3) chloromethane	2.74	50	146687	10.99	ppb		97
4) vinyl chloride	2.84	62	118862	10.01	ppb		98
5) bromomethane	3.30	94	63810	10.04	ppb		97
6) chloroethane	3.49	64	76347	10.78	ppb		99
7) trichlorofluoromethane	3.69	101	177392	12.05	ppb		97
8) acrolein	4.94	56	549175	268.69	ppb		97
9) 1,1-dichloroethene	4.46	96	93792	9.35	ppb		90
10) acetone	5.32	58	96850	42.77	ppb		74
11) methylene chloride	5.24	84	104903	10.13	ppb		94
12) trans-1,2-dichloroethene	5.44	96	86922	9.60	ppb		94
13) acrylonitrile	6.20	53	1361370	277.82	ppb		100
14) MTBE	5.58	73	243638	9.40	ppb	#	94
15) 1,1-dichloroethane	6.14	63	208760	10.68	ppb		98
16) DIPE	6.01	45	321526	9.52	ppb		88
17) 2,2-dichloropropane	6.80	77	167720	12.01	ppb		95
18) cis-1,2-dichloroethene	6.69	96	91337	9.15	ppb		96
19) 2-butanone	7.25	72	81821	44.08	ppb		77
20) bromochloromethane	6.89	130	59992	9.84	ppb		87
21) chloroform	6.95	83	197871	11.16	ppb		98
22) 1,1,1-trichloroethane	7.16	97	175126	11.63	ppb		97
23) carbon tetrachloride	7.09	117	146141	11.68	ppb		98
25) 1,1-dichloropropene	7.27	75	145882	10.37	ppb		96
27) benzene	7.50	78	405734	9.79	ppb		98
28) 1,2-dichloroethane	7.67	62	163423	11.60	ppb		97
29) trichloroethene	7.97	95	101649	9.65	ppb		95
30) 1,2-dichloropropane	8.36	63	106976	9.79	ppb		89
31) dibromomethane	8.29	93	59625	10.41	ppb		97
32) bromodichloromethane	8.39	83	143401	11.62	ppb		99
33) 2-chloroethyl vinyl ether	8.76	106	655088	305.85	ppb	#	77
34) cis-1,3-dichloropropene	8.82	75	172696	10.85	ppb		100
35) 4-methyl-2-pentanone	9.19	100	65363	50.04	ppb		90
37) toluene	8.97	92	260293	9.73	ppb		100
38) iodomethane	4.66	142	127079	8.44	ppb		98
39) trans-1,3-dichloropropene	8.82	75	172696	10.85	ppb		100
40) Vinyl acetate	6.40	43	690067	32.41	ppb		97
41) carbon disulfide	4.49	76	367125	9.82	ppb		99

(#) = qualifier out of range (m) = manual integration

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022802.D Vial: 2
Acq On : 22 Oct 2015 1:41 pm Operator: JHL
Sample : QCK010 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Oct 29 12:56:01 2015 Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Oct 29 12:55:30 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
43) 1,1,2-trichloroethane	9.32	83	78572	9.70	ppb	94
44) tetrachloroethene	9.20	166	120606	9.63	ppb	99
45) 1,3-dichloropropane	9.48	76	157602	9.79	ppb	99
46) 2-hexanone	9.66	58	253528	49.71	ppb	97
47) dibromochloromethane	9.43	129	96547	10.56	ppb	98
48) 1,2-dibromoethane	9.57	107	86525	9.80	ppb	97
49) chlorobenzene	9.86	112	289703	9.42	ppb	95
50) 1,1,1,2-tetrachloroethane	9.89	131	99929	10.33	ppb	98
51) bromoform	10.22	173	70619	12.31	ppb	96
53) bromobenzene	10.54	156	128081	9.53	ppb	94
54) 1,1,2,2-tetrachloroethane	10.55	83	134237	10.77	ppb	100
55) 1,2,3-trichloropropane	10.64	110	42111	10.61	ppb	94
57) ethylbenzene	9.86	106	144777	9.49	ppb	94
58) m/p-xylene	9.93	106	387874	20.11	ppb	92
59) styrene	10.19	104	295915	11.21	ppb	91
60) o-xylene	10.16	106	169859	9.56	ppb	98
61) isopropylbenzene	10.31	105	478134	10.10	ppb	98
62) n-propyl benzene	10.52	91	650353	10.44	ppb	97
63) 2-chlorotoluene	10.62	126	130670	10.56	ppb	97
64) 4-chlorotoluene	10.70	126	118207	9.96	ppb	86
65) 1,3,5-trimethylbenzene	10.61	105	415134	10.73	ppb	97
66) tert-butylbenzene	10.78	119	367412	10.41	ppb	93
67) 1,2,4-trimethylbenzene	10.81	105	448338	10.93	ppb	93
68) sec-butylbenzene	10.87	105	579080	10.55	ppb	99
69) 1,3-dichlorobenzene	11.01	146	246062	10.01	ppb	99
70) 4-isopropyltoluene	10.93	119	480698	11.54	ppb	97
71) 1,4-dichlorobenzene	11.06	146	245379	10.13	ppb	99
72) 1,2-dichlorobenzene	11.29	146	251207	10.43	ppb	96
73) n-butylbenzene	11.16	91	468180	11.75	ppb	97
74) 1,2-dibromo-3-chloropropan	11.76	75	172129	74.31	ppb	89
75) 1,2,4-trichlorobenzene	12.20	180	138431	9.68	ppb	99
76) hexachlorobutadiene	12.15	225	97592	10.91	ppb	96
77) naphthalene	12.46	128	309587	10.36	ppb	99
78) trans-1,4-Dichloro-2-buten	10.64	88	131001	65.24	ppb	99
79) 1,2,3-trichlorobenzene	12.60	180	129793	10.54	ppb	97

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

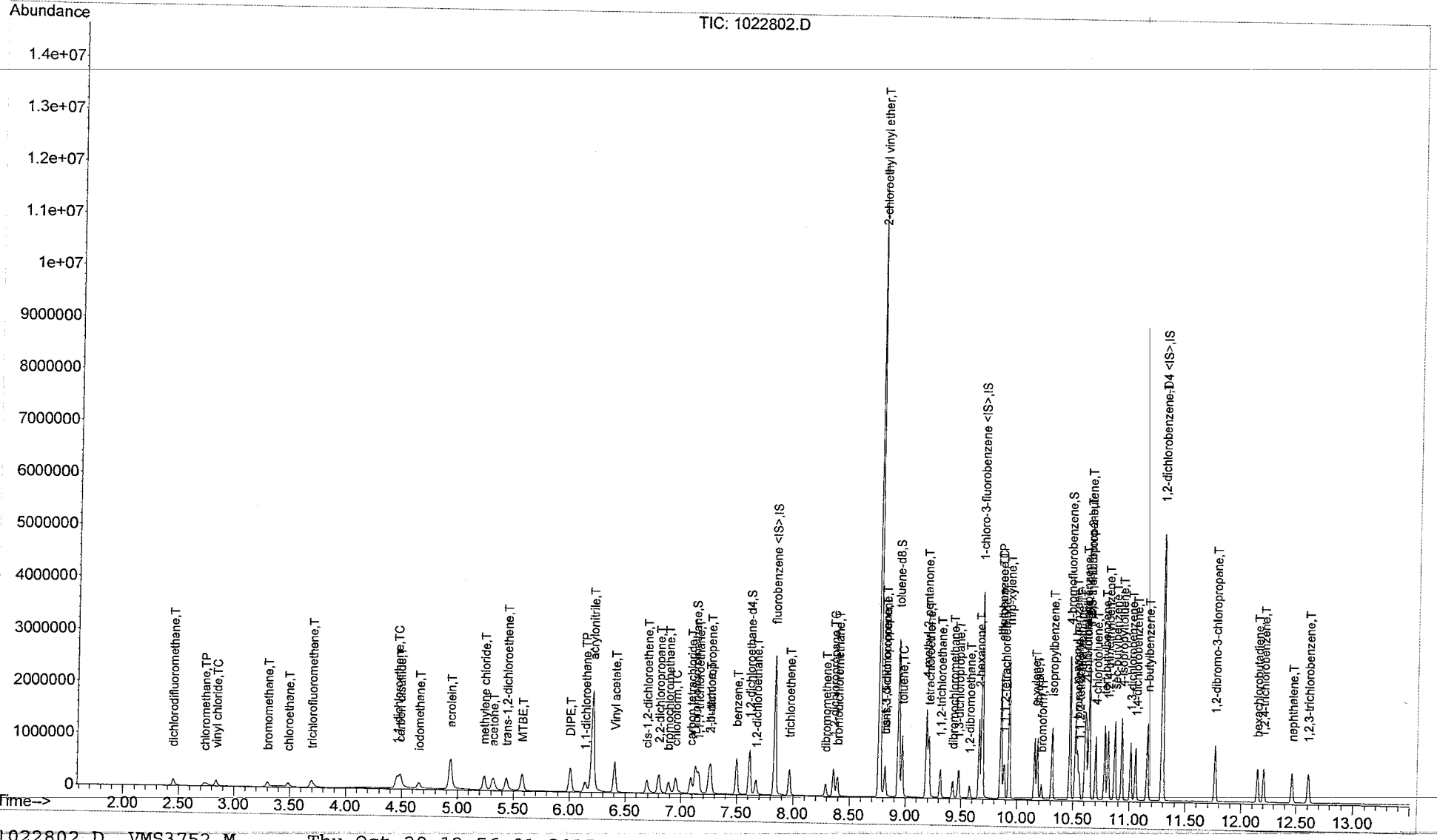
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022802.D
Acq On : 22 Oct 2015 1:41 pm
Sample : QCK010
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 29 12:56 2015

Revised Report
Vial: 2
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Oct 29 12:55:30 2015
Response via : Initial Calibration



1022802.D VMS3752.M Thu Oct 29 12:56:01 2015

Revised Report

Results for 8260 CCV

BATCH: VMS3772
Filename: 1022805.D
ICAL Batch: VMS3715

Date Analyzed: 10/22/15
Instrument: MSD8

Compound	TV (ug/L)	Result (ug/L)	%Drift
Isobutyl alcohol	500	297.60	-40.5
1,4-Dioxane	500	302.64	-39.5
Ethyl methacrylate	5	4.75	-5.0

Evaluate Continuing Calibration Report

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022805.D Vial: 5
Acq On : 22 Oct 2015 2:57 pm Operator: JHL
Sample : CCAPX9 Inst : MSD8
Misc : Multiplr: 1.00
MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 50% Max. Rel. Area : 150%

APIX CCV ✓ 10/23/15

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IS	fluorobenzene <IS>	1.000	1.000	0.0	58	0.00
2		Acetonitrile	0.101	0.170	-68.3#	85	0.00
3		Allyl chloride	0.815	1.496	-83.6#	96	0.00
4		Chloroprene	0.746	1.022	-37.0	74	0.00
5		Propionitrile	0.107	0.159	-48.6	75	0.00
6		Methacrylonitrile	0.423	0.751	-77.5#	89	0.00
7		Isobutyl alcohol	0.024	0.032	-33.3	71	0.00
8	S	1,2-dichloroethane-d4	1.031	1.372	-33.1	69	0.00
9		1,4-Dioxane	0.005	0.003	40.0	35#	0.00
10		Methyl methacrylate	0.503	0.666	-32.4	69	0.00
11	S	toluene-d8	3.484	3.349	3.9	49#	0.00
12		Ethyl methacrylate	0.636	0.667	-4.9	57	0.00
13	IS	1-chloro-3-fluorobenzene <I	1.000	1.000	0.0	55	0.00
14	S	4-bromofluorobenzene	0.813	0.844	-3.8	50	0.00
15		Pentachloroethane	0.018	0.169	-838.9#	535#	0.00
16	IS	1,2-dichlorobenzene-D4 <IS>	1.000	1.000	0.0	54	0.00

✓

(#) = Out of Range SPCC's out = 0 CCC's out = 0
1022805.D VMS3715.M Thu Oct 22 16:10:28 2015 Page 1

Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022805.D
Acq On : 22 Oct 2015 2:57 pm
Sample : CCAPX9
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 16:10:09 2015

Vial: 5
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Quant Method : C:\MSDCHEM\1...\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Sep 24 09:15:32 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	317468	30.00	ppb		0.00
42) 1-chloro-3-fluorobenzene <	9.69	95	530759	30.00	ppb		0.00
56) 1,2-dichlorobenzene-D4 <IS	11.29	152	637493	30.00	ppb		0.00
System Monitoring Compounds							
24) Dibromofluoromethane	7.13	113	275639	29.12	ppb		0.00
Spiked Amount 30.000	Range 86 - 118		Recovery = 97.07%				
26) 1,2-dichloroethane-d4	7.61	65	435534	34.41	ppb		0.00
Spiked Amount 30.000	Range 64 - 130		Recovery = 114.70%				
36) toluene-d8	8.94	98	1064094	26.57	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 88.57%				
52) 4-bromofluorobenzene	10.47	95	447735	29.26	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 97.53%				
Target Compounds							Qvalue
8) acrolein	4.94	56	4078	~~1.97 ppb~~			84
13) acrylonitrile	6.21	53	2699	~~0.54 ppb~~		#	75
28) 1,2-dichloroethane	7.54	62	5068	~~0.36 ppb~~		#	76
44) tetrachloroethene	9.20	166	20358	~~1.81 ppb~~			95
46) 2-hexanone	9.69	58	1336	0.29 ppb		#	1
74) 1,2-dibromo-3-chloropropan	11.76	75	702	~~0.35 ppb~~		#	75

IS/SR ONLY FROM THIS RUN ✓ ✓ 10/29/15

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

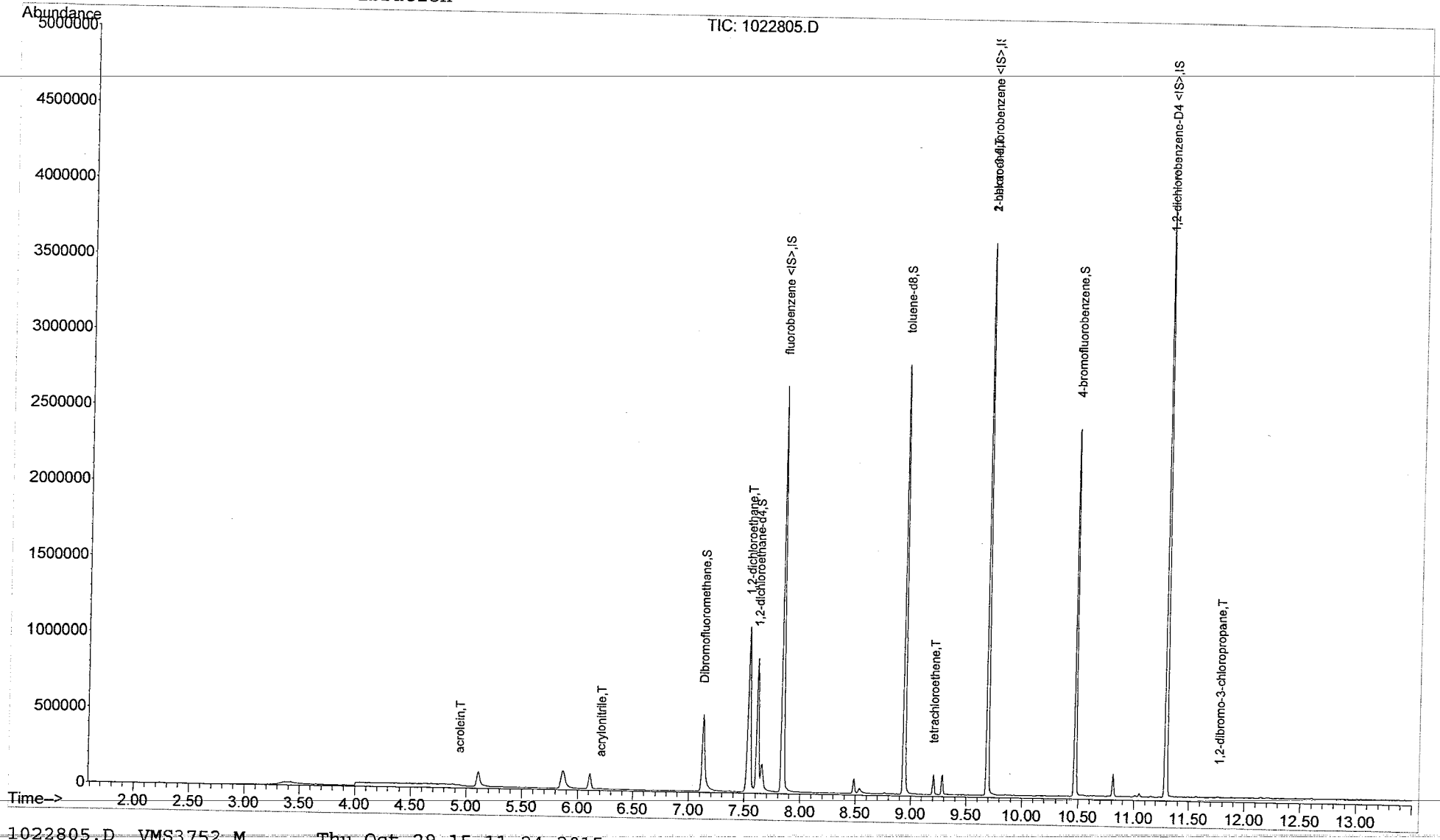
Quantitation Report (Not Reviewed)

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022805.D
Acq On : 22 Oct 2015 2:57 pm
Sample : CCAPX9
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 16:10 2015

Revised Report
Vial: 5
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3752.RES

Method : C:\MSDCHEM\1\METHODS\8260W\VMS3752.M (RTE Integrator)
Title : VMS3752 Water ICAL 8260\624\6200
Last Update : Thu Oct 29 13:00:53 2015
Response via : Initial Calibration



Quantitation Report (Not Reviewed)

Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022805.D
Acq On : 22 Oct 2015 2:57 pm
Sample : CCAPX9
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 16:10:20 2015

Vial: 5
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Quant Method : C:\MSDCHEM\1...\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration
DataAcq Meth : MSD8_AC6

Internal Standards	R.T.	QIon	Response	Conc	Units		Dev(Min)
1) fluorobenzene <IS>	7.84	70	317468	30.00	ppb		0.00
13) 1-chloro-3-fluorobenzene <	9.69	95	530759	30.00	ppb		0.00
16) 1,2-dichlorobenzene-D4 <IS	11.29	152	637493	30.00	ppb		0.00
System Monitoring Compounds							
8) 1,2-dichloroethane-d4	7.61	65	435534	34.92	ppb		0.00
Spiked Amount 30.000	Range 64 - 140		Recovery = 116.40%				
11) toluene-d8	8.94	98	1063334	25.23	ppb		0.00
Spiked Amount 30.000	Range 82 - 117		Recovery = 84.10%				
14) 4-bromofluorobenzene	10.47	95	447735	27.24	ppb		0.00
Spiked Amount 30.000	Range 85 - 115		Recovery = 90.80%				
Target Compounds							Qvalue
2) Acetonitrile	5.86	41	179519	147.65	ppb		98
3) Allyl chloride	5.11	41	79151	8.03	ppb	#	86
4) Chloroprene	6.11	53	54089	5.99	ppb	#	85
5) Propionitrile	7.53	54	168440	130.06	ppb		100
6) Methacrylonitrile	7.54	41	397248	77.61	ppb	#	90
7) Isobutyl alcohol	7.65	43	85266	297.60	ppb	#	90
9) 1,4-Dioxane	8.54	88	18290	302.64	ppb		85
10) Methyl methacrylate	8.48	41	35240	5.80	ppb	#	76
12) Ethyl methacrylate	9.29	69	35308	4.75	ppb	#	80
15) Pentachloroethane	10.81	167	14966	40.33	ppb	#	77

10/23/15

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

Quantitation Report (Not Reviewed)

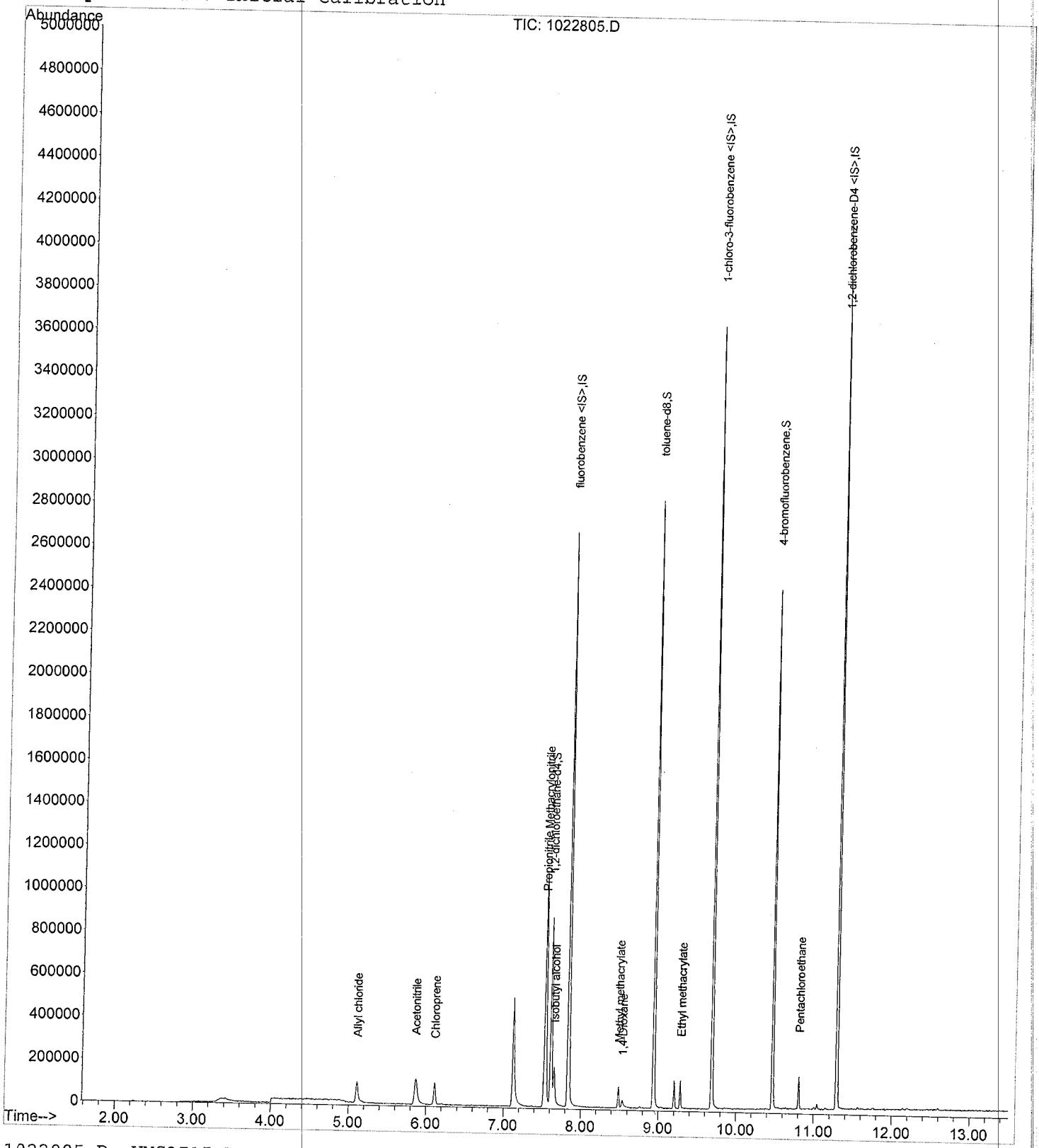
Revised Report

Data File : C:\MSDCHEM\1\DATA\VMS3772\1022805.D
Acq On : 22 Oct 2015 2:57 pm
Sample : CCAPX9
Misc :
MS Integration Params: RTEINT.P
Quant Time: Oct 22 16:10 2015

Vial: 5
Operator: JHL
Inst : MSD8
Multiplr: 1.00

Quant Results File: VMS3715.RES

Method : C:\MSDCHEM\1\METHODS\APIX-W\VMS3715.M (RTE Integrator)
Title : VMS3715 APIX Water ICAL
Last Update : Mon Aug 17 11:36:08 2015
Response via : Initial Calibration



Appendix C

Data Validation Report

AECOM
250 Apollo Drive
Chelmsford, MA 01824

978-905-2100 tel
978-905-2101 fax

Memorandum

Project	GE - Pittsfield	Page 1
Laboratory	SGS, Wilmington, NC	
Laboratory SDG	31501928	
Analyses/Method	VOC by SW-846 8260B	
Validation Level	Tier II	
AECOM Project Number	60331701 4.3.4	
Prepared by	Lori Herberich AECOM/Chelmsford, MA	Completed: December 3, 2015
Reviewed by	Paula DiMattei AECOM/Chelmsford, MA	Completed: December 7, 2015

SUMMARY

The samples listed below were collected by AECOM Environment from General Electric Company's (GE's) Groundwater Management Area (GMA) 4 on October 19, 2015 and submitted to SGS in Wilmington, NC for analysis.

SDG	Sample ID	Matrix/Sample Type	Analysis
31501928	DUP-1-101915	Field Duplicate of GMA4-7S-101915	VOCs
	GMA4-7S-101915	Groundwater	VOCs
	GMA4-8-101915	Groundwater	VOCs
	GMA4-9-101915	Groundwater	VOCs
	H78B-16-101915	Groundwater	VOCs
	TB	Trip Blank	VOCs
VOCs = Volatile Organic Compounds by SW-846 8260B			

Data validation activities were conducted with reference to:

- Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW846, specifically SW-846 Method 8260B, *Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry* (USEPA, 1996);
- EPA New England, Environmental Data Review Program Guidance (USEPA, April 2013)*;*
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (June 2008); and
- The Data Validation Annex A in General Electric Company's *Field Sampling Plan/Quality Assurance Project Plan* (FSP/QAPP) (revised July 2013).

A Tier 1 Plus review, as defined in the EPA Region 1 2013 guidance, was performed on all of the data. This Tier 1 Plus review is equivalent to the Tier II review (EPA Region 1 1993 guidance) described in the FSP/QAPP. A Tier 1 Plus review of all data was deemed necessary in order to fulfill the requirements of the FSP/QAPP since QC issues were identified.

The National Functional Guidelines cited above were modified to accommodate the non-CLP methodologies. In the absence of method-specific information or project-specific requirements, AECOM's professional judgment was used as appropriate.

REVIEW ELEMENTS

Sample data were reviewed for the following elements, where applicable to the method:

✓ Data completeness (chain-of-custody [COC])/sample integrity
✗ Holding times and sample preservation
✓ Instrument tuning
✗ Initial calibration/continuing calibration verification
✓ Laboratory blanks/trip blanks/equipment blanks
✓ Surrogate spike recoveries
✗ Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓ Field duplicate results
✓ Laboratory control sample (LCS)/laboratory control sample duplicate (LCSD) results
✓ Internal standard results
✓ Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Select data points were estimated or rejected due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

DISCUSSION

Data Completeness/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests and any subsequent communications between AECOM and the laboratory.

Holding Times and Sample Preservation

All VOC samples were received properly preserved to a pH of <2. One compound, 2-chloroethylvinyl ether, was rejected (R) in all VOC samples since the samples were received acid preserved. As noted below under MS/MSD nonconformances, 2-chloroethylvinyl ether does not recover in an acid matrix.

All samples were analyzed within the method specified holding times for the VOC analyses.

Instrument Tuning

All instrument tuning met QC acceptance criteria.

Initial Calibration/Continuing Calibration Verification

The percent relative standard deviations (%RSDs) and the response factors (RFs) of all target compounds in the initial calibrations (IC) and the percent differences or percent drifts (%Ds) in the continuing calibration verification standards (CCVs) met QC acceptance criteria for the VOC analyses with the following exceptions noted in the tables below.

IC or CCV Date Analyzed	Compound	RF	Actions	
			Detects	Nondetects
IC 8/14/15	Isobutyl alcohol	0.024	J	R
Associated Samples: All samples in this SDG				
CCV 10/22/15	Isobutyl alcohol	0.023	J	R
Associated Samples: All samples in this SDG				

CCV Date Analyzed	Compound	%D or %Drift	Actions	
			Detects	Nondetects
CCV 10/22/15	Isobutyl alcohol*	-40.5	J	UJ
	1,2-Dibromo-3-chloropropane	-22.9	J	UJ
	2-Chloroethylvinylether[1]	-22.4	J	UJ
	Acetonitrile	-68.3	J	UJ
	Allyl Chloride	-83.6	J	UJ
	Dichlorodifluoromethane	-20.8	J	UJ
	Chloroprene	-37.0	J	UJ
	Methylacrylonitrile	-77.5	J	UJ
	Methyl methacrylate	-32.4	J	UJ
	1,4-Dioxane	-39.5	J	UJ
Associated Samples: All samples in this SDG *Previously qualified as rejected due to low RF in IC and/or CCV; no further qualifiers applied [1]Previously qualified as rejected due to acid preservation issue.				

Laboratory Blanks/Trip Blanks/Equipment Blanks

Target compounds were not detected in the laboratory method blanks or trip blank associated with the samples in this data set. An equipment blank was not submitted with this data set.

Surrogate Spike Recoveries

The surrogate percent recoveries (%Rs) were within the QAPP QC acceptance limits for all sample analyses.

MS/MSD Results

The laboratory spiked 45 of 55 target compounds into the MS and MSD. Only five target compounds (1,1-dichloroethane, trichloroethene, benzene, toluene, chlorobenzene) were listed in

the QAPP as spiking compounds. The MS and MSD recoveries were evaluated using the QAPP for the five target compounds listed in the QAPP and using the laboratory QC limits for the remaining 50 compounds.

MS/MSD analyses were performed on sample GMA4-8-101915. The MS/MSD %Rs and relative percent differences (RPDs) were reviewed for conformance with the QAPP and laboratory QC acceptance criteria. All QC acceptance criteria were met except for the following.

Compound	MS %R	MSD %R	RPD	QC Limits		Actions	
				%R	RPD	Detects	Nondetects
2-Chloroethylvinylether	0	0	ok	17-283	20	J-	R
Acetone	117	133	ok	18-85	20	J+	Accept
Note: The nondetect results for 2-chloroethylvinyl ether were rejected in all samples in this SDG since the samples were received at the laboratory acid preserved. Acid preservation causes lack of recovery of this compound.							

Field Duplicates Results

Field duplicate RPDs were reviewed for conformance with the QC acceptance criterion of ≤30% for aqueous matrices. All field duplicate precision criteria were met.

LCS/LCSD Results

The laboratory spiked 45 of 55 target compounds into the LCS and LCSD. The QC acceptance limits from the QAPP were used to evaluate the five target compounds (1,1-dichloroethane, trichloroethene, benzene, toluene, chlorobenzene) that were listed as spike compounds. The remaining compounds were evaluated using laboratory QC acceptance limits. All %Rs and RPDs met QC acceptance criteria or qualification of the data was not required.

Internal Standard Results

All internal standards met QC acceptance criteria.

Sample Results/Reporting Issues

Results reported between the detection limit (DL) and the LOQ were qualified as estimated (J) by the laboratory; these qualifiers were retained during data validation unless superseded by validation qualifiers.

Select sample results were reported from a dilution analysis due to the elevated concentration of target compounds present in the sample. Sample LOQs were adjusted accordingly by the laboratory.

ATTACHMENTS

Attachment A: Validation Qualifier Codes and Explanation

Attachment B: Reason Codes and Explanation

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	QL	Units	Validation Qualifiers	Validation Reason
DUP-1-101915	WG	1,2-Dibromo-3-chloropropane		5.00	ug/l	UJ	c
DUP-1-101915	WG	Methyl Methacrylate		1.00	ug/l	UJ	c
DUP-1-101915	WG	Acetonitrile		20.0	ug/l	UJ	c
DUP-1-101915	WG	Dichlorodifluoromethane		5.00	ug/l	UJ	c
DUP-1-101915	WG	Isobutyl Alcohol			ug/l	R	c
DUP-1-101915	WG	Allyl Chloride		1.00	ug/l	UJ	c
DUP-1-101915	WG	2-Chloroethylvinylether			ug/l	R	p
DUP-1-101915	WG	1,4-Dioxane		100	ug/l	UJ	c
DUP-1-101915	WG	Methacrylonitrile		10.0	ug/l	UJ	c
DUP-1-101915	WG	Chloroprene		1.00	ug/l	UJ	c
GMA4-7S-101915	WG	Allyl Chloride		1.00	ug/l	UJ	c
GMA4-7S-101915	WG	2-Chloroethylvinylether			ug/l	R	p
GMA4-7S-101915	WG	1,4-Dioxane		100	ug/l	UJ	c
GMA4-7S-101915	WG	Methacrylonitrile		10.0	ug/l	UJ	c
GMA4-7S-101915	WG	Chloroprene		1.00	ug/l	UJ	c
GMA4-7S-101915	WG	Acetonitrile		20.0	ug/l	UJ	c
GMA4-7S-101915	WG	Dichlorodifluoromethane		5.00	ug/l	UJ	c
GMA4-7S-101915	WG	Isobutyl Alcohol			ug/l	R	c
GMA4-7S-101915	WG	Methyl Methacrylate		1.00	ug/l	UJ	c
GMA4-7S-101915	WG	1,2-Dibromo-3-chloropropane		5.00	ug/l	UJ	c
GMA4-8-101915	WG	Allyl Chloride		1.00	ug/l	UJ	c
GMA4-8-101915	WG	2-Chloroethylvinylether			ug/l	R	p,m
GMA4-8-101915	WG	1,4-Dioxane		100	ug/l	UJ	c
GMA4-8-101915	WG	Methacrylonitrile		10.0	ug/l	UJ	c
GMA4-8-101915	WG	Chloroprene		1.00	ug/l	UJ	c
GMA4-8-101915	WG	Acetone	20.3	25.0	ug/l	J+	m
GMA4-8-101915	WG	Acetonitrile		20.0	ug/l	UJ	c
GMA4-8-101915	WG	Dichlorodifluoromethane		5.00	ug/l	UJ	c
GMA4-8-101915	WG	Isobutyl Alcohol			ug/l	R	c
GMA4-8-101915	WG	Methyl Methacrylate		1.00	ug/l	UJ	c
GMA4-8-101915	WG	1,2-Dibromo-3-chloropropane		5.00	ug/l	UJ	c
GMA4-9-101915	WG	Allyl Chloride		1.00	ug/l	UJ	c
GMA4-9-101915	WG	2-Chloroethylvinylether			ug/l	R	p
GMA4-9-101915	WG	1,4-Dioxane		100	ug/l	UJ	c
GMA4-9-101915	WG	Methacrylonitrile		10.0	ug/l	UJ	c
GMA4-9-101915	WG	Chloroprene		1.00	ug/l	UJ	c
GMA4-9-101915	WG	Acetonitrile		20.0	ug/l	UJ	c
GMA4-9-101915	WG	Dichlorodifluoromethane		5.00	ug/l	UJ	c
GMA4-9-101915	WG	Isobutyl Alcohol			ug/l	R	c
GMA4-9-101915	WG	Methyl Methacrylate		1.00	ug/l	UJ	c
GMA4-9-101915	WG	1,2-Dibromo-3-chloropropane		5.00	ug/l	UJ	c
H78B-16-101915	WG	1,2-Dibromo-3-chloropropane		100	ug/l	UJ	c
H78B-16-101915	WG	Allyl Chloride		20.0	ug/l	UJ	c
H78B-16-101915	WG	2-Chloroethylvinylether			ug/l	R	p
H78B-16-101915	WG	1,4-Dioxane		2000	ug/l	UJ	c
H78B-16-101915	WG	Methacrylonitrile		200	ug/l	UJ	c
H78B-16-101915	WG	Chloroprene		20.0	ug/l	UJ	c
H78B-16-101915	WG	Acetonitrile		400	ug/l	UJ	c

Sample ID	Matrix	Compound	Result	QL	Units	Validation Qualifiers	Validation Reason
H78B-16-101915	WG	Dichlorodifluoromethane		100	ug/l	UJ	c
H78B-16-101915	WG	Isobutyl Alcohol			ug/l	R	c
H78B-16-101915	WG	Methyl Methacrylate		20.0	ug/l	UJ	c
TB-1021915	WQ	Allyl Chloride		1.00	ug/l	UJ	c
TB-1021915	WQ	2-Chloroethylvinylether			ug/l	R	p
TB-1021915	WQ	1,4-Dioxane		100	ug/l	UJ	c
TB-1021915	WQ	Methacrylonitrile		10.0	ug/l	UJ	c
TB-1021915	WQ	Chloroprene		1.00	ug/l	UJ	c
TB-1021915	WQ	Acetonitrile		20.0	ug/l	UJ	c
TB-1021915	WQ	Dichlorodifluoromethane		5.00	ug/l	UJ	c
TB-1021915	WQ	Isobutyl Alcohol			ug/l	R	c
TB-1021915	WQ	Methyl Methacrylate		1.00	ug/l	UJ	c
TB-1021915	WQ	1,2-Dibromo-3-chloropropane		5.00	ug/l	UJ	c

Notes:

- Refer to Attachment A for validation qualifier definitions.
- Refer to Attachment B for validation reason code definitions.
- Where the sample result is nondetect, there will be no value in the result column.

Attachment A

Qualifier Codes and Explanation

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Estimated result, bias is likely to be high. The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential high bias.
J-	Estimated result, bias is likely to be low. The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential low bias.
U (“ND”)	The analyte was analyzed for, but was not detected above the reported sample quantitation limit (ND is also used for this project to indicate non-detected compounds.)
UJ (“ND J”)	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample (ND J is also used for this project to indicate non-detected compounds in this category.)
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment B

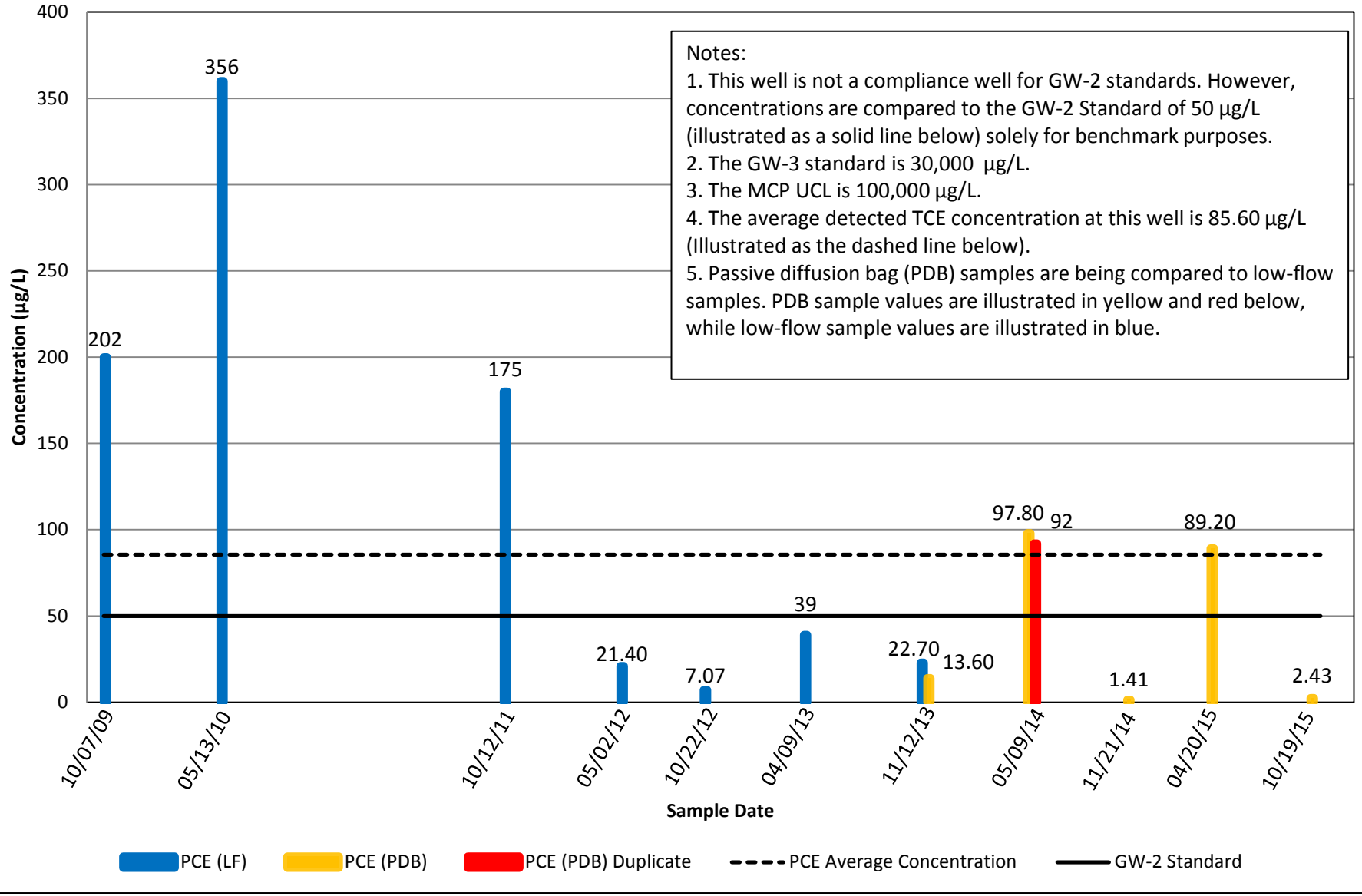
Reason Codes and Explanation

Reason Code	Explanation
be	Equipment blank (or trip blank) contamination
bl	Laboratory blank contamination
bm	Missing blank information
c	Calibration issue
cl	Clean-up standard recovery
cr	Chromatographic resolution
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
g	Chromatographic pattern match issue
h	Holding times
i	Internal standard areas
ip	DDT/Endrin breakdown
k	Estimated Maximum Possible Concentrations
l	LCS recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs (matrix duplicate, MSD, LCSD)
m	Matrix spike recovery
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column precision
q	Quantitation issue
s	Surrogate recovery
sp	Sample preparation issue
su	Evidence of ion suppression
t	Temperature preservation issue
v	Compound identification issue
x	Low % solids
y	Serial dilution results
z	ICS results

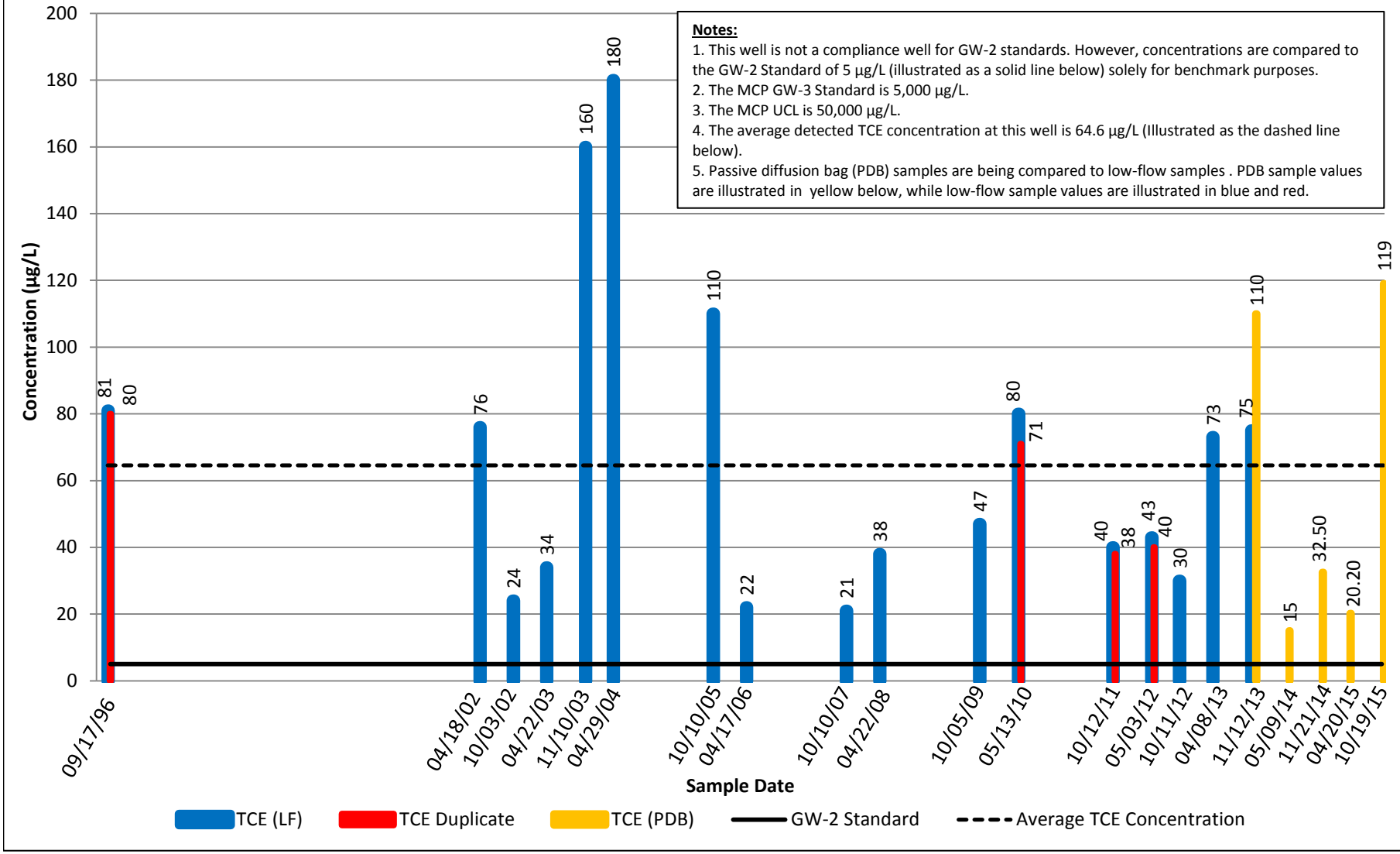
Appendix D

Select Graphs on Historical Groundwater Quality Data

Appendix D
Well GMA4-9 Historical PCE Concentrations
Groundwater Monitoring Program for GMA 4 Fall 2015
General Electric Company - Pittsfield, Massachusetts



Appendix D
Well H78B-16 Historical TCE Concentrations
Groundwater Monitoring Program for GMA 4 Fall 2015
General Electric Company - Pittsfield, Massachusetts



Appendix E

Summary Statistics on Historical Groundwater Quality Data

Table E-1
GMA4-7S
Summary Statistics on Historical Groundwater Quality Data
Long-Term Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts
Fall 2015

Location ID: Date Collected: Sample Name:	Method 1 GW-2 Standards	Method 1 GW-3 Standards	MCP UCL for Groundwater	Detection Frequency	Minimum Detect	Maximum Detect	Median Value	Arithmetic Average	Geometric Mean	Standard Deviation
Volatile Organics (µg/L)										
2-Butanone	50,000	50,000	100,000	1/12	1.04	1.37	8.75	10.2	7.17	8.23
Acetone	50,000	50,000	100,000	5/12	1.05	19.8	11.5	11.5	7.93	8.41
Chloroform	50	20,000	100,000	3/12	0.52	0.87	0.595	0.713	0.679	0.235
Tetrachloroethylene	50	30,000	100,000	5/12	0.48	11.2	1	1.99	1.20	3.00
Trichloroethylene	5	5,000	50,000	3/12	0.17	0.4	0.5	0.647	0.552	0.331
Total VOCs	Not Listed	Not Listed	Not Listed	9/12	0.48	21.75	13.235	14.9	8.09	14.4

Notes:

1. Historical analytical data between 2009 and 2015 provided by ARCADIS and AECOM.
2. Sample results were validated in accordance with GE's EPA-approved *Field Sampling Plan/Quality Assurance Project Plan* in effect at the time of the analyses.
3. Only constituents which were detected during at least one prior sampling event and were analyzed during the Fall 2015 sampling event are summarized.
4. Statistical calculations for events where multiple samples were collected from one location (e.g. low-flow and passive diffusion bag samples) were conducted treating the initial sample for that event as a parent and the other sample type (e.g. passive diffusion bag sample) as a split. For locations with duplicate and/or split analytical results, if there is a detection in any of the samples for a location during a single monitoring event, a single detection is reported when calculating the detection frequency. Minimum and maximum detects are the minimum and maximum from all analytical results, treating duplicate and split samples separately. Medians, arithmetic averages, and geometric means are calculated by treating the arithmetic average of paired duplicate results, split samples and primary samples each as a single result. One half of the associated reporting limit is used for any non-detected results in the summary statistics presented. The use of this convention can result in a calculated average greater than the maximum detected concentration.

Table E-2
GMA4-8
Summary Statistics on Historical Groundwater Quality Data
Long-Term Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts
Fall 2015

Location ID: Date Collected: Sample Name:	Method 1 GW-2 Standards	Method 1 GW-3 Standards	MCP UCL for Groundwater	Detection Frequency	Minimum Detect	Maximum Detect	Median Value	Arithmetic Average	Geometric Mean	Standard Deviation
Volatile Organics (µg/L)										
2-Butanone	50,000	50.000	100,000	2/10	1.44	3.12	4.06	8.06	5.33	7.64
Acetone	50,000	50,000	100,000	5/10	2.9	45	11.5	15.4	10.9	13.0
Xylenes (total)	3,000	5,000	100,000	1/10	0.26	0.26	1	0.926	0.815	0.471
Total VOCs	Not Listed	Not Listed	Not Listed	5/10	2.9	45	26.96	29.7	22.7	18.1

Notes:

1. Historical analytical data between 2009 and 2015 provided by ARCADIS and AECOM.
2. Sample results were validated in accordance with GE's EPA-approved *Field Sampling Plan/Quality Assurance Project Plan* in effect at the time of the analyses.
3. Only constituents which were detected during at least one prior sampling event and were analyzed during the Fall 2015 sampling event are summarized.
4. Statistical calculations for events where multiple samples were collected from one location (e.g. low-flow and passive diffusion bag samples) were conducted treating the initial sample for that event as a parent and the other sample type (e.g. passive diffusion bag sample) as a split. For locations with duplicate and/or split analytical results, if there is a detection in any of the samples for a location during a single monitoring event, a single detection is reported when calculating the detection frequency. Minimum and maximum detects are the minimum and maximum from all analytical results, treating duplicate and split samples separately. Medians, arithmetic averages, and geometric means are calculated by treating the arithmetic average of paired duplicate results, split samples and primary samples each as a single result. One half of the associated reporting limit is used for any non-detected results in the summary statistics presented. The use of this convention can result in a calculated average greater than the maximum detected concentration.

Table E-3
GMA4-9
Summary Statistics on Historical Groundwater Quality Data
Long-Term Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts
Fall 2015

Location ID: Date Collected: Sample Name:	Method 1 GW-2 Standards	Method 1 GW-3 Standards	MCP UCL for Groundwater	Detection Frequency	Minimum Detect	Maximum Detect	Median Value	Arithmetic Average	Geometric Mean	Standard Deviation
Volatile Organics (µg/L)										
2-Butanone	50,000	50,000	100,000	1/12	1.55	1.55	13	34.8	14.7	42.6
Acetone	50,000	50,000	100,000	3/12	10.4	44.3	19	36.1	20.4	40.4
Chloroform	50	20,000	100,000	4/12	1.27	3.87	1.74	2.68	1.66	2.78
cis 1,2-Dichloroethylene	20	50,000	100,000	1/2	0.61	0.61	0.555	0.555	0.552	0.0778
Methylene Chloride	2,000	50,000	100,000	1/12	0.16	0.16	2.5	11.9	4.05	15.4
Tetrachloroethylene	50	30,000	100,000	12/12	1.41	356	30.85	85.6	30.6	109
Total Xylene	3,000	5,000	100,000	1/12	2.12	2.12	1.56	3.72	2.04	3.77
Trichloroethylene	5	5,000	50,000	10/12	0.12	7	1.115	2.28	1.13	2.46
Total VOCs	Not Listed	Not Listed	Not Listed	12/12	11.86	363	43.49	96.2	53.1	108

Notes:

1. Historical analytical data between 2009 and 2015 provided by ARCADIS and AECOM.
2. Sample results were validated in accordance with GE's EPA-approved *Field Sampling Plan/Quality Assurance Project Plan* in effect at the time of the analyses.
3. Only constituents which were detected during at least one prior sampling event and were analyzed during the Fall 2015 sampling event are summarized.
4. Statistical calculations for events where multiple samples were collected from one location (e.g. low-flow and passive diffusion bag samples) were conducted treating the initial sample for that event as a parent and the other sample type (e.g. passive diffusion bag sample) as a split. For locations with duplicate and/or split analytical results, if there is a detection in any of the samples for a location during a single monitoring event, a single detection is reported when calculating the detection frequency. Minimum and maximum detects are the minimum and maximum from all analytical results, treating duplicate and split samples separately. Medians, arithmetic averages, and geometric means are calculated by treating the arithmetic average of paired duplicate results, split samples and primary samples each as a single result. One half of the associated reporting limit is used for any non-detected results in the summary statistics presented. The use of this convention can result in a calculated average greater than the maximum detected concentration.

Table E-4
H78B-16
Summary Statistics on Historical Groundwater Quality Data
Long-Term Monitoring Program
Groundwater Management Area 4
General Electric Company
Pittsfield, Massachusetts
Fall 2015

Location ID: Date Collected: Sample Name:	Method 1 GW-2 Standards	Method 1 GW-3 Standards	MCP UCL for Groundwater	Detection Frequency	Minimum Detect	Maximum Detect	Median Value	Arithmetic Average	Geometric Mean	Standard Deviation
Volatile Organics (µg/L)										
1,1,1-Trichloroethane	4,000	20,000	100,000	7/21	0.34	9	2	2.51	1.58	2.64
1,1-Dichloroethane	2,000	20,000	100,000	7/21	0.18	5	2	2.18	1.27	2.35
1,1-Dichloroethylene	80	30,000	100,000	1/21	0.35	0.35	0.5	1.68	0.919	2.41
1,2-Dichloroethane	5	20,000	100,000	4/21	0.25	2.8	1	2.18	1.35	2.33
Acetone	50,000	50,000	100,000	4/21	6.91	47.2	5	12.4	8.16	12.3
Benzene	1,000	10,000	100,000	1/21	0.6	0.6	1	2.37	1.34	2.85
Chlorobenzene	200	1,000	10,000	16/21	0.44	49	2.84	8.53	3.45	13.0
Chloroform	50	20,000	100,000	4/21	0.14	1.25	2	2.23	1.30	2.32
cis 1,2-Dichloroethylene	20	50,000	100,000	1/1	20.9	26.8	26.8	26.8	26.8	Insufficient Data
Methylene Chloride	2,000	50,000	100,000	3/21	0.16	1.48	2.5	5.38	2.76	10.5
Tetrachloroethylene	50	30,000	100,000	15/21	0.22	3.1	1	1.70	1.02	2.21
trans 1,2-Dichloroethylene	80	50,000	100,000	8/21	0.19	2	1.2	2.00	1.21	2.25
Trichloroethylene	5	5,000	50,000	21/21	14.7	180	42.7	64.6	50.1	47.7
Trichlorofluoromethane	Not Listed	Not Listed	Not Listed	2/21	0.41	0.62	2	2.50	1.53	2.79
Vinyl Chloride	2	50,000	100,000	14/21	0.28	19	1	4.19	1.87	5.49
Total VOCs	Not Listed	Not Listed	Not Listed	21/21	14.94	241.9	57.29	84.4	64.1	65.0

Notes:

1. Historical analytical data between 1996 and 2015 provided by ARCADIS and AECOM.
2. Sample results were validated in accordance with GE's EPA-approved *Field Sampling Plan/Quality Assurance Project Plan* in effect at the time of the analyses.
3. Only constituents which were detected during at least one prior sampling event and were analyzed during the Fall 2015 sampling event are summarized.
4. Statistical calculations for events where multiple samples were collected from one location (e.g. low-flow and passive diffusion bag samples) were conducted treating the initial sample for that event as a parent and the other sample type (e.g. passive diffusion bag sample) as a split. For locations with duplicate and/or split analytical results, if there is a detection in any of the samples for a location during a single monitoring event, a single detection is reported when calculating the detection frequency. Minimum and maximum detects are the minimum and maximum from all analytical results, treating duplicate and split samples separately. Medians, arithmetic averages, and geometric means are calculated by treating the arithmetic average of paired duplicate results, split samples and primary samples each as a single result. One half of the associated reporting limit is used for any non-detected results in the summary statistics presented. The use of this convention can result in a calculated average greater than the maximum detected concentration.

Appendix F

Statistical Analysis for Trend Evaluation of Groundwater Quality Data from GMA 4 Wells

Statistical Analysis for Trend Evaluation of Groundwater Quality Data from GMA-4 Wells

1.0 General

This appendix summarizes the statistical analyses performed on behalf of the General Electric Company (GE) for select groundwater data collected through Fall 2015 under the long-term groundwater monitoring program conducted for the Groundwater Management Area 4 (GMA 4), located at the GE Plant Area in Pittsfield, Massachusetts. The purpose of the statistical analyses was to assess potential increasing trends in groundwater constituent concentrations over time (i.e., historical long-term or more recent increasing concentrations) as well as increasing trends in seasonal results.

The data for four monitoring wells were reviewed as part of this trend evaluation; GMA4-7S, GMA4-8, GMA4-9, and H78B-16. Trend analyses were conducted for constituents in any of these wells that met the criteria described in Section 2.2 below. These constituents included tetrachloroethylene (PCE), trichloroethylene (TCE), 1,1-dichloroethylene, cis 1,2-dichloroethylene, trans 1,2-dichloroethylene, and vinyl chloride at select locations.

The entire historical dataset for each well/analyte subject to statistical analysis was initially used in the evaluation of trends. The historical dataset for GMA4-9 includes semi-annual sampling conducted since 2009. The historical dataset for H78B-16 includes sampling results from 1996 and semi-annual sampling conducted since 2002. For a general discussion of historical sampling at these wells, refer to Section 4 in the main body of this report. In order to evaluate more recent conditions for each well, the most recent eight samples (representing the last four years of semi-annual sampling) were also utilized in a separate statistical evaluation of trends.

2.0 Statistical Evaluation Procedures

Three statistical trend analysis methods were proposed in the March 2012 *Baseline Assessment Final Report and Long-Term Monitoring Program Proposal for Groundwater Management Area 4* (GMA 4 Long Term Monitoring Proposal), submitted on March 5, 2012 and conditionally approved by EPA on May 11, 2012. Statistical methods were selected to evaluate temporal trends in GMA4 groundwater and to determine the statistical significance of any potential trends that are identified. The methodology followed EPA's unified guidance for the statistical analysis of groundwater monitoring data (Unified Guidance) (USEPA, 2009). The three statistical methods used included (1) the Mann-Kendall Test (MK); (2) Sen's Estimator for Slope (SSE); and (3) the Seasonal Kendall Tau Estimator Test (SK).These methods are described below.

For datasets where increasing trends were identified, the GMA 4 Long Term Monitoring Proposal proposed regression analysis. EPA's Unified Guidance, however, recommends that "there should be few if any non-detects when computing a linear regression." For the present analysis, due to the number of non-detects, linear regression was not performed for datasets where trends were identified. However, the coefficient of determination (R^2) was calculated for concentration versus time for all datasets. Values for R^2 range from 0 to 1, where a value of 1 indicates the data fit a regression line perfectly while a value of 0 indicates the data do not fit a regression line. While there is no defined R^2 value that indicates a good fit, generally values greater than 0.5 may indicate a moderate fit to a regression line. Treatment of

non-detected values in calculating R^2 values was the same as that used for the trend analyses, as described below. As seen in Table F-2, no increasing trends were identified.

2.1 Description of Statistical Tests

Mann-Kendall Test

The MK trend test is a non-parametric test for linear trend. The test has the flexibility to be modified to account for multiple observations per time period, multiple sampling locations, and seasonality (USEPA, 2006, 2009). The statistics for the MK test are implemented in ProUCL Version 5.0.00 following EPA guidance (USEPA, 2009b). The MK test has the flexibility to accommodate any particular distribution form, and is relatively insensitive to outliers and non-detects (values less than reporting limits). Non-detect values are assigned a common value less than the minimum detected value as per EPA's Unified Guidance (USEPA, 2009). The test compares each data point to every successive measurement and determines if the change is positive or negative (the magnitude of change, or slope, is not considered). Each discordant pair is given a score of -1 and concordant pairs a score of +1. Tied values are given a score of 0. A test statistic ("S") is then computed based on the difference between the number of positive differences and negative differences. S is then compared to a critical value based on a 95% confidence level ($\alpha = 0.05$ significance level) in order to accept or reject the null hypothesis of no trend (equal numbers of positive and negative differences) in accordance with the Unified Guidance (USEPA, 2009). That guidance recommends that at least four, and preferably eight, samples be collected in order to perform Mann-Kendall trend analysis.

Sen's Estimator for Slope

The direction and magnitude of concentration trends over time can be evaluated using Sen's Estimator for Slope, referred to herein as the Sen's slope estimator (SSE) test. The statistics for the SEE test are implemented in ProUCL Version 5.0.00 (USEPA, 2009b). The SSE test, sometimes referred to as the Theil-Sen line (Helsel and Hirsch, 2002), is a nonparametric method for estimating the slope of time-series data (USEPA, 2009a). The method was first introduced by Sen in 1968 (Sen, 1968). The approach involves computing slopes for each point compared to every successive point, and then using the median of these slopes as an estimate of overall slope (USEPA, 2009a). Sen's estimator is robust to outliers, data sets with a limited number of non-detects (i.e., values less than sample reporting limits), and datasets with missing values (Gibbons, 1994; USEPA, 2009a). In fact, nonparametric methods such as Sen's slope estimator often perform as well or better than parametric methods, and have the added benefit of avoiding pitfalls common to parametric regression methods, which can include violating assumptions of normality or failure to edit out a small percentage of data that can have a substantial effect on the results (Helsel and Hirsch, 2002). A 95% confidence level ($\alpha = 0.05$ significance level) was used to test the null hypothesis of no trend for the Sen's slope estimation. EPA recommends that at least four and preferably eight samples be collected in order to perform Sen's slope estimator (USEPA, 2009a).

Seasonal Kendall Tau Estimator Test

If seasonal cycles are present in data, tests for trend that remove these cycles or are not affected by them should be used (Gilbert, 1987). The Seasonal Kendall (SK) test was developed by the U.S. Geological Survey (USGS) and is a standard test for evaluating seasonal patterns in water quality data. This test has been applied since the early 1980s to the USGS collection of long-term water-quality records across the U.S. The USGS computer program for the kendall family of trend tests was used for this analysis (Helsel. Mueller, and Slack, 2006). The SK test is a non-parametric test for monotonic trend in water quality. This test is a generalization of the Mann-Kendall test and reduces potential seasonal differences in concentration by only comparing data from similar seasons when evaluating trend (Schertz et al., 1991). This test performs the Mann-Kendall trend test for individual seasons of the year and then

combines the individual results into one overall test. The test calculates a p-value for testing the null hypothesis (H0) of no significant trend versus the alternate hypothesis (Ha) of a significant trend. A p-value less than the significance level ($\alpha = 0.05$) allows the null hypothesis to be rejected at that significance level (i.e., there is a trend). "Season" is defined by the analyst. Each "season" or subset of the overall series should include at least three measurements in order to compute the Mann-Kendall statistic (USEPA, 2009a). The Seasonal Kendall analysis tests the null hypothesis of no upward seasonal trend, at $\alpha = 0.05$ significance level.

Since groundwater sampling activities at GMA4 have generally been conducted on a semi-annual basis, the SK test was focused on the spring and fall seasons when the sampling was performed. Samples collected in April or May were categorized as spring, and samples collected in September, October, or November were categorized as fall. In cases where the spring or fall datasets did not have any detected results, only one season could be evaluated for trends.

2.2 Data Set Definition

Summary statistics were compiled for the 4 monitoring wells: GMA4-7S, GMA4-8, GMA4-9, and H78B-16. A summary of historical results from these locations is provided in Tables E-1 through E-4 in Appendix E.

In addition to the summary statistics provided in Appendix E, certain constituents at certain locations were selected for detailed trend analyses by the following screening process:

- Initially, the database was reviewed and any GMA4 locations/constituents where maximum historical concentrations were greater than 50 percent of applicable groundwater standards, benchmark levels, or the notification level for total VOCs had been recorded were selected for additional screening.[1]
- Trend analyses were performed at the selected locations if one of the following additional criteria were met:
  - The maximum detected concentration of the constituent is greater than the lowest applicable groundwater standard or benchmark level or, for total VOCs, the notification level;
  - The average concentration of the constituent is greater than 50% of the lowest applicable groundwater standard or benchmark level or, for total VOCs, the notification level;
  - The current (Fall 2015) concentration is greater than 50% of the lowest applicable groundwater standard or benchmark level or, for total VOCs, the notification level; and/or,
  - The constituent is a commonly detected breakdown product of one of the above-selected constituents.

Based on these criteria, the following constituents and locations were selected for statistical trend analysis:

- PCE in well GMA4-9
- TCE in wells GMA4-9 and H78B-16

[1] For all constituents except total VOCs, concentrations were compared to the applicable MCP Method 1 GW-2 or GW-3 standards. For total VOCs, which have no applicable MCP standards, results were compared to the 5 ppm level specified in the Statement of Work for Removal Actions Outside the River (SOW) as a notification level for GW-2 wells located within 30 feet of a school or occupied residential structure and as a trigger level in GW-2 wells for the proposal of interim response actions.

- cis 1,2-Dichloroethylene in wells GMA4-9 and H78B-16
- trans 1,2-Dichloroethylene in well H78B-16
- 1,1-Dichloroethylene in well H78B-16
- Vinyl Chloride in well H78B-16

The entire historical dataset for each well/analyte was used in the evaluation of trends using all three trend tests (MK, SSE, and SK). The historical dataset for GMA4-9 includes semi-annual sampling conducted since 2009. The historical dataset for H78B-16 includes sampling results from 1996 and semi-annual sampling conducted since 2002.

In order to evaluate recent conditions for each well, the most recent eight samples were also evaluated for trends using all three trend tests (MK, SSE, and SK). Since EPA recommends that at least four, and preferably eight samples be collected in order to perform MK trend analysis (USEPA, 2009a), and since eight samples is sufficient for the SSE and the SK analyses, a sample size of eight (representing the most recent four years of semi-annual sampling) was selected.

Several data conditioning steps were necessary to prepare the data for trend analysis. For locations where duplicate or split samples were analyzed, an average concentration of the reported detected results for that sampling event was utilized in the statistical analyses. Where samples were collected using a passive diffusion bad as well as via low flow sampling methods, an average concentration of the reported detected results from different sampling methods was used. In Fall 2015, since samples were only taken using a passive diffusion bag, it was not necessary to average concentration of the reported detected results from different sampling methods for that sampling event.

For the MK, SSE, and SK trend analysis calculations, results reported as non-detected values were substituted with a common value equal to 95 percent of the minimum detected value for the dataset following the Unified Guidance (USEPA, 2009a). Utilizing values related to the detection limit (e.g., one-half of the detection limit) for non-detected results is not recommended since the evaluation could primarily reflect the changes in the detection limits, rather than detected concentrations of constituents. By substituting non-detected results with a common value less than the minimum detected value for the data set, those non-detected values are treated as ties for the trend analysis, and the evaluation of a trend may be less reflective of changes in detection limits. However, historically elevated reporting limits reported as non-detects that are higher than recent detections can be problematic in the interpretation of trend results. Because the Unified Guidance recommends the use of a common value less than the minimum detected value for non-detects, the Mann-Kendall Test may identify an increasing trend when in fact it is likely that that test would identify no trend, or even a decreasing trend, if a more realistic reporting limit had been available. Because there is uncertainty in the true value of a non-detect observation, increasing trends with elevated reporting limits are highly uncertain.

3.0 Results of Trend Analysis

Based on the criteria for choosing parameters and locations for trend analysis in the GMA 4 Long Term Monitoring Proposal, a total of eight analytical datasets (well/analyte combinations) were evaluated to determine if a statistically significant ($\alpha = 0.05$) increase in groundwater concentrations was observed, as discussed above. A summary matrix of the results of the trend analyses is presented in Table F-1. The general trend test statistics are presented in Table F-2, with the seasonal trend statistics presented in Table F-3. The results of the trend analyses are discussed below for each constituent.

Tetrachloroethylene (PCE)

Only well GMA4-9 was evaluated for trends in PCE. At this well, the MK and SSE tests identified a significant decreasing trend over the entire dataset. However, the SK test did not identify an overall seasonal trend. No trends were observed in the most recent eight events. Based on application of the MK test to the seasonal data, a decreasing trend was identified in the fall for the entire dataset, but not in the spring for the entire dataset, in the four most recent spring events or in the four most recent fall events. While linear regression was not performed, the R^2 was 0.525 over the entire dataset and 0.033 over the last eight events indicating moderate and low correlations with time, respectively.

Trichloroethylene (TCE)

Two wells were evaluated for trends in TCE – GMA4-9 and H78B-16. For GMA4-9, the MK and SK tests identified a significant decreasing trend. In addition, the SK test identified an overall decreasing seasonal trend for GMA4-9. No trends were observed in the most recent eight events for GMA4-9. Based on application of the MK test to the seasonal data from GMA4-9, a decreasing trend was identified in the fall for the entire dataset and four most recent fall events, but not in the spring for the entire dataset or in the four most recent spring events. While linear regression was not performed, the R^2 was 0.529 over the entire dataset and 0.032 over the last eight events indicating moderate and low correlations with time, respectively.

For H78B-16 no trends were observed in the entire dataset or over the last eight rounds. Based on application of the MK test to the seasonal data from H78B-16, no trends were observed for the entire dataset or over the last four rounds. While linear regression was not performed, the R^2 was 0.069 over the entire dataset and 0.048 over the last eight events indicating low correlations with time.

cis 1,2-Dichloroethylene

Two wells were evaluated for trends in cis 1,2-dichloroethylene – GMA4-9 and H78B-16. Given that GMA4-9 and H78B-16 have been analyzed for cis 1,2-dichloroethylene less than four times no analyses were conducted.

trans 1,2-Dichloroethylene

Only well H78B-16 was evaluated for trends in trans 1,2-dichloroethylene. At this well, no trends were observed in the entire dataset or over the last eight rounds. Based on application of the MK test to H78B-16 seasonal data, no trends were observed for the entire dataset or over the last four rounds. While linear regression was not performed, the R^2 was 0.222 over the entire dataset and 0.222 over the last eight events indicating low correlations with time.

1,1-Dichloroethylene

Only well H78B-16 was evaluated for trends in trans 1,2-dichloroethylene. At this well, no trends were observed in the entire dataset or over the last eight rounds. Based on application of the MK test to H78B-16 fall data, no trends were observed for the entire dataset or over the last four rounds. The MK test was not applied to H78-16 spring data which are all non detect. While linear regression was not performed, the R^2 was 0.029 over the entire dataset and 0.176 over the last eight events indicating low correlations with time.

Vinyl Chloride

Only well H78B-16 was evaluated for trends in trans 1,2-dichloroethylene. At this well, the MK and SK tests identified a significant decreasing trend. In addition, the SK test identified an overall decreasing seasonal trend. Based on application of the MK test to H78B-16 seasonal data, a decreasing trend was

identified in the fall and spring for the entire dataset, but not in the four most recent spring or fall events. While linear regression was not performed, the R^2 was 0.399 over the entire dataset and 0.362 over the last eight events indicating low correlations with time.

4.0 References

Gibbons, R.D. 1994. *Statistical Methods for Groundwater Monitoring*. John Wiley & Sons, Inc., New York.

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Helsel, D. R. and R.M. Hirsch. 2002. *Statistical methods in water resources: U.S.Geological Survey Techniques of Water-Resources Investigations*, Book 4, Chap. A3, 524 p. Available online at http://water.usgs.gov/pubs/twri/twri4a3/

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Table F-1
Summary of Results – Mann-Kendall, Sen's Slope Estimator, and Seasonal Kendall Trend Tests
Long-Term Trend Evaluation Report for Fall 2015
General Electric Company - Pittsfield, Massachusetts

Location ID/Dataset		Tetrachloroethylene			Trichloroethylene			1,1-Dichloroethylene			cis 1,2-Dichloroethylene			trans 1,2-Dichloroethylene			Vinyl Chloride		
Trend Parameter		MK	SSE	SK	MK	SSE	SK	MK	SSE	SK	MK	SSE	SK	MK	SSE	SK	MK	SSE	SK
Well ID	Dataset																		
GMA4-9	All Historical Data	▼	▼	↔	▼	▼	▼	-	-	-	-	-	-	-	-	-	-	-	-
	Recent Data	↔	↔	↔	↔	↔	↔	-	-	-	-	-	-	-	-	-	-	-	-
H78B-16	All Historical Data	-	-	-	↔	↔	↔	↔	↔	↔	-	-	-	↔	↔	↔	▼	▼	▼
	Recent Data	-	-	-	↔	↔	↔	↔	↔	↔	-	-	-	↔	↔	↔	↔	↔	↔

Notes:
1. Two datasets were evaluated for trends at the selected locations: (1) all historical data; and (2) recent data, which include only the previous eight sampling rounds.
2. Trend results sybmolized as follows (α = 0.05):

- = not evaluated (detected concentrations and/or detection frequency do not meet criteria to perform trend analyses for this constituent)
▼ = downward trend
↔ = no trend
▲ = upward trend
ND = all data were non-detect

Abbreviations

FOD = frequency of detects (# detects/# samples)
MK = Mann-Kendall
SSE = Sen's Slope Estimate
SK = Seasonal Kendall
PCBs = polychlorinated biphenyls
VOCs = volatile organic compounds
PCE = tetrachloroethene
TCE = trichloroethene

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Table F-2
Trend Test Statistics and Results
Long-Term Trend Evaluation Report for Fall 2015
General Electric Company - Pittsfield, Massachusetts

Location ID	Date Range	All Historical Data												Recent Data (Previous Eight Samples)										
		FOD	Detected Results		MK Test		SSE Test		Regression	Seasonal Kendall (SK)				FOD	Detected Results		MK Test		SSE Test		Regression	Seasonal Kendall (SK)			
			Range	Mean	Result	p Value	Result	Slope (Units/Day)	R^2	Number of Seasons	Overall Z	p value	SK Result		Range	Mean	Result	p Value	Result	Slope (Units/Day)	R^2	Number of Seasons	Overall Z	p value	SK Result
Tetrachloroethylene																								
GMA4-9	10/09 - 10/15	11/11	0.001 - 0.356	0.092	-27 (DWN)	0.020	DWN	-0.0001	0.525	2	-1.491	0.136	-11(NT)	8/8	0.001 - 0.095	0.034	-2 (NT)	0.452	NT	0	0.033	2	0.240	0.810	2 (NT)
Trichloroethylene																								
GMA4-9	10/09 - 10/15	10/11	0.0001 - 0.007	0.00300	-25 (DWN)	0.03	DWN	0	0.529	2	-2.385	0.017	-17 (DWN)	7/8	0.0001 - 0.003	0.001	0 (NT)	0.548	NT	0	0.032	2	-0.721	0.471	-4 (NT)
H78B-16	9/96 - 10/15	21/21	0.015 - 0.180	0.063	-32 (NT)	0.177	NT	0	0.069	2	-0.763	0.445	-14(NT)	8/8	0.015 - 0.119	0.053	2 (NT)	0.452	NT	0	0.048	2	0.240	0.810	2 (NT)
cis 1,2-Dichloroethylene																								
GMA4-9	11/13	1/1	0.0006-0.0006	0.0006	-	-	-	-	-	-	-	-	-	1/1	0.0006-0.0006	0.0006	-	-	-	-	-	-	-	-	-
H78B-16	11/13	1/1	0.024 - 0.024	0.024	-	-	-	-	-	-	-	-	-	1/1	0.024 - 0.024	0.024	-	-	-	-	-	-	-	-	-
trans 1,2-Dichloroethylene																								
H78B-16	9/96 - 10/15	8/21	0.0002 - 0.002	0.0007	-24 (NT)	0.246	NT	0	0.222	2	-0.901	0.367	-14 (NT)	2/8	0.00005 - 0.0008	0.0007	-11 (NT)	0.138	NT	0	0.222	2	-1.581	0.114	-6 (NT)
1,1-Dichloroethylene																								
H78B-16	9/96 - 10/15	1/21	0.0004 - 0.0004	0.0004	8 (NT)	0.417	NT	0	0.029	2	0.474	0.635	4 (NT)	1/8	0.0004 - 0.0004	0.0004	-5 (NT)	0.360	NT	0	0.176	2	-0.894	0.371	-3 (NT)
Vinyl Chloride																								
H78B-16	9/96 - 10/15	14/21	0.0003 - 0.019	0.005	-121 (DWN)	0	DWN	0	0.399	2	-3.361	0.0008	-57 (DWN)	2/8	0.0008 - 0.002	0.001	-13 (NT)	0.089	NT	0	0.362	2	-1.581	0.114	-6 (NT)

Abbreviations

FOD = frequency of detects (# detects/# samples)
MK = Mann-Kendall
SSE = Sen's Slope Estimate
SK = Seasonal Kendall
range = minimum and maximum detected concentrations
mean = average of detected concentrations

R^2 = coefficient of determination
- = insufficient data for calculating statistics
NT = no trend
UP = updward trend
DWN = downward trend

PCBs = polychlorinated biphenyls
VOCs = volatile organic compounds
PCE = tetrachloroethene
TCE = trichloroethene

Check tabulated versus estimated.

Notes

All results in ppm.
Trend results are presented when at least four samples and one detected value are available. Non-detects were assigned a common value less than the minimum detected value (95% of the minimum detected value) (USEPA, 2009).
Since sampling has generally been conducted on a semi-annual basis, the yearly data were divided into two seasons, spring and fall. Spring and fall datasets that do not have any detections cannot be evaluated for trends.
Highlighted cells indicate a result of an upward or downward trend

References

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance.

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Table F-3
Trend Test Statistics and Results for Seasonal Analyses
Long-Term Trend Evaluation Report for Fall 2015
General Electric Company - Pittsfield, Massachusetts

Location ID	Season	Date Range												Recent Data (Previous Eight Samples)											
		Date Range	FOD	Detected Results				MK Test			Overall Seasonal Kendall			Date Range	FOD	Detected Results				MK Test			Overall Seasonal Kendall		
				Range	Mean	Median	SD	Result	p Value	s Value	Overall Z	Conclusion	Overall SK Direction			Range	Mean	Median	SD	Result	p Value	s Value	Overall Z	p value	Overall SK Result
Tetrachloroethylene																									
GMA4-9	Spring	05/10 - 04/15	5/5	0.021 - 0.356	0.120	0.089	0.121	NT	0.592	0	-1.491	No Trend	-	05/12 - 04/15	4/4	0.0214 - 0.095	0.061	0.064	0.032	NT	0.167	4	0.240	No Trend	-
	Fall	10/09 - 10/15	6/6	0.001 - 0.202	0.0680	0.0130	0.086	DWN	0.028	-11	-1.491			10/12 - 10/15	4/4	0.001 - 0.018	0.007	0.005	0.007	NT	0.375	-2	0.240		
Trichloroethylene																									
GMA4-9	Spring	05/10 - 04/15	4/5	0.0004 - 0.007	0.004	0.003	0.003	NT	0.408	-2	-2.385	Trend Exists	DWN	05/12 - 04/15	3/4	0.0004 - 0.003	0.002	0.003	0.001	NT	0.375	2	-0.721	No Trend	-
	Fall	10/09 - 10/15	6/6	0.0001 - 0.007	0.002	0.001	0.002	DWN	0.001	-15	-2.385			10/12 - 10/15	4/4	0.0001- 0.001	0.0006	0.0005	0.0005	DWN	0.042	-6	-0.721		
H78B-16	Spring	04/02 - 04/15	10/10	0.015 - 0.180	0.057	0.057	0.047	NT	0.108	-15	-0.763	No Trend	-	05/12 - 04/15	4/4	0.015- 0.073	0.037	0.031	0.023	NT	0.375	-2	0.240	No Trend	-
	Fall	9/96 - 10/15	11/11	0.021 - 0.160	0.069	0.047	0.045	NT	0.500	1	-0.763			10/12 - 10/15	4/4	0.030 - 0.119	0.069	0.063	0.039	NT	0.167	4	0.240		
cis 1,2-Dichloroethylene																									
GMA4-9	Spring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fall	11/13	1/1	0.0006-0.0006	0.0006	0.0006	-	-	-	-	-			11/13	1/1	0.0006-0.0006	0.0006	0.0006	-	-	-	-	-		
H78B-16	Spring	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Fall	11/13	1/1	0.024 - 0.024	0.024	0.024	-	-	-	-	-			11/13	1/1	0.024 - 0.024	0.024	0.024	-	-	-	-	-		
trans 1,2-Dichloroethylene																									
H78B-16	Spring	04/02 - 04/15	2/10	0.0002 - 0.0005	0.0004	0.0004	0.0002	NT	0.431	3	-0.901	No Trend	-	05/12 - 04/15	1/4	0.0005 - 0.0005	0.0005	0.0005	-	NT	0.375	-3	-1.581	No Trend	-
	Fall	09/96 - 10/15	6/11	0.0003 - 0.002	0.0009	0.0007	0.0006	NT	0.109	-17	-0.901			10/12 - 10/15	1/4	0.0008 - 0.0008	0.0008	0.0008	-	NT	0.375	-3	-1.581		
1,1-Dichloroethylene																									
H78B-16	Spring	04/02 - 04/15	0/10	-	-	-	-	-	-	-	0.474	No Trend	-	5/12 - 04/15	0/10	-	-	-	-	-	-	-	-0.894	No Trend	-
	Fall	09/96 - 10/15	1/11	0.0004 - 0.0004	0.0004	0.0004	-	NT	0.381	4	0.474			10/12 - 10/15	1/4	0.0004 - 0.0004	0.0004	0.0004	-	NT	0.375	-3	-0.894		
Vinyl Chloride																									
H78B-16	Spring	04/02 - 04/15	7/10	0.0008 - 0.019	0.006	0.002	0.006	DWN	0.002	-30	-3.361	Trend Exists	DWN	05/12 - 04/15	1/4	0.002 - 0.002	0.002	0.002	-	NT	0.375	-3	-1.581	No Trend	-
	Fall	09/96 - 10/15	7/11	0.0003 - 0.016	0.005	0.0008	0.006	DWN	0.020	-27	-3.361			10/12 - 10/15	1/4	0.0008 - 0.0008	0.0008	0.0008	-	NT	0.375	-3	-1.581		

Abbreviations

FOD = frequency of detects (# detects/# samples)
MK = Mann-Kendall
SSE = Sen's Slope Estimate
SK = Seasonal Kendall

NT = no trend
UP = updward trend
DWN = downward trend
- = insufficient data for calculating statistics

range = minimum and maximum detected concentrations
mean = average of detected concentrations
median = median of detected concentrations
sd = standard deviation of detected concentrations

PCBs = polychlorinated biphenyls
VOCs = volatile organic compounds
PCE = tetrachloroethene
TCE = trichloroethene

Notes

All results in ppm.
Trend results are presented when at least four samples and one detected value are available. Non-detects were assigned a common value less than the minimum detected value (95% of the minimum detected value) (USEPA, 2009).
Since sampling has generally been conducted on a semi-annual basis, the yearly data were divided into two seasons, spring and fall. Spring and fall datasets that do not have any detections cannot be evaluated for trends.
Highlighted cells indicate a result of an upward or downward trend

References

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance.