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Groundwater Monitoring Report
Building 742, Former Degreasing Plant
Groundwater Sampling December 2015

Former Mare Island Naval Shipyard
Vallejo, California

June 2016

Prepared for:
Department of the Navy
Base Realignment and Closure
Program Management Office West
San Diego, California

Prepared by:
Construction Engineering Services, LLC
100 Hartsfield Centre Parkway, Suite 610
Atlanta, Georgia 30354-1390

Prepared under:
Naval Facilities Engineering Command Southwest
Contract Number N62473-11-D-2215
Contract Task Order 0004
DCN: CESJ-2215-0004-0007

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(404) 443-2777

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Submitted by:
Construction Engineering Services, LLC

	June 10, 2016
Signature	Date
Dan Lohr, PG	Project Manager
Name	Title
	June 10, 2016
Signature	Date
Doug Bielskis, PE	CES Program Manager
Name	Title

Executive Summary

Construction Engineering Services, LLC (CES), a limited liability corporation established as a joint venture between J.M. Waller Associates, Inc. (J.M. Waller), and Engineering/Remediation Resources Group, Inc. (ERRG), prepared this Groundwater Monitoring Report, Building 742, Former Degreasing Plant (FDP), Groundwater Sampling December 2015 on behalf of the Department of the Navy (Navy), under Contract No. N62473-11-D-2215, Contract Task Order No. 0004. This report summarizes the results of the December 2015 groundwater monitoring activities conducted at Building 742, Former Degreasing Plant (FDP) under the Groundwater Service Contract for the former Mare Island Naval Shipyard (Mare Island) in Vallejo, California.

The Groundwater Service Contract at Mare Island was established to install and abandon groundwater wells as-needed and to collect and report groundwater monitoring data in support of ongoing environmental restoration efforts at multiple Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites: Building 742, FDP; Defense Reutilization and Marketing Office (DRMO) South Site; Installation Restoration Site 04 (IR04); Paint Waste Area (PWA); Former Underground Storage Tank (UST) 993-4 Site; Unexploded Ordnance (UXO) 3 – Dredge Pond 3E, Northern Marine Corps Firing Range; and UXO 7 – South Shore Area (SSA). For this December 2015 event, groundwater monitoring was conducted at Building 742, FDP and is presented in this report.

Monitoring activities performed at Building 742, FDP during this event included measuring groundwater elevations; collecting representative groundwater samples from selected wells; analyzing the samples for contaminants of concern; performing third-party data validation; and compiling, tabulating, analyzing, and presenting the results in this report. Monitoring activities were performed in accordance with the "Final Work Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment at Former Mare Island Naval Shipyard, Vallejo, California" (CES, 2014a), "Addendum 1 to the Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment, Former Mare Island Naval Shipyard, Vallejo, California" (Addendum 1 to the Sampling and Analysis Plan [SAP]) (CES, 2014b), and "Addendum 2 to the Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment, Former Mare Island Naval Shipyard, Vallejo, California" (Addendum 2 to the SAP) (CES, 2015).

Groundwater samples were collected from six wells (D1C85W01R, D1C85W02R-A, D1C85W03, D1C85W04, D1C85W06, and D1C85W07). All six groundwater samples were analyzed for volatile organic compounds (VOCs). Two of the groundwater samples, collected from wells D1C85W06 and D1C85W07, were also analyzed for specific dissolved metals: arsenic, iron, and manganese. Analytical results were compared to project action limits (PALs) listed in the SAP and addenda to the SAP (CES, 2014a; CES, 2014b; CES, 2015).

Two VOCs (1, 4 - dichlorobenzene and vinyl chloride) were detected at concentrations exceeding their respective PALs at Building 742, FDP; 1, 4 - dichlorobenzene in wells D1C85W06 and D1C85W07, and vinyl chloride in well D1C85W06. Arsenic, iron, and manganese were detected in both samples collected from wells D1C85W06 and D1C85W07, but were not detected at concentrations exceeding PALs.

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Abbreviations and Acronyms

amsl	above mean sea level
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Construction Engineering Services, LLC
COCs	chemicals of concern
C&T	Curtis & Tompkins Laboratories
DRMO	Defense Reutilization and Marketing Office
EPA	U.S. Environmental Protection Agency
ERRG	Engineering/Remediation Resources Group, Inc.
FDP	Former Degreasing Plant
IDW	investigation-derived waste
IR	Installation Restoration
IR04	Installation Restoration Site 4
ISCR	in-situ chemical reduction
J.M. Waller	J.M. Waller Associates, Inc.
L	liter
LDC	Laboratory Data Consultants, Inc.
LOQ	limit of quantitation
Mare Island	former Mare Island Naval Shipyard
mg/L	milligrams per liter
µg/L	micrograms per liter
Navy	Department of the Navy
NTCRA	non-time-critical removal action

Abbreviations and Acronyms *(continued)*

PAL	project action limit
PWA	Paint Waste Area
QA	quality assurance
QC	quality control
RPD	relative percent difference
SAP	Sampling and Analysis Plan
SOPs	standard operating procedures
SSA	South Shore Area
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOCs	volatile organic compounds

Section 1. Introduction

Construction Engineering Services, LLC (CES), a limited liability corporation established as a joint venture between J.M. Waller Associates, Inc. (J.M. Waller), and Engineering/Remediation Resources Group, Inc. (ERRG), has prepared this Groundwater Monitoring Report on behalf of the Department of the Navy (Navy). This report summarizes the results of the groundwater monitoring activities conducted in December 2015 at the former Mare Island Naval Shipyard (Mare Island) in Vallejo, California (Figure 1).

The Groundwater Service Contract at Mare Island was established to install and abandon groundwater wells as-needed and to collect and report groundwater monitoring data in support of ongoing environmental restoration efforts at multiple Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites: Building 742, Former Degreasing Plant (FDP); Defense Reutilization and Marketing Office (DRMO) South Site; Installation Restoration Site 04 (IR04); Paint Waste Area (PWA); Former Underground Storage Tank (UST) 993-4 Site; Unexploded Ordnance (UXO) 3 – Dredge Pond 3E, Northern Marine Corps Firing Range; and UXO 7 – South Shore Area (SSA). For this December 2015 event, Building 742, FDP groundwater monitoring was conducted and is described in this report.

1.1. SCOPE OF WORK

The Groundwater Service Contract was designed to install and abandon groundwater wells and to collect samples to assess concentrations of chemicals of concern (COCs) in groundwater at sites on Mare Island as-needed. For this December 2015 event, monitoring activities included: measuring groundwater elevations; collecting representative groundwater samples from selected wells; analyzing the samples for COCs; performing third-party data validation; and compiling, tabulating, analyzing, and presenting the results in this report. Monitoring activities were performed in accordance with the "Final Work Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment at Former Mare Island Naval Shipyard, Vallejo, California" (CES, 2014a), which included the sampling and analysis plan (SAP) for groundwater sampling, "Addendum 1 to the Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment, Former Mare Island Naval Shipyard, Vallejo, California" (Addendum 1 to the SAP) (CES, 2014b), and "Addendum 2 to the Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment, Former Mare Island Naval Shipyard, Vallejo, California" (Addendum 2 to the SAP) (CES, 2015).

1.2. BUILDING 742, FORMER DEGREASING PLANT GROUNDWATER MONITORING

For this groundwater monitoring event, the Navy selected the list of wells and analyses for sampling to include only Building 742, FDP wells D1C85W01R, D1C85W02R-A, D1C85W03, D1C85W04, D1C85W06, and D1C85W07. The Navy did not collect samples from the other wells on the monitoring well list for this event as a result of the CERCLA status of the other project sites included in the Groundwater Service Contract at the time: DRMO South, Former UST 993-4, IR04, PWA, UXO Site 03, and UXO Site 07.

1.3. DOCUMENT ORGANIZATION

This groundwater monitoring report is organized into the following sections:

- Section 1 – Introduction
- Section 2 – Site Background
- Section 3 – Groundwater Monitoring Field Activities
- Section 4 – Laboratory Data Analysis and Validation
- Section 5 – Groundwater Monitoring Results
- Section 6 – Summary and Recommendations
- Section 7 – References

Additionally, the following documents and information are appendices to this report:

- Appendix A – Field Forms: contains field forms including groundwater purge forms and water level field logs
- Appendix B – Waste Management Documentation: contains waste management documentation
- Appendix C – Analytical Data: presents laboratory analytical data reports and data validation reports

Section 2. Site Background

This section describes the location, physical characteristics, operational history, and environmental condition of Mare Island and briefly describes the site where groundwater monitoring was conducted.

2.1. MARE ISLAND NAVAL SHIPYARD LOCATION

Mare Island is located on a peninsula that is approximately 3.5 square miles in Solano County, northeast of San Francisco, California (Figure 1). Mare Island is bordered by San Pablo Bay to the west, the Napa River to the east, and the Carquinez Strait to the south. Mare Island is separated from the city of Vallejo by the Mare Island Strait, a portion of the Napa River. The primary entrance to Mare Island is through a causeway located at Tennessee Street and Wilson Avenue, and the secondary entrance is from Highway 37 at the north end of the island (Battelle, 2010).

2.2. PHYSICAL SETTING

The following subsections describe the general geology, hydrology, topography and biological conditions, climate, and future land use for Mare Island.

2.2.1. Geology and Hydrogeology

Mare Island has been modified from an island into a peninsula through dredge and fill operations. The original island was approximately 1,000 acres in area with 300 acres of surrounding wetlands (Trevet, 2014). Historical Navy maps indicate that the original island was composed of bedrock outcrop surrounded by tule marshes. The placement of dredging spoils increased the footprint of the island to the north and west to form the current contours (CE2-Kleinfelder Joint Venture, 2014). In general, three geologic units (listed from top to bottom) are present at Mare Island:

- Artificial fill material (heterogeneous layer consisting of dredged material – clay, silt, sand, and debris in varied proportions)
- Unconsolidated natural deposits (silty clays [commonly referred to as Young Bay Mud] and fine-grained material from weathering of bedrock)
- Bedrock (weathered sandstone, siltstone, and shale)

The artificial fill layer ranges in depth from 3 to 14 feet below ground surface (bgs), averaging a thickness of 6 feet. Younger Bay Mud has been observed from 7 to 9 feet bgs up to 50 feet bgs (CE2-Kleinfelder Joint Venture, 2014; Trevet, 2014).

Mare Island has three primary water-bearing zones: shallow, intermediate, and deep. The shallow water-bearing zone includes both the artificial fill and naturally deposited material that is intersected by the water table. Both the intermediate and deep zones correspond to the intermediate and lower sands located in the natural sediments below the artificial fill layer. The shallow unconfined water-bearing zone was identified as extending from the water table to 28 feet bgs (Battelle, 2010). Groundwater at Building 742, FDP, IR04 and PWA is within the shallow water-bearing zone that meets exception (a) of State Water Resources Control Board Resolution No. 88-63 (as revised by Resolution No. 2006-008) and is not likely to be used as a source of drinking water (State Water Resources Control Board, 2006).

Groundwater ranges from 2 to 8 feet bgs and groundwater flow direction, based on water levels measured in monitoring wells in surrounding areas, indicates flow direction varies seasonally across Mare Island. Groundwater depth fluctuates approximately 3 feet with seasonal variations. The shallow water aquifer has low groundwater yields and naturally high salinity (CE2-Kleinfelder Joint Venture, 2014; Trevet, 2014).

2.2.2. Topography

Mare Island includes an area of approximately 5,400 acres, where 1,400 acres are dry land and 3,000 acres are a combination of tidal and nontidal wetlands and dredge sediment ponds. Generally, Mare Island is relatively flat, ranging in elevation from sea level to 284 feet above sea level at the southern end.

2.2.3. Biological Conditions

Several habitats are present at Mare Island: disturbed uplands, tidal mudflats, seasonal and tidally influenced wetlands, exposed shoreline, and open tidal waters. In the wetland habitats, tidal and nontidal areas support the growth of coastal salt marsh vegetation and pickleweed (*Salicornia pacifica*) marsh habitat seasonally. Protected species in the wetland areas of Mare Island include the salt harvest mouse (*Reithrodontomys raviventris*). Other protected species that may be present in habitat at Mare Island (but are less likely to be encountered based on limited habitat present) include the California ridgway rail (*Rallus longirostris obsoletus*) and California black rail (*Laterallus jamaicensis coturniculus*). The California clapper rail is a federal- and state-listed endangered species, and state fully protected. The California black rail is listed as a state threatened species, and state fully protected (CE2-Kleinfelder Joint Venture, 2014).

2.2.4. Climate

The climate at Mare Island is characterized by warm, dry summers and cool, wet winters, with an average annual temperature of 44.5°F, the warmest month, on average, is July with an average temperature of 61.5°F, and the coolest month on average, is January, with an average temperature of 31.5°F. Prevailing winds are from the west at 5 to 10 knots. The average annual rainfall of 41.4 inches occurs primarily between October and May (Weatherbase, 2015).

2.2.5. Future Land Use Considerations

The Mare Island Specific Plan (City of Vallejo, 2007), envisions the future of Mare Island as a multi-use community with a balance of industrial, office, commercial, residential, educational, recreation cultural, and open spaces to meet the needs of future generations. The area around Building 742, FDP is planned for future industrial reuse.

2.3. DESCRIPTION OF BUILDING 742, FORMER DEGREASING PLANT

The following sections briefly describe the physical characteristics and operational history of the site in which groundwater monitoring was performed during this event. The environmental conditions at the site relevant to the chemicals detected in groundwater that may require further monitoring are briefly described below. Figure 2 shows the site boundary and groundwater monitoring wells measured and sampled during this monitoring event.

Building 742 is located in the central-eastern area of Mare Island and formerly was an ordnance machine shop. The FDP was located next to Building 742, and wastewater generated during degreasing operations was discharged to sumps that led to the storm water drainage system (SulTech, 2007). Previous investigations identified elevated concentrations of chlorinated volatile organic compounds (VOCs) in water and residue samples collected from Manhole D1-C85, which previously received storm water from the FDP. In June 2010, a non-time-critical removal action (NTCRA) was performed to remove the contaminant source at the FDP, within the storm water drainage system, and around Manhole D1-C85 (Tetra Tech EC, Inc., 2011). Building 742, FDP was transferred to the City of Vallejo as part of the Eastern Early Transfer Parcel; however, investigation of Building 742, FDP continues. After regulatory agency concurrence to the Removal Action Summary Report (Tetra Tech EC, Inc., 2012) is obtained, the Building 742, FDP site will be included in the Investigation Area C2 Remedial Action Plan being prepared by the City of Vallejo and its developer, Lennar Mare Island.

Groundwater and soil gas samples were collected after the NTCRA in November 2011. Analytical results indicated that VOC concentrations near former Manhole D1-C85 had decreased; however, the results of additional soil samples near Manhole D1-C85 identified VOCs at concentrations in soil that could impact groundwater and soil gas. Therefore, additional removal of remaining impacted source materials was recommended in this area to achieve site closure (Tetra Tech EC, Inc., 2012). Additional excavation was performed in June and July 2013, and an initial round of groundwater and soil gas samples was collected in August 2013 to confirm the effectiveness of this removal action (NOREAS, Inc., 2013). Following additional soil delineation and groundwater and soil gas monitoring in 2013 and 2014, an injection of in-situ chemical reduction (ISCR) was performed in the stormwater pipeline area in September 2014. Four rounds of groundwater and soil gas sampling have been conducted since August 2013 (NOREAS, 2016). This additional monitoring is being conducted primarily to supplement the Removal Action Summary Report. Additional site information can be found in the Removal Action Summary Report and Remedial Action Plan (Tetra Tech EC, Inc., 2010 and 2011).

Section 3. Groundwater Monitoring Field Activities

This section summarizes the field methodology and activities including mobilization and site preparation, groundwater sampling, and the analytical methods used for the groundwater monitoring. The December 2015 field activities were conducted under the approved SAP (CES, 2014a) and addenda to the SAP (CES, 2014b; CES, 2015).

3.1. MOBILIZATION AND SITE PREPARATION

Equipment and materials were mobilized to the site as needed to perform the work on a daily basis (December 14-16, 2015). CES set up a work zone and a support zone (for first-aid kits and a break area). The work zone was set up around each individual well for the duration of monitoring activity at that well. When monitoring was complete, the work zone was moved to the next well. The support zone was established on the tailgate of a work truck during sampling. A first-aid kit, eyewash station, air horn, and project documents were also placed in the truck within close proximity to each work area. A break area with shade and bottled water was provided in the cab of the truck.

3.2. GROUNDWATER SAMPLING

This section describes the procedures for sampling groundwater at the monitoring wells at Building 742, FDP. The SAP (CES, 2014a) provides details on sample management procedures, field procedures, sample analyses, and provides the sampling standard operating procedures (SOPs), which were followed during field activities.

Table 1 provides a list of existing groundwater monitoring wells included in this groundwater sampling event. Field forms including the groundwater purge forms and water level field logs are presented in Appendix A.

3.2.1. Groundwater Elevation Measurements

Prior to sample collection, CES personnel measured groundwater elevations at each well included in Table 1. Table 2 presents the measured groundwater elevations, available groundwater monitoring well construction data (i.e., top of casing elevation, ground surface elevation, and screened interval). The ground surface elevation and screened interval for well D1C85W03 were not provided on the original well construction logs, therefore that data is not presented in Table 2. Groundwater level measurements were taken in a coordinated groundwater sounding event prior to purging and sampling any of the wells at that site. Data were used to prepare a groundwater potentiometric contour map. The water level field log is

presented in Appendix A. Groundwater levels were measured in accordance with ERRG SOP FS-020, Water Level Measurements (CES, 2014a). Measurements were made from the top of the casing to the groundwater surface using a water level indicator. The water level indicator was decontaminated in accordance with the procedures described in ERRG SOP FS-010, Decontamination of Contact Sampling Equipment (CES, 2014a), prior to collecting each measurement and before proceeding to the next well location.

3.2.2. Purging and Environmental Parameter Data Collection

A low-flow (or micro-purge) purging and sampling method designed to collect high-quality formation water samples was used for the groundwater monitoring wells in accordance with ERRG SOP FS-023, Low Flow/Micro-Purge Well Sampling (CES, 2014a) and U.S. Environmental Protection Agency (EPA) guidance for low-flow well sampling (EPA, 2010). Personnel used a bladder pump to draw water from the well at a rate of approximately 100 to 500 milliliters per minute. The pump was started at the lowest speed and slowly increased until discharge began. The water level was monitored and the pump speed adjusted until there was little or no drawdown (less than 0.3 foot). The temperature, pH, dissolved oxygen, oxidation-reduction potential, and conductivity of the groundwater were recorded at regular intervals (approximately every three to five minutes) using a flow-through cell to determine when the groundwater sample was representative of formation water. The parameters were measured using a YSI-6920 multi-parameter instrument from a sealed flow-through cell during the low-flow purging process. The parameters were considered stable when dissolved oxygen and turbidity varied by less than 10%, temperature and specific conductivity varied by less than 3%, pH varied by less than 0.1 units, and oxidation-reduction potential varied by less than 10 millivolts, as described in the SAP (CES, 2014a). Purged groundwater was transferred to a U.S. Department of Transportation-approved 55-gallon drum and stored at the designated waste storage area at Building 993 pending waste characterization and disposal.

All groundwater environmental parameters were documented on the groundwater purge form and general field observations and site activities were documented on field forms (or in logbooks). Completed field forms and data sheets are included in Appendix A of this report.

3.2.3. Groundwater Sample Collection

Groundwater samples were collected from monitoring wells (listed in Table 1) using a bladder pump with single-use teflon tubing (following the low-flow sampling technique described above) immediately after the environmental parameters measured by the flow-through cell stabilized.

Volatile organic analysis vials were filled first (including aliquots for quality control [QC] and quality assurance [QA] analysis) for VOC analysis, followed by containers for analysis of dissolved metals (arsenic, iron, and manganese, only). Samples for dissolved metals were filtered by the laboratory, prior to analysis. Following primary sample collection, additional sample volumes were collected from selected

wells for QA and QC purposes, as described in detail in Section 3.3. Samples collected for QA/QC were collected in the same manner as primary samples. Appendix A contains field logs and data tables pertaining to groundwater sample collection during this event.

3.2.4. Equipment Decontamination

New, clean tubing was used at each monitoring well and discarded after each use. All non-dedicated sampling equipment and field measurement devices (i.e., water level meter) were decontaminated before and after collecting each groundwater sample to prevent cross-contamination of samples. Complete decontamination procedures for sampling equipment and field measuring devices are further described in the SAP (CES, 2014a).

3.3. QUALITY CONTROL SAMPLES

QC sample data were generated to assess the precision and accuracy of the analytical results. The types, numbers, and frequencies of field QC samples are specified in the SAP (CES, 2014a) and addenda to the SAP (CES, 2014b; CES, 2015). Field QC samples collected during this groundwater sampling event included two equipment blanks, one source-water blank, and one trip blank. Field duplicate samples for groundwater were collected at a rate of 1 per every 10 field samples. Matrix spike/matrix spike duplicate samples for groundwater were collected at a frequency of 1 per every 20 field samples. Equipment blanks were collected at a frequency of one per day per dedicated piece of equipment and analyzed for the same sample analyses conducted that day. Equipment blanks were collected to evaluate if decontamination procedures were adequate to prevent cross-contamination between sample locations. Source blanks were collected at a frequency of one per source and analyzed for all project analyses. Source blanks were collected to evaluate if the source of decontamination water introduced outside contaminants to the sampling equipment. Trip blanks (provided by the laboratory) were included at a rate of one per cooler when VOCs were being sampled and analyzed for VOCs to determine if outside contaminants affected the sample during transport to the laboratory.

3.4. INVESTIGATION-DERIVED WASTE MANAGEMENT

CES managed all waste generated during the course of the project. Purged groundwater and decontamination water generated during groundwater monitoring activities were collected in a 55-gallon drum and stored in the covered and locked waste storage area at Building 993. Personal protective equipment waste generated during field activities consisted mainly of nitrile sampling gloves and used tubing, which were collected in a plastic trash bag and disposed of in municipal trash bins. Investigation-derived waste (IDW) was characterized and disposed of in accordance with applicable local, state, and federal requirements. IDW documentation is provided in Appendix B. The waste management procedures for this project are defined in the Waste Management Plan (Appendix C of the Work Plan [CES, 2014a]).

3.5. FIELD DOCUMENTATION COLLECTED

Field documentation protocols included the use of field logbooks, a water elevation form, groundwater purge and sample collection forms, air monitoring logs, health and safety forms, waste inventory log, and chain-of-custody forms. Contractor daily production reports and contractor quality control reports were also developed daily.

3.6. DEVIATIONS FROM THE WORKPLAN

No deviations from the workplan occurred during this groundwater monitoring event.

Section 4. Laboratory Data Analysis and Validation

The following sections summarize the laboratory analysis (and associated data validation) of the groundwater samples collected during the December 2015 monitoring event.

4.1. GROUNDWATER SAMPLE LABORATORY ANALYSIS

Upon receipt at the analytical laboratory, groundwater and QA/QC samples were logged and analyzed in accordance with the SAP (CES, 2014a). Laboratory data analysis reports are available in Appendix C1. Samples were analyzed for the following chemicals (dependent on site contaminants):

- Select dissolved metals by EPA Method 6010C (EPA, 1992)
- VOCs by EPA Method 8260C (EPA, 2008)

4.2. THIRD PARTY DATA VALIDATION

Groundwater monitoring data were subject to a data quality assessment (review, verification, validation, and usability assessment). Sample chains of custody were reviewed by the Project Chemist, Project Manager, and Quality Control Manager upon submittal to the analytical laboratory from the field crew for accuracy in sample identification, analytical methods, QC samples, etc. In accordance with the project-specific SAP Worksheets 34 – 36, (CES, 2014a), the analytical data packages delivered by Curtis & Tompkins Laboratories (C&T), in Berkeley, California, were initially examined by the Project Chemist against project requirements and chain-of-custody records (i.e., holding times, sample handling, analytical methods, sample identification, laboratory data qualifiers, QC samples, etc.). If project requirements were met, the packages were released to the data validator, Laboratory Data Consultants, Inc. (LDC) for validation. The data validator performed the requested level of data validation and prepared validation reports, adding or changing laboratory qualifiers as needed. The data quality assessment was performed in accordance with Worksheet #37 of the SAP (CES, 2014a). In accordance with the SAP (CES, 2014a) and Addenda 1 and 2 to the SAP (CES, 2014b; CES, 2015), 80 percent of the data underwent Level III validation and 20 percent of the data underwent Level IV validation. Appendix C2 contains the data validation reports from this groundwater monitoring event. Data validation results are discussed in Section 5.4.

4.3. DEVIATIONS FROM THE SAP

There were no deviations from the SAP during the December 2015 sampling event.

Section 5. Groundwater Monitoring Results

The following sections summarize the groundwater monitoring results during the December 2015 monitoring event.

5.1. GROUNDWATER LEVEL MONITORING

Groundwater level monitoring data, as measured in December 2015, for Building 742, FDP are summarized below. Groundwater elevation data are presented in Table 2.

Groundwater levels at six wells (D1C85W01R, D1C85W02R-A, D1C85W03, D1C85W04, D1C85W06, and D1C85W07) were measured at Building 742, FDP on December 14, 2015. The minimum and maximum groundwater elevations observed for this site during the monitoring event were 5.47 and 6.27 feet above mean sea level (amsl), measured at D1C85W03 and D1C85W02R-A, respectively. Groundwater flow at the site is not considered to be uniform due to the heterogeneous mixture of fill material. Additionally, utility corridors (due to coarse grained backfill) and tidal influences are expected to impact local groundwater flow (TetraTech EC, 2011). Because of the non-uniform flow at the site, the groundwater elevation contours and flow direction in the vicinity of Building 742, FDP, shown on Figure 3, were estimated using data gathered from four of the six wells (D1C85W01R, D1C85W03, D1C85W06, and D1C85W07). The groundwater elevations measured at wells D1C85W02R-A and D1C85W04 were found to be inconsistent with the groundwater gradient calculated at the other four wells, therefore wells D1C85W02R-A and D1C85W04 were excluded from calculation of the groundwater elevation contours presented on Figure 3.

5.2. GROUNDWATER ANALYTICAL RESULTS

The following sections summarize groundwater analytical results for the December 2015 monitoring event for Building 742, FDP wells. Groundwater analytical data are summarized in Tables 3 and 4. Laboratory analytical data and data validation reports for December 2015 are included as Appendix C1 and C2, respectively.

The detected analytical data presented in the following sections were compared against project action limits (PALs), as defined in the SAP (CES, 2014a) and addenda to the SAP (CES, 2014b; CES, 2015). PALs are established by Environmental Screening Levels in shallow soils where groundwater is not a current or potential source of drinking water (Water Board, 2013).

VOCs

Groundwater samples collected from monitoring wells D1C85W01R, D1C85W02R-A, D1C85W03, D1C85W04, D1C85W06, and D1C85W07 were analyzed for VOCs; the results are summarized in Table 3. Contaminants exceeding PALs are shown on Figure 4.

VOCs were detected at concentrations exceeding their respective PALs in the sample from D1C85W06, as well as the primary and field duplicate samples from D1C85W07, as follows:

- 1, 4 - Dichlorobenzene (PAL = 15 micrograms per liter [µg/L]) was detected at concentrations of 34 µg/L in D1C85W06, 20 µg/L in D1C85W07, and 21 µg/L in the field duplicate, D1C85W07.
- Vinyl chloride (PAL of 1.8 µg/L) was detected at a concentration of 20 µg/L in D1C85W06.

Various other VOCs were detected in all the samples (D1C85W0R1, D1C85W0R2-A, D1C85W03, D1C85W04, D1C85W06, and D1C85W07), but none at concentrations exceeding their respective PAL. Results are summarized in Table 3.

Metals

Groundwater samples collected from monitoring wells D1C85W06 and D1C85W07 were analyzed for specific dissolved metals: arsenic, iron, and manganese. Dissolved metals were not identified as COCs at Building 742, FDP but were included as analytes during this monitoring event to evaluate groundwater conditions following the ISCR injections performed in September 2014. The ISCR injections consisted of a controlled-release carbon, zero-valent iron particles, and nutrients used for stimulating ISCR. Analysis for dissolved iron monitors the longevity of elevated iron in groundwater (caused by the zero valent iron) following the ISCR injections. Manganese and arsenic were selected as proxies for the potential mobilization of metals due to lowered pH during and immediately following the injections. All three metals were detected in the samples but none at concentrations exceeding PALs. The results were as follows:

- Arsenic (PAL = 36 µg/L) was detected at the following concentrations: 6.8 µg/L (D1C85W06); estimated[1] 4.6 µg/L (D1C85W07); and estimated 4.7 µg/L (field duplicate, D1C85W07).
- Iron (PAL not established) was detected at the following concentrations: 1,300 µg/L (D1C85W06); 380 µg/L (D1C85W07); and 250 µg/L (field duplicate, D1C85W07).
- Manganese (PAL not established) was detected at the following concentrations: 4,200 µg/L (D1C85W06); 1,700 µg/L (D1C85W07); and 1,700 µg/L (field duplicate, D1C85W07).

[1] Estimated concentrations are shown in the laboratory reports, figures, and tables as J flagged, which indicates an estimated value, where the analyte is detected above the laboratory method detection limit, but below the laboratory reporting limit.

The results are summarized in Table 4.

5.3. FIELD QUALITY CONTROL SAMPLES RESULTS

A total of 4 field QC samples were collected and submitted for analysis. These samples included two equipment blanks, one source blank, and one trip blank. Detected concentrations of analytes in these samples are discussed below and summarized in Table 5.

VOCs

No VOCs were detected in any of the collected field QC samples.

Metals

No metals were detected in any of the collected field QC samples.

5.4. DATA VALIDATION RESULTS

In accordance with the SAP (CES, 2014a) and addenda to the SAP (CES, 2014b; CES, 2015), a data quality assessment was performed on the analytical data generated. The process consisted of a systematic review, verification, validation, and usability assessment of the data generated. LDC, a third-party data validation company, performed data validation. Level 4 validation was performed on 20% of the data and the remaining 80% was Level 3 validation. A total of 752 analytical results were evaluated by LDC. While some analytical results were qualified as estimated (i.e., "J" flagged) by C&T, LDC either verified this or further qualified the data with "UJ" during the validation process. A "UJ" qualifier means that the data result reported is a nondetect for the analyte. The "J" flagged, estimated results were considered usable. No analytical results were rejected by the validators.

Data quality indicators (precision, accuracy, representativeness, comparability, completeness, and sensitivity) were evaluated on the data.

Precision

For precision of groundwater field duplicate samples, the Relative Percent Difference (RPD) goal established in SAP Worksheet #12 (CES, 2014a) was less than 25%. One groundwater duplicate was collected during the Building 742, FDP sampling event for analysis of VOCs and dissolved metals. The RPD on valid detected constituents for this event were within the precision goal for VOCs (4.4%) and metals (14.5%). The average RPD on the three metals was due to a higher iron concentration in the primary sample than the field duplicate sample, resulting in an iron RPD of 41.3%. The arsenic and manganese RPDs were 2.2% and 0%, respectively. Overall, the results met the RPD goal of less than 25%.

Accuracy

The data validation summaries reported with the analytical data reports provided information concerning the quality and acceptance of the laboratory generated results. For this event, minimal qualifiers were attached to individual data points. Only the validation and application of "J" qualifiers were noted, as previously discussed. Field accuracy was accomplished through field instrumentation calibration, keeping sample bottles segregated and protected from fuels, chemicals, or other potential contaminant sources, and performing proper decontamination and sample handling to prevent cross contamination.

Representativeness

Representativeness was accomplished as much as practical by following the SAP (CES, 2014a) and addenda to the SAP (CES, 2014b; CES, 2015) and designated sample locations. In addition, field tasks and fixed laboratory analyses were conducted by experienced personnel and in accordance with standard operating procedures and established quality assurance procedures.

Comparability

The primary objective of this sampling event was to collect analytical data sets for Building 742, FDP to assess concentrations of COCs in groundwater at this site. This was the second groundwater monitoring event of the contract that included sampling at Building 742, FDP.

Completeness

Of the 752 analytical results evaluated by LDC, no data points were rejected. Since no data points were rejected and all samples were analyzed as planned, the completeness for this sampling event was 100% which exceeds the completeness goal of 95% established in the SAP (CES, 2014a).

Sensitivity

Sensitivity was assessed by the evaluation of the analytical laboratory's ability to meet the PALs and limit of quantitation (LOQ). LOQs were established in the SAP (CES, 2014a) and were based upon PALs, instrument sensitivity and information provided by the laboratory. Actual LOQs were affected by numerous factors, including turbidity of groundwater samples, matrix interferences, and sample dilutions. For this sampling event, no laboratory or sample problems were noted that affected sensitivity levels.

Section 6. Summary and Recommendations

The following sections present a summary of the December 2015 monitoring event. Groundwater monitoring was performed at Building 742, FDP in accordance with the SAP (CES, 2014a) and addenda to the SAP (CES, 2014b; CES, 2015). Monitoring at Building 742, FDP included measuring the depth to groundwater and collecting samples from six wells.

The following summarizes the groundwater monitoring results at Building 742, FDP:

- A total of six wells were located and water levels measured (D1C85W01R, D1C85W02R-A, D1C85W03, D1C85W04, D1C85W06, and D1C85W07).
  - The average groundwater elevation measured in December 2015 was 5.90 feet amsl. Although groundwater levels are not expected to be strongly influenced by seasonal fluctuations, approximately 0.5 inches of rain were recorded during week prior to the December 2015 groundwater event, which may have influenced the groundwater elevations at the site.
- Groundwater samples were collected and analyzed for VOCs at D1C85W01R, D1C85W02R-A, D1C85W03, and D1C85W04, D1C85W06, and D1C85W07.
  - 1, 4 - Dichlorobenzene and vinyl chloride were detected at concentrations exceeding their respective PALs in the sample from D1C85W06.
  - 1, 4 – Dichlorobenzene was detected at concentrations exceeding its PAL in the primary and field duplicate samples from D1C85W07.
- Groundwater samples were collected and analyzed for specific dissolved metals (arsenic, iron, and manganese) at two wells (D1C85W06 and D1C85W07).
  - Arsenic, iron, and manganese were detected in each of the samples but were not at concentrations exceeding their respective PALs.
- Groundwater monitoring data were subject to a data quality assessment including review, verification, validation, and usability assessment, and were validated by a third party laboratory. All data were deemed acceptable for their intended use.

Section 7. References

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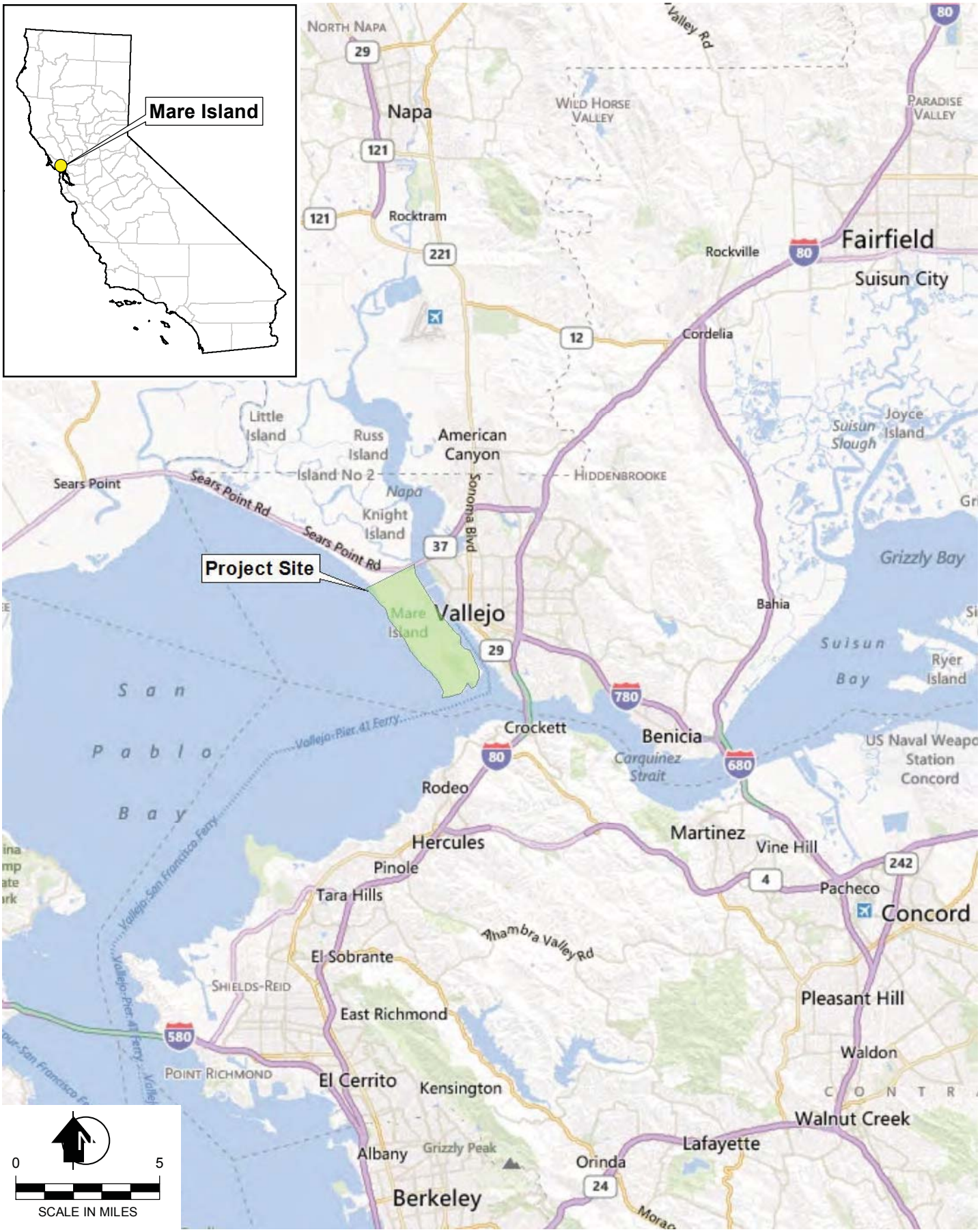
Figures



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CES CONSTRUCTION ENGINEERING SERVICES, LLC.
100 Hartsfield Centre Pkwy, Ste 610
Atlanta, Georgia 30354-1390
404-443-1390

CLIENT:	SITE LOCATION AND VICINITY			
DEPARTMENT OF THE NAVY BRAC PMO WEST				
LOCATION:	DRAWN BY:	CHECKED BY:	PROJECT NO.	FIG NO.
FORMER MARE ISLAND NAVAL SHIPYARD VALLEJO, CALIFORNIA	JJC 7/22/2013	HAW 7/22/2013	2013-042	1

LEGEND:

- 2010 Excavation Boundary
- 2013 Excavation Boundary
- Former Degreasing Plant
- Former Mare Island Naval Shipyard Boundary
- Building/Structure
- Road
- Wetland
- Mudflat
- Water

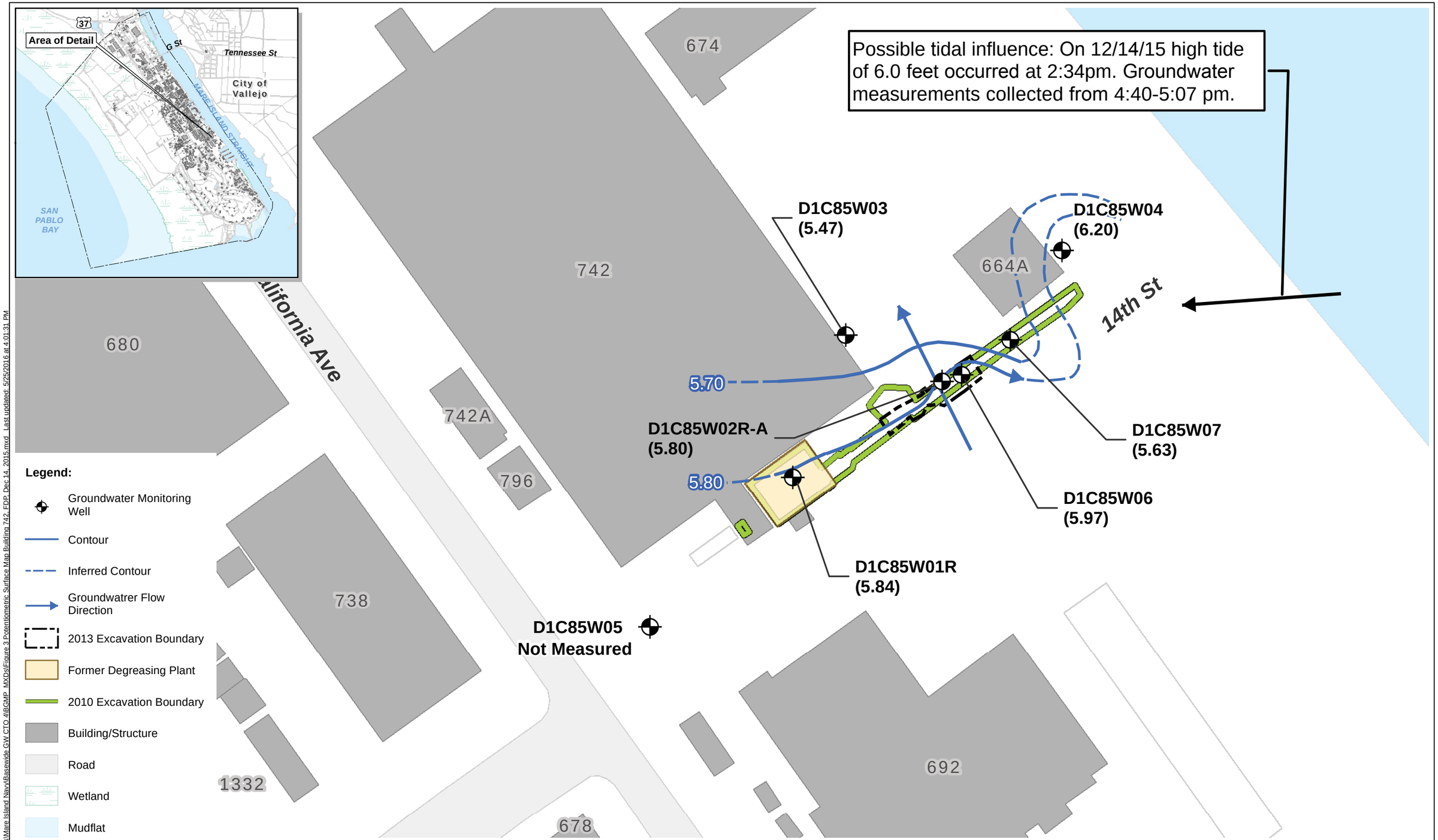
Acronyms:
FDP = Former Degreasing Plant

SOURCES: TETRA TECH EM INC.; ESRI

C:\Users\hcoats\Documents\Mare Island Navy\Basewide GW CTO 4\BGMP_MXDs\Figure 2 Groundwater Monitoring Locations December 2015.mxd Last updated: 1/15/2016 at 3:09:31 PM

CES CONSTRUCTION ENGINEERING SERVICES, LLC.
100 Hartsfield Centre Pkwy, Suite 610
Atlanta, Georgia 30354-1390
(404) 443-2777

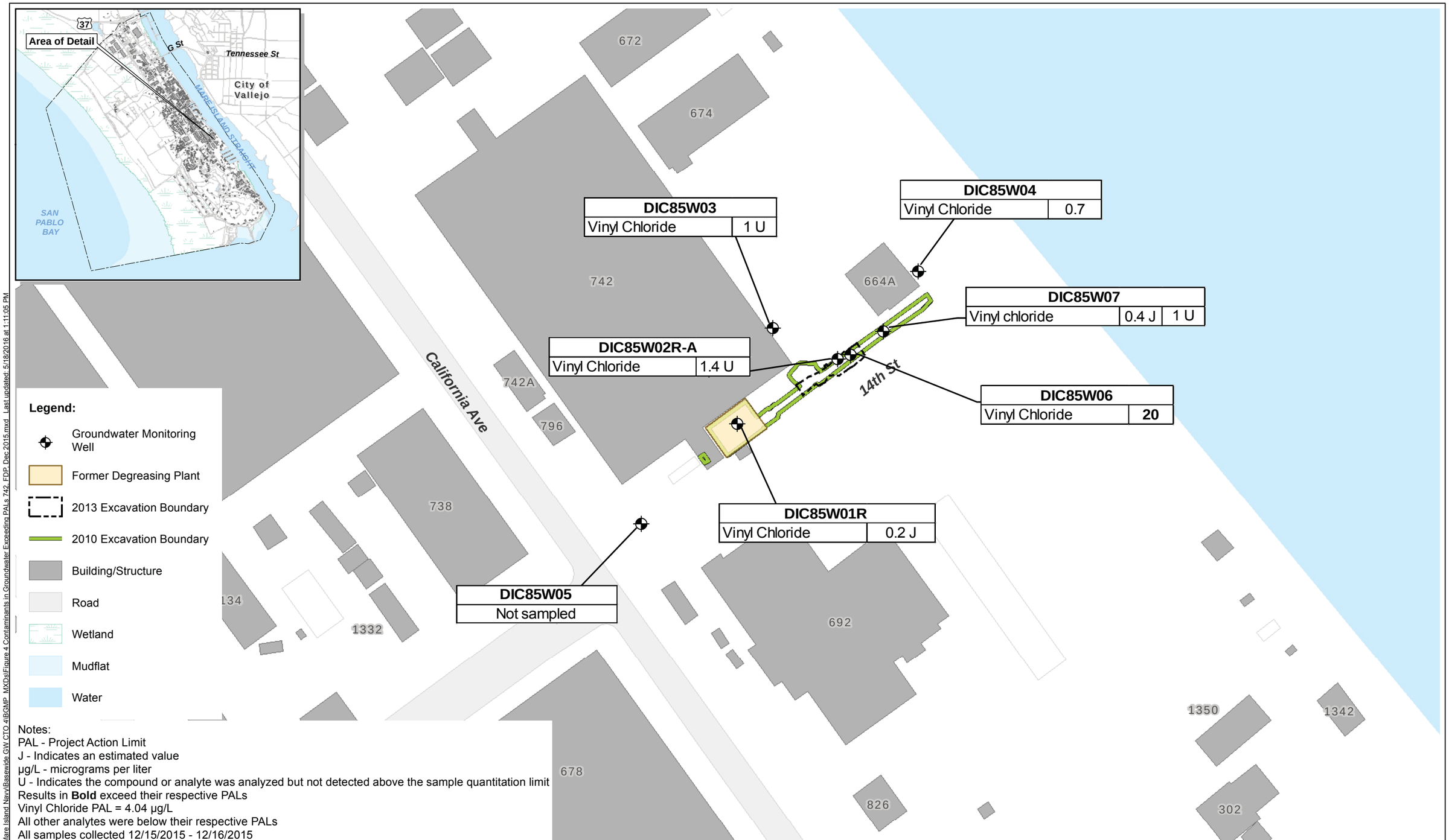
CLIENT:	GROUNDWATER MONITORING LOCATIONS DECEMBER 2015			
DEPARTMENT OF THE NAVY BRAC PMO WEST				
LOCATION:	DRAWN BY:	CHECKED BY:	PROJECT NO.	FIG NO.
FORMER MARE ISLAND NAVAL SHIPYARD VALLEJO, CALIFORNIA	HGC 1/15/2016	MFM 1/15/2016	2013-042	2



SOURCES: TETRA TECH EM INC.; ESRI

C:\Users\hcoats\Documents\Mare Island Navy\Basewide GW CTO 4\BGMP_MXDs\Figure 3 Potentiometric Surface Map Building 742, FDP_Dec 14, 2015.mxd Last updated: 5/25/2016 at 4:01:31 PM

CES CONSTRUCTION ENGINEERING SERVICES, LLC. 100 Hartsfield Centre Pkwy, Suite 610 Atlanta, Georgia 30354-1390 (404) 443-2777	CLIENT: DEPARTMENT OF THE NAVY BRAC PMO WEST	POTENTIOMETRIC SURFACE MAP BUILDING 742, FDP			
	LOCATION: FORMER MARE ISLAND NAVAL SHIPYARD VALLEJO, CALIFORNIA	DRAWN BY: HGC 5/16/16	CHECKED BY: MFM 5/16/16	PROJECT NO. 2013-042	FIG NO. 3



Notes:
PAL - Project Action Limit
J - Indicates an estimated value
µg/L - micrograms per liter
U - Indicates the compound or analyte was analyzed but not detected above the sample quantitation limit
Results in **Bold** exceed their respective PALs
Vinyl Chloride PAL = 4.04 µg/L
All other analytes were below their respective PALs
All samples collected 12/15/2015 - 12/16/2015

04W00		
Analyte	1	2

Well ID
Primary Sample Result (µg/L)
Duplicate Sample Result (µg/L)

0 60 120 240 Feet

SOURCES: TETRA TECH EM INC.; ESRI

CES CONSTRUCTION ENGINEERING SERVICES, LLC.
100 Hartsfield Centre Pkwy, Suite 610
Atlanta, Georgia 30354-1390
(404) 443-2777

CLIENT: DEPARTMENT OF THE NAVY BRAC PMO WEST
LOCATION: FORMER MARE ISLAND NAVAL SHIPYARD VALLEJO, CALIFORNIA

CONTAMINANTS IN GROUNDWATER EXCEEDING PALS BUILDING 742, FDP, DECEMBER 2015

DRAWN BY:	CHECKED BY:	PROJECT NO.	FIG NO.
HGC 5/16/16	MFM 5/16/16	2013-042	4

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Tables

Table 1. December 2015 Groundwater Monitoring Event

Site Name	Monitoring Well ID	Groundwater Elevation Measured on (Date)	Sample Date
Building 742, FDP	D1C85W01R	12/14/2015	12/15/2015
	D1C85W02R-A	12/14/2015	12/15/2015
	D1C85W03	12/14/2015	12/16/2015
	D1C85W04	12/14/2015	12/16/2015
	D1C85W06	12/14/2015	12/15/2015
	D1C85W07	12/14/2015	12/15/2015

Notes:
FDP - Former Degreasing Plant

Table 2. Groundwater Elevation Data

Site Name	Monitoring Well ID	Easting	Northing	TOC Elevation (ft amsl)	Ground Surface Elevation (ft amsl)	Screened Interval Depth (ft bgs)	Total Depth (ft BTOC)	Depth to Water (ft BTOC)	Water Elevation (ft amsl)	Gauge Date
Building 742, FDP	D1C85W01R	6486166.220000	1795386.850000	9.43	10.17	5-15	14.94	3.59	5.84	12/14/2015
	D1C85W02R-A	6486281.370000	1795460.840000	7.98	8.45	5-15	14.82	2.18	5.80	12/14/2015
	D1C85W03	6486207.154872	1795496.317162	8.978	NA	NA	14.98	3.51	5.47	12/14/2015
	D1C85W04	6479681.217764	1802945.069314	9.74	10.34	5-15	14.70	3.54	6.20	12/14/2015
	D1C85W06	6486296.149168	1795465.871564	8.14	8.50	5-25	24.38	2.17	5.97	12/14/2015
	D1C85W07	6486334.153847	1795492.503937	8.89	9.30	5-25	24.47	3.26	5.63	12/14/2015

Notes:
amsl - above mean sea level
bgs - below ground surface
BTOC - below top of casing
FDP - Former Degreasing Plant
ft - feet
NA - data not available on well construction log
TOC - top of casing

Table 3. Detected Groundwater Analytical Results for VOCs – Building 742, FDP

Analyte[1]	PAL[2] (µg/L)	Monitoring Well ID and Sample Date						
		DIC85W01R 12/15/2015	DIC85W02R-A 12/15/2015	DIC85W03 12/16/2015	DIC85W04 12/16/2015	DIC85W06 12/15/2015	DIC85W07 12/15/2015	DIC85W07 Duplicate 12/15/2015
1,2-Dichlorobenzene	42,100	0.2 J	1.4 U	1.0 U	0.2 U	8.4	2.1	2.3 J
1,3-Dichlorobenzene	42,100	0.8 J	1.4 UJ	1.0 UJ	0.2 U	6.8 J	4.2 J	4.2 J
1,4-Dichlorobenzene	445	11.0 J	1.4 U	1.0 U	0.2 U	34	20	21
2-Butanone	NE	2.0 U	14 U	10.0 U	2 U	14 U	4 U	10.0 U
4-Methyl-2-Pentanone	NE	2.0 U	14 U	10.0 U	2 U	14 U	4 U	10.0 U
Acetone	NE	4.0 U	29 U	20.0 U	4 U	29 U	8 U	20.0 U
Benzene	62.1	0.2 U	1.4 U	1.0 U	0.2 U	1.1 J	0.4 U	1.0 U
Chlorobenzene	113,000	0.2 U	1.4 U	1.0 U	0.2 U	24	2.7	2.6
cis-1,2-Dichloroethene	3,360	0.2 U	0.9 J	1.0 U	0.4 J	3.6	0.4 J	1.0 U
Ethylbenzene	300	0.2 U	1.4 U	1.0 U	0.2 U	1.4 U	0.4 U	1.0 U
m- and p-Xylene [3]	NE	0.4 U	2.9 U	2.0 U	0.4 U	2.9 U	0.8 U	2.0 U
Naphthalene	439	0.4 U	2.9 U	2.0 U	0.4 U	2.4 J	0.8 U	2.0 U
O-Xylene [3]	NE	0.2 U	1.4 U	1.0 U	0.2 U	2.2 J	0.4 U	1.0 U
Toluene	400	0.2 U	1.4 U	1.0 U	0.2 U	0.9 J	0.4 U	1.0 U
Trans-1,2-Dichloroethene	2,820	0.2 U	1.4 U	1.0 U	0.2 U	4.9	0.4 U	1.0 U
Trichloroethene	567	0.2 U	1.4 U	1.0 U	0.2 U	1.4 U	0.4 U	1.0 U
Vinyl Chloride	4.04	0.2 J	1.4 U	1.0 U	0.7	20	0.4 J	1.0 U

Notes:

[1] All analytes reported in µg/L.

[2] PAL is the established removal monitoring level (RML) for the site (Tetra Tech EC, Inc., 2010).

[3] Xylenes (Total) PAL = 5,300 µg/L

PAL - project action limit

µg/L - micrograms per liter

NE - Not established

U - Indicates the compound or analyte was analyzed but not detected above the sample quantitation limit

J - Indicates an estimated value

Shaded value exceeds the PAL.

Table 4. Detected Groundwater Analytical Results for Select Metals – Building 742, FDP

Analyte[1]	PAL[2] (µg/L)	Monitoring Wells ID and Sample Date		
		DIC85W06 12/15/2015	DIC85W07 12/15/2015	DIC85W07 Duplicate 12/15/2015
Arsenic	78	6.8	4.6 J	4.7 J
Iron	140,000	1,300	380	250
Manganese	5,400	4,200	1,700	1,700

Notes:

[1] All analytes reported in µg/L.

[2] PAL is the established removal monitoring level (RML) for the site (Tetra Tech EC, Inc., 2010).

J - Indicates an estimated value

µg/L - micrograms per liter

PAL - project action limit

Table 5. Field Quality Control Sample Results

Analyte[1]	PAL[2] (µg/L)	Sample ID and Date			
		ER-121515 12/15/2015	TB-121515 12/15/2015	ER-121615 12/16/2015	SB-121615 12/16/2015
Metals					
Arsenic	78	4 U	NA	NA	4 U
Iron	140,000	80 U	NA	NA	80 U
Manganese	5,400	2.5 U	NA	NA	2.5 U
VOCs					
1,1,1,2-Tetrachloroethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,1,1-Trichloroethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2,2-Tetrachloroethane	261	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloro-1,2,2-Trifluoroethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,1,2-Trichloroethane	527	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloroethane	2,800	0.2 U	0.2 U	0.2 U	0.2 U
1,1-Dichloropropene	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichlorobenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,2,3-Trichloropropane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trichlorobenzene	1,690	0.2 U	0.2 U	0.2 U	0.2 U
1,2,4-Trimethylbenzene	616	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dibromo-3-chloropropane	NE	1 U	1 U	1 U	1 U
1,2-Dibromoethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichlorobenzene	42,100	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloroethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,2-Dichloropropane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,3,5-Trimethylbenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,3-Dichlorobenzene	42,100	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
1,3-Dichloropropane	NE	0.2 U	0.2 U	0.2 U	0.2 U
1,4-Dichlorobenzene	445	0.2 U	0.2 U	0.2 U	0.2 U
2,2-Dichloropropane	NE	0.4 UJ	0.4 UJ	0.4 UJ	0.4 UJ
2-Butanone	NE	2 U	2 U	2 U	2 U
2-Chlorotoluene	NE	0.2 U	0.2 U	0.2 U	0.2 U
2-Hexanone	NE	2 U	2 U	2 U	2 U
4-Chlorotoluene	NE	0.2 U	0.2 U	0.2 U	0.2 U
4-Isopropyltoluene	NE	0.2 U	0.2 U	0.2 U	0.2 U
4-Methyl-2-pentanone	NE	2 U	2 U	2 U	2 U
Acetone	NE	4 U	4 U	4 U	4 U
Benzene	62.1	0.2 U	0.2 U	0.2 U	0.2 U
Bromobenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
Bromochloromethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
Bromodichloromethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
Bromoform	NE	0.2 U	0.2 U	0.2 U	0.2 U
Bromomethane	NE	0.4 UJ	0.4 UJ	0.4 UJ	0.4 UJ
Carbon Disulfide	NE	0.2 U	0.2 U	0.2 U	0.2 U
Carbon Tetrachloride	NE	0.2 U	0.2 U	0.2 U	0.2 U
Chlorobenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
Chloroethane	NE	0.4 U	0.4 U	0.4 U	0.4 U
Chloroform	NE	0.2 U	0.2 U	0.2 U	0.2 U
Chloromethane	NE	0.4 U	0.4 U	0.4 U	0.4 U
cis-1,2-Dichloroethene	3,360	0.2 U	0.2 U	0.2 U	0.2 U
cis-1,3-Dichloropropene	53	0.2 U	0.2 U	0.2 U	0.2 U
Dibromochloromethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
Dibromomethane	NE	0.2 U	0.2 U	0.2 U	0.2 U
Dichlorodifluoromethane	NE	0.4 UJ	0.4 UJ	0.4 UJ	0.4 UJ
Ethylbenzene	300	0.2 U	0.2 U	0.2 U	0.2 U

Table 5. Field Quality Control Sample Results

Analyte[1]	PAL[2] (µg/L)	Sample ID and Date			
		ER-121515 12/15/2015	TB-121515 12/15/2015	ER-121615 12/16/2015	SB-121615 12/16/2015
VOCs (Continued)					
Hexachlorobutadiene	96.7	0.2 U	0.2 U	0.2 U	0.2 U
Isopropylbenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
m,p-Xylenes[3]	NE	0.4 U	0.4 U	0.4 U	0.4 U
Methyl-tert-butyl-ether	NE	0.2 U	0.2 U	0.2 U	0.2 U
Methylene Chloride	NE	0.2 U	0.2 U	0.2 U	0.2 U
Naphthalene	439	0.4 U	0.4 U	0.4 U	0.4 U
n-Butylbenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
o-Xylene[3]	NE	0.2 U	0.2 U	0.2 U	0.2 U
Propylbenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
Sec-Butylbenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
Styrene	NE	0.2 U	0.2 U	0.2 U	0.2 U
Tert-Butylbenzene	NE	0.2 U	0.2 U	0.2 U	0.2 U
Tetrachloroethene	123	0.2 U	0.2 U	0.2 U	0.2 U
Toluene	400	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,2-Dichloroethene	2,820	0.2 U	0.2 U	0.2 U	0.2 U
trans-1,3-Dichloropropene	53	0.2 U	0.2 U	0.2 U	0.2 U
Trichloroethene	567	0.2 U	0.2 U	0.2 U	0.2 U
Trichlorofluoromethane	NE	0.4 U	0.4 U	0.4 U	0.4 U
Vinyl Acetate	NE	2 U	2 U	2 U	2 U

Notes:
[1] All analytes reported in µg/L.
[2] PAL is the established removal monitoring level (RML) for the site (Tetra Tech EC, Inc., 2010).
[3] Xylenes (Total) PAL = 5,300 µg/L
ER - equipment rinsate
TB - trip blank
SB - source water blank
µg/L – micrograms per liter
NA - not analyzed
NE - not established
PAL - project action limit
VOCs – volatile organic compounds
J - Indicates an estimated value
U - Indicates the compound or analyte was analyzed but not detected above sample quantitation limit

Appendix A. Field Forms

WELL GAUGING LOG SHEET

ERRG

Prepared by: M. Mandell
Project Name: MINS BGMP
Site Location: Building 742, FDDD

Client: NAVY
Project No.: 20130042
Page: 1/1

Well ID	Date	Time	Depth to Water (ft below TOC)	Depth to Bottom (ft below TOC)	Notes
DIC85W01R	12.14.15	1640	3.59	14.94	Very soft bottom
DIC85W02R-A		1646	2.18	14.82	—
DIC85W06		1650	2.17	24.38	Soft bottom
DIC85W03		1657	3.51	14.98	Potential product in well all the way to bottom
DIC85W07		1702	3.26	24.47	—
DIC85W04		1707	AM 3.54	14.70	Soft bottom

Signed: M. Mandell

Date: 12.14.15

SAMPLE COLLECTION RECORD

ERRG

Prepared by: M. Mandell / K. Woodhouse
Client: NAVY
Project Name: MINS BGMP
Project No.: 20130042
Site Location: Building 742
Page: 1 of 1

Sample ID	Date	Time	Media soil/water	Depth	Analysis/ containers collected	Notes	Sampler
DIC85W01R -	121515	1013	W	10'	VOCs (3)	—	MM/KW
TB-121515	12.15.15	1015	W	—	VOCs (2)	—	
DIC85W06 -	121515	1146	W	20'	VOCs (9) Metals (3)	MS/MSD	
DIC85W07 -	121515	1454	W	20'	VOCs (3) Metals (1)	—	
DIC85W07 -	121515X	1500	W	20'	VOCs (3) Metals (1)	DUP	
ER-121515	12.15.15	1517	W	—	VOCs (3) Metals (1)	-	
DIC85W02RA -	12.15.15	1616	W	10'	VOCs (3)	—	
DIC85W03 -	121615	0844	W	10'	VOCs (3)	—	
DIC85W04 -	121615	1004	W	10'	VOCs (3)	—	
ER - 121615	12.16.15	1024	W	—	VOCs (3)	—	
SB - 121615	121615	1026	W	-	VOCs (3) Metals (1)	—	

* All metals analysis = Arsenic, Manganese, + Iron only

ERRG

Sample Location: DC85W01R
Casing Size/Type: 2"
Measuring Point: TOC
Depth to Water: 3.76
Pump Depth: ~10'

Screen Interval: 5-15'
Depth to Bottom: 14.94'
Pump Type: Bladder
Water Quality Meter: YSI 650 MDS
Surface Completion: Pavement

Date: 12.15.15
Project #: 20130042
Project Name: MINS BGMP
Sampler(s): MM | KW
Weather: Sunny
Set Up Time: 0920

1 Well Volume = (Depth to Bottom — - Depth to Water —) x (— milliliters/linear foot) = —

Time (2400hr) 3 to 5 min.	Depth to Water (ft) 0.33 feet	Flowrate (mL/min) 100 to 500	Purge Volume (mL)	Temp. (°C) ± 3%	Sp. Cond. (µS/cm) ± 3%	pH (units) ± 0.1	D.O. (mg/L) ±10%	ORP (mV) ±10 mV	Turbidity (NTU) ±10%	Comments
—	3.76	400	0	—	—	—	—	—	—	Troubleshooting YSI
0954	3.73	↓	1000	20.69	27.54	7.24	0.73	-280.3	82.4	—
0957	3.72		2200	21.85	27.63	7.26	0.51	-288.4	48.0	—
1000	3.72		3400	22.40	27.73	7.26	0.37	-298.0	21.2	—
1003	3.72		4600	22.48	27.74	7.26	0.32	-303.6	12.8	—
1006	3.73		5800	22.46	27.65	7.26	0.29	-305.9	9.2	—
										~~Sulphur~~ odor from well: sulfur

Well Head Condition (lid, bolts, seal, bolt holes, expanding well cap, flooded, survey mark): Good.

Signature and Date: M. Mandell 12/15/15

2-inch well = 644 milliliters/linear foot
4-inch well = 2,498 milliliters/linear foot
1 gallon = 3.785 liters

ERRG

Sample Location: D1C85WE2A-A
Casing Size/Type: 2"
Measuring Point: TOC
Depth to Water: 1.77'
Pump Depth: -10'

Screen Interval: 5-15'
Depth to Bottom: 14.82'
Pump Type: Bladder
Water Quality Meter: YSI
Surface Completion: Paved

Date: 12.15.15
Project #: 20130042
Project Name: MINS BGMP
Sampler(s): MM / KW
Weather: Cool Breezy 50'
Set Up Time: ~~1600~~ 1520

1 Well Volume = (Depth to Bottom — - Depth to Water —) x (— milliliters/linear foot) = —

Time (2400hr) 3 to 5 min.	Depth to Water (ft) 0.33 feet	Flowrate (mL/min) 100 to 500	Purge Volume (mL)	Temp. (°C) ± 3%	Sp. Cond. (µS/cm) ± 3%	pH (units) ± 0.1	D.O. (mg/L) ±10%	ORP (mV) ±10 mV	Turbidity (NTU) ±10%	Comments
1545	3.28	75	0	—	—	—	—	—	—	Very slow recharge and
1554	4.32	↓	1000	18.51	13.76	6.98	0.87	-102.8	55.9	continual, gradual draw-down
1557	4.50	↓	1075	18.33	13.77	6.94	0.79	-93.3	59.2	as we purge well.
~~1576~~ 1600	4.70	↓	1150	18.32	13.74	6.92	0.64	-88.8	60.1	Hoping for equilibrium at
1603	4.90	↓	1225	18.30	13.75	6.91	0.58	-88.0	61.6	lower elevation.
1606	5.05	↓	1300	18.30	13.74	6.93	0.60	-87.5	59.0	—

Well Head Condition (lid, bolts, seal, bolt holes, expanding well cap, flooded, survey mark): Good

Signature and Date: M Mandell 12/15/15

2-inch well = 644 milliliters/linear foot
4-inch well = 2,498 milliliters/linear foot
1 gallon = 3.785 liters

ERRG

Sample Location: DVC85W03
Casing Size/Type: 2"
Measuring Point: TOC
Depth to Water: 3.43'
Pump Depth: ~16'

Screen Interval: unknown
Depth to Bottom: 14.98'
Pump Type: Bladder
Water Quality Meter: YSI
Surface Completion: Paved

Date: 12/16/15
Project #: 20130042
Project Name: MINS BGMP
Sampler(s): MM / KW
Weather: 45° F Sunny
Set Up Time: 0745

1 Well Volume = (Depth to Bottom — - Depth to Water —) x (— milliliters/linear foot) = —

Time (2400hr) 3 to 5 min.	Depth to Water (ft) 0.33 feet	Flowrate (mL/min) 100 to 500	Purge Volume (mL)	Temp. (°C) ±3%	Sp. Cond. (µS/cm) ±3%	pH (units) ±0.1	D.O. (mg/L) ±10%	ORP (mV) ±10 mV	Turbidity (NTU) ±10%	Comments
0813	3.61'	125	0	—	—	—	—	—	—	—
0820	3.95	↓	1000	14.44	8.926	6.36	1.75	-87.8	45.6	—
0823	3.98		1125	14.15	8.524	6.49	1.05	-107.5	43.5	—
0826	4.0		1250	14.20	8.161	6.54	1.88	-111.7	42.7	—
0829	4.01		1375	14.21	7.965	6.58	0.78	-121.0	40.9	—
0832	4.05		1500	14.25	7.480	6.66	0.69	-130.4	40.2	—
0835	4.09		1625	14.35	7.067	6.70	0.69	-134.8	40.1	—
0838	4.10		1750	14.46	6.917	6.70	0.68	-134.7	39.4	—

Well Head Condition (lid, bolts, seal, bolt holes, expanding well cap, flooded, survey mark): Well next to large pile of tree trunks. A* Tree Service chainlinked pile to stabilize in case of disturbance (i.e. earthquake).

Signature and Date: M. Mandell 12/16/15

2-inch well = 644 milliliters/linear foot
4-inch well = 2,498 milliliters/linear foot
1 gallon = 3.785 liters

ERRG

Sample Location: DVC85W04
Casing Size/Type: 2"
Measuring Point: TOC
Depth to Water: 3.85'
Pump Depth: ~10'

Screen Interval: 5'-15'
Depth to Bottom: 14.70'
Pump Type: Bladder
Water Quality Meter: YSI
Surface Completion: Paved

Date: 12.16.15
Project #: 20130042
Project Name: MINS BGMP
Sampler(s): MM | KW
Weather: 55°F Sunny
Set Up Time: 0915

1 Well Volume = (Depth to Bottom — - Depth to Water —) x (— milliliters/linear foot) = —

Time (2400hr) 3 to 5 min.	Depth to Water (ft) 0.33 feet	Flowrate (mL/min) 100 to 500	Purge Volume (mL)	Temp. (°C) ±3%	Sp. Cond. (µS/cm) ±3%	pH (units) ±0.1	D.O. (mg/L) ±10%	ORP (mV) ±10 mV	Turbidity (NTU) ±10%	Comments
0926	3.85	100	0	—	—	—	—	—	—	—
0937	3.83	↓	1000	17.60	3.867	6.70	1.27	-85.2	383.3	—
0940	3.87	↓	1100	17.89	3.858	6.70	0.86	-89.7	178.9	—
0943	3.85	↓	1200	18.02	3.858	6.70	0.70	-92.7	153.7	—
0946	3.85	↓	1300	18.14	3.863	6.70	0.63	-94.7	102.8	—
0949	3.85	↓	1400	18.21	3.860	6.70	0.56	-96.8	112.0	—
0952	3.85	↓	1500	18.22	3.859	6.70	0.51	-97.8	74.1	—
0955	3.85	↓	1600	18.22	3.859	6.70	0.48	-98.2	71.6	—
0958	3.85	↓	1700	18.22	3.858	6.69	0.53	-99.1	67.5	—

Well Head Condition (lid, bolts, seal, bolt holes, expanding well cap, flooded, survey mark): Well located under port-o-potty
* least visit at 0950. Well next to truck scale - waiting for trucks to pass to collect sample (to avoid truck-emitted VOCs)

Signature and Date: M.M. Mandell 12/16/15

2-inch well = 644 milliliters/linear foot
4-inch well = 2,498 milliliters/linear foot
1 gallon = 3.785 liters

ERRG

Sample Location: D1C85W06
Casing Size/Type: 2"
Measuring Point: TOC
Depth to Water: 2.31
Pump Depth: ~20'

Screen Interval: 5-25'
Depth to Bottom: 24.38'
Pump Type: Bladder
Water Quality Meter: YSI 650 MPS
Surface Completion: Paved

Date: 12.15.15
Project #: 20130042
Project Name: MWS BGMP
Sampler(s): MM / KW
Weather: Cold, sunny
Set Up Time: 1035

1 Well Volume = (Depth to Bottom — - Depth to Water —) x (— milliliters/linear foot) = —

Time (2400hr) 3 to 5 min.	Depth to Water (ft) 0.33 feet	Flowrate (mL/min) 100 to 500	Purge Volume (mL)	Temp. (°C) ±3%	Sp. Cond. (µS/cm) ±3%	pH (units) ±0.1	D.O. (mg/L) ±10%	ORP (mV) ±10 mV	Turbidity (NTU) ±10%	Comments
1107	2.31	175	0	-	-	-	-	-	-	-
1113	2.31	↓	1000	20.13	25.76	6.69	1.13	-178.9	76.5	Black-tinted water
1116	2.31	↓	1525	19.97	25.70	6.67	0.90	-182.0	72.2	due to sediment
1119	2.31	↓	2050	19.86	25.59	6.66	0.72	-184.0	67.4	—
1122	2.31	↓	2575	19.81	25.52	6.65	0.60	-191.4	62.7	—
1125	2.31	↓	3100	19.77	25.51	6.65	0.51	-198.8	57.2	—
1128	2.31	↓	3625	19.78	25.49	6.65	0.46	-203.4	53.2	—
1131	2.31	↓	4150	19.79	25.49	6.65	0.41	-206.9	50.3	—
1134	2.31	↓	4675	19.84	25.48	6.64	0.36	-212.3	47.6	—
1137	2.31	↓	5200	19.90	25.47	6.64	0.33	-218.7	42.1	—
1140	2.31	↓	5725	20.02	25.42	6.63	0.30	-223.3	40.6	—
1143	2.31	↓	6250	20.08	25.44	6.63	0.28	-227.1	38.3	—

Well Head Condition (lid, bolts, seal, bolt holes, expanding well cap, flooded, survey mark): Good.

Signature and Date: M. Mardell 12/15/15

2-inch well = 644 milliliters/linear foot
4-inch well = 2,498 milliliters/linear foot
1 gallon = 3.785 liters

ERRG

Sample Location: DIC85W07
Casing Size/Type: 2"
Measuring Point: TOC
Depth to Water: 3.10'
Pump Depth: ~28'

Screen Interval: 5-25'
Depth to Bottom: 24.47'
Pump Type: Bladder
Water Quality Meter: YSI
Surface Completion: Paved

Date: 12-15-15
Project #: 20130042
Project Name: MN's Bamp
Sampler(s): MM/KW
Weather: Sunny, breezy 56°F
Set Up Time: 1325

1 Well Volume = (Depth to Bottom - - Depth to Water -) x (- milliliters/linear foot) = -

Time (2400hr) 3 to 5 min.	Depth to Water (ft) 0.33 feet	Flowrate (mL/min) 100 to 500	Purge Volume (mL)	Temp. (°C) ±3%	Sp. Cond. (µS/cm) ±3%	pH (units) ±0.1	D.O. (mg/L) ±10%	ORP (mV) ±10 mV	Turbidity (NTU) ±10%	Comments
1341	3.10	100	0	-	-	-	-	-	-	-
1348	3.10		1000	20.26	23.74	7.02	1.67	-202.3	97.2	Dark tint to water
1351	3.10		1100	20.17	23.68	6.84	1.30	-206.7	91.8	from sediment, slight
1354	3.10		1200	20.11	23.64	6.76	1.08	-210.6	88.8	sulfur odor.
1357	3.10		1300	20.09	23.82	6.73	0.94	-212.2	84.8	—
1400	3.10		1400	20.08	23.60	6.72	0.81	-213.1	79.8	—
1403	3.10		1500	20.09	23.56	6.71	0.72	-213.5	70.2	—
1406	3.10		1600	20.08	23.49	6.70	0.62	-213.7	63.0	—
1409	3.10		1700	20.06	23.39	6.70	0.56	-213.6	58.6	—
1412	3.10		1800	20.03	23.28	6.71	0.52	-212.0	54.1	—
1415	3.10		1900	19.98	23.20	6.71	0.48	-217.1	45.5	—
1418	3.10		2000	19.96	23.08	6.72	0.46	-217.6	43.5	—
1421	3.10		2100	19.97	22.80	6.72	0.43	-217.5	35.7	—
1424	3.10		2200	19.98	22.51	6.73	0.42	-218.1	32.2	—
1427	3.10		2300	19.98	22.22	6.74	0.40	-219.7	26.7	—
1430	3.10		2400	19.97	21.99	6.75	0.39	-221.0	24.1	—
1433	3.10		2500	19.97	21.71	6.76	0.37	-223.2	21.4	—
1437	3.10		2600	19.95	21.43	6.77	0.37	-229.9	17.0	—
1440	3.10		2700	19.93	21.25	6.78	0.36	-228.0	14.5	—
1443	3.10		2800	19.89	21.12	6.79	0.34	-230.6	12.2	—
1446	3.10		2900	19.85	20.98	6.80	0.31	-233.7	11.0	—
1449	3.10		3000	19.84	20.94	6.80	0.31	-234.0	9.4	—

Well Head Condition (lid, bolts, seal, bolt holes, expanding well cap, flooded, survey mark): Only one bolt on well lid.

Signature and Date: M. Mardell 12/15/15

2-inch well = 644 milliliters/linear foot
4-inch well = 2,498 milliliters/linear foot
1 gallon = 3.785 liters

Appendix B. Waste Management Documentation

NO. 721325
Tracking Number: MI-9611

NON-HAZARDOUS WASTE DATA FORM

BESI # 264136

GENERATOR

Generator's Name and Mailing Address
US NAVY BRAC PMO-W (MI)
1 AVENUE OF THE PALMS, SUITE 161
SAN FRANCISCO, CA 94130

Generator's Site Address (if different than mailing address)
FORMER DEGREASING PLANT
CORNER OF K ST. & WALNUT AVE.
MARE ISLAND, VALLEJO, CA 94592

Generator's Phone: 415-743-4713

Container type removed from site:
☒ Drums ☐ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck
☐ Other _____
Quantity 001

Container type transported to receiving facility:
☐ Drums ☒ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck
☐ Other _____
Quantity 001 Volume 025 GALLONS

WASTE DESCRIPTION NON-HAZARDOUS WATER
GENERATING PROCESS WELL PURGING / DECON WATER

COMPONENTS OF WASTE	PPM	%	COMPONENTS OF WASTE	PPM	%
1. WATER		100%	3.		
2.			4.		

Waste Profile _____ PROPERTIES: pH 7-10 ☐ SOLID ☒ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: WEAR ALL APPROPRIATE PERSONAL PROTECTIVE CLOTHING.

Generator Printed/Typed Name: Brian L. Castagnetti
Signature: [signature]
Month 2 Day 4 Year 16

The Generator certifies that the waste as described is 100% non-hazardous

TRANSPORTER

Transporter 1 Company Name: BELSHIRE
Phone#: 949-460-5200

Transporter 1 Printed/Typed Name: STEVEN E. MENDOZA
Signature: [signature]
Month 02 Day 04 Year 16

Transporter Acknowledgment of Receipt of Materials

Transporter 2 Company Name: NIETO & SONS TRUCKING, INC.
Phone#: 714-990-6855

Transporter 2 Printed/Typed Name: RAFAEL UREDA
Signature: [signature]
Month 2 Day 17 Year 16

Transporter Acknowledgment of Receipt of Materials

RECEIVING FACILITY

Designated Facility Name and Site Address
DEMENNO KERDOON
2000 N. ALAMEDA ST.
COMPTON, CA 90222

Phone#: 310-537-7100

Printed/Typed Name: SOPHAL P. SYAY
Signature: [signature]
Month 02 Day 12 Year 16

Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.

Appendix C. Analytical Data

(Available on CD)

Appendix C1. Laboratory Analytical Reports

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 272485
ANALYTICAL REPORT

Versar, Inc. 100 Hartsfield Centre Parkway Atlanta, GA 30354	Project : N62473-11-D-2215 Location : MINS BGMP Level : III Contract # : N62473-11-D-2215

Sample ID	Lab ID
D1C85W01R-121515	272485-001
D1C85W06-121515	272485-002
D1C85W07-121515	272485-003
D1C85W07-121515X	272485-004
D1C85W02RA-121515	272485-005
D1C85W03-121615	272485-006
TB-121515	272485-007
ER-121515	272485-008
ER-121615	272485-009
SB-121615	272485-010

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: Tracy Babjar Date: 01/04/2016

Tracy Babjar
Project Manager
tracy.babjar@ctberk.com
(510) 204-2226

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**272485**
Client:	**Versar, Inc.**
Project:	**N62473-11-D-2215**
Location:	**MINS BGMP**
Request Date:	**12/16/15**
Samples Received:	**12/16/15**

This data package contains sample and QC results for ten water samples, requested for the above referenced project on 12/16/15. See attached cooler receipt form for any sample receipt problems or discrepancies.

All qualified data are compliant with appropriate corrective actions specified in Standard Operating Procedures. The Standard Operating Procedures are available upon request.

Manual integration documentation may be found in the "Case Narrative Addendum: Manual Integrations" sections.

Volatile Organics by GC/MS (EPA 8260C):

Low response was observed for Freon 12 in the ICV analyzed 12/08/15 02:28; this analyte was not detected at or above the RL in the associated samples, and affected data was qualified with "b".

Low responses were observed for bromomethane and chloromethane in the ICV analyzed 11/04/15 20:35; affected data was qualified with "b".

High responses were observed for a number of analytes in the ICV analyzed 11/25/15 18:28; affected data was qualified with "b".

Low response was observed for Freon 12 in the ICV analyzed 11/24/15 23:24; affected data was qualified with "b".

High responses were observed for a number of analytes in the CCV analyzed 12/18/15 16:49; these analytes were not detected at or above the RL in the associated samples, and affected data was qualified with "b".

High responses were observed for bromomethane and 2,2-dichloropropane in the CCV analyzed 12/17/15 12:35; these analytes were not detected at or above the RL in the associated samples, and affected data was qualified with "b".

Low responses were observed for many analytes in the CCV analyzed 12/29/15 12:28; these analytes met minimum response criteria, and affected data was qualified with "b". High responses were observed for carbon tetrachloride, trichlorofluoromethane, and 1,1,1-trichloroethane; affected data was qualified with "b".

Low response was observed for Freon 12 in the CCV analyzed 12/29/15 08:12; this analyte met minimum response criteria, and affected data was qualified

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**272485**
Client:	**Versar, Inc.**
Project:	**N62473-11-D-2215**
Location:	**MINS BGMP**
Request Date:	**12/16/15**
Samples Received:	**12/16/15**

Volatile Organics by GC/MS (EPA 8260C):

with "b". High responses were observed for 2,2-dichloropropane and vinyl acetate; affected data was qualified with "b".

High recoveries were observed for a number of analytes in the BS/BSD for batch 230360; the associated RPDs were within limits, and these analytes were not detected at or above the RL in the associated samples.

High recoveries were observed for a number of analytes in the BS/BSD for batch 230541; the associated RPDs were within limits, and these analytes were not detected at or above the RL in the associated samples.

High recoveries were observed for bromodichloromethane in the MS/MSD of D1C85W06-121515 (lab # 272485-002); the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated samples.

Low recoveries were observed for 2-hexanone and 4-methyl-2-pentanone in the BS/BSD for batch 230759; the associated RPDs were within limits, and these low recoveries were not associated with any reported results. High recovery was observed for carbon tetrachloride in the BS for batch 230759; the associated RPD was within limits, and the high recovery was not associated with any reported results.

High surrogate recoveries were observed for 1,2-dichloroethane-d4 in D1C85W01R-121515 (lab # 272485-001) and SB-121615 (lab # 272485-010).

N-butylbenzene was detected between the MDL and half the RL in the method blank for batch 230760; this analyte was not detected in the sample at or above the LOD.

A number of samples were diluted due to foaming.

D1C85W01R-121515 (lab # 272485-001) was analyzed with more than 1 mL of headspace in the VOA vial.

No other analytical problems were encountered.

Metals (EPA 6010C):

High % difference was observed for iron in the serial dilution of D1C85W06-121515 (lab # 272485-002).

Curtis & Tompkins, Ltd.

CASE NARRATIVE

Laboratory number:	**272485**
Client:	**Versar, Inc.**
Project:	**N62473-11-D-2215**
Location:	**MINS BGMP**
Request Date:	**12/16/15**
Samples Received:	**12/16/15**

Metals (EPA 6010C):

No other analytical problems were encountered.

Chain of Custody

CHAIN OF CUSTODY

Curtis & Tompkins Laboratories
ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
In Business Since 1878

2323 Fifth Street
Berkeley, CA 94710

Phone (510) 486-0900
Fax (510) 486-0532

Chain of Custody #

C&T LOGIN # 272485

Project No: N6273-11-D-2215
Sampler: M. Mandell
Project Name: MINS BGMP
Report To: T. Chunhay, H. Wollenburg
Project P. O. No: ATL14-001-01-004-CTL
Company: SMWI ERRG
EDD Format: Report Level ☐ II ☐ III ☐ IV
Telephone: 404-443-2777
Turnaround Time: ☐ RUSH ☑ Standard
Email:

Lab No.	Sample ID.	Sampling: Date Collected	Sampling: Time Collected	Matrix: Water	Matrix: Solid	# of Containers	Chemical Preservative: HCl	H2SO4	HNO3	NaOH	None	ANALYTICAL REQUEST: VOCs 8260	Metals (As, Mn, Fe) 6010	MS/MSD
1	DIC85W01R-121515	12.15.15	1013	X		3	X					X		
2	DIC85W06-121515	12.15.15	1146	X		12	9X				3	X	X	X
3	DIC85W07-121515	12.15.15	1454	X		4	3				1	X	X	
4	DIC85W09-121515X	12.15.15	1505	X		4	3				1	X	X	
~~5~~	~~DIC85~~ (MW)													
5	DIC85W02RA-121515	12.15.15	1616	X		3	3					X		
6	DIC85W03-121615	12.16.15	0844	X		3	3					X		
7	TB-121515	12.15.15	1013	X		2	2					X		
8	ER-121515	12.15.15	1517	X		4	3				1	X	X	
9	ER-121615	12.16.15	1024	X		3	3					X		
10	SB-121615	12.16.15	1026	X		4	3				1	X	X	

Notes:
LAB FILTER METALS

SAMPLE RECEIPT
☑ Intact
☑ Cold
☑ On Ice
☐ Ambient

RELINQUISHED BY:
[signature] DATE: 12.16.15 TIME: 1219
DATE: TIME:
DATE: TIME:

RECEIVED BY:
[signature] DATE: 12/16/15 TIME: 1218
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 272485 Date Received 12/16/15 Number of coolers 1
Client JMWI ERRG Project MINS BGMP

Date Opened 12/16 By (print) CJN (sign) [illegible]
Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) _____ YES (NO)
   Shipping info _____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received? _____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) ___ (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 4.3°

☐ Temperature blank(s) included? ☐ Thermometer# _____ ☒ IR Gun# A

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES (NO)
   If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened? _____ (YES) NO
10. Are there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ (YES) NO
13. Do the sample labels agree with custody papers? _____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? _____ (YES) NO
15. Are the samples appropriately preserved? _____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? _____ YES NO (N/A)
17. Did you document your preservative check? (pH strip lot# _____) YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? _____ (YES) NO N/A
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
   If YES, Who was called? _____ By _____ Date: _____

COMMENTS

_____

Rev 12, 12/01/15

Curtis & Tompkins, Ltd.

Detections Summary for 272485

Results for any subcontracted analyses are not included in this summary.

Client : Versar, Inc.
Project : N62473-11-D-2215
Location : MINS BGMP

Client Sample ID : D1C85W01R-121515 Laboratory Sample ID : 272485-001

Analyte	Result	Flags	LOQ	DL	Units	Basis	IDF	Method	Prep Method
Vinyl Chloride	0.2	J	0.5	0.1	ug/L	As Recd	1.000	EPA 8260C	EPA 5030C
1,3-Dichlorobenzene	0.8		0.5	0.2	ug/L	As Recd	1.000	EPA 8260C	EPA 5030C
1,4-Dichlorobenzene	11		0.5	0.1	ug/L	As Recd	1.000	EPA 8260C	EPA 5030C
1,2-Dichlorobenzene	0.2	J	0.5	0.1	ug/L	As Recd	1.000	EPA 8260C	EPA 5030C

Client Sample ID : D1C85W06-121515 Laboratory Sample ID : 272485-002

Analyte	Result	Flags	LOQ	DL	Units	Basis	IDF	Method	Prep Method
Vinyl Chloride	20		3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
trans-1,2-Dichloroethene	4.9		3.6	1.1	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
cis-1,2-Dichloroethene	3.6		3.6	0.9	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
Benzene	1.1	J	3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
Toluene	0.9	J	3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
Chlorobenzene	24		3.6	0.9	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
o-Xylene	2.2	J	3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
Isopropylbenzene	0.9	J	3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
1,3,5-Trimethylbenzene	0.8	J	3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
1,2,4-Trimethylbenzene	4.3		3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
sec-Butylbenzene	0.9	J	3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
1,3-Dichlorobenzene	6.8		3.6	1.0	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
1,4-Dichlorobenzene	34		3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
1,2-Dichlorobenzene	8.4		3.6	0.7	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
Naphthalene	2.4	J	14	0.8	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C
Arsenic	6.8		5.0	1.5	ug/L	DISS.	1.000	EPA 6010C	METHOD
Iron	1,300		100	20	ug/L	DISS.	1.000	EPA 6010C	METHOD
Manganese	4,200		5.0	1.0	ug/L	DISS.	1.000	EPA 6010C	METHOD

Client Sample ID : D1C85W07-121515 Laboratory Sample ID : 272485-003

Analyte	Result	Flags	LOQ	DL	Units	Basis	IDF	Method	Prep Method
Vinyl Chloride	0.4	J	1.0	0.2	ug/L	As Recd	2.000	EPA 8260C	EPA 5030C
cis-1,2-Dichloroethene	0.4	J	1.0	0.3	ug/L	As Recd	2.000	EPA 8260C	EPA 5030C
Chlorobenzene	2.7		1.0	0.3	ug/L	As Recd	2.000	EPA 8260C	EPA 5030C
1,3-Dichlorobenzene	4.2		1.0	0.3	ug/L	As Recd	2.000	EPA 8260C	EPA 5030C
1,4-Dichlorobenzene	20		1.0	0.2	ug/L	As Recd	2.000	EPA 8260C	EPA 5030C
1,2-Dichlorobenzene	2.1		1.0	0.2	ug/L	As Recd	2.000	EPA 8260C	EPA 5030C
Arsenic	4.6	J	5.0	1.5	ug/L	DISS.	1.000	EPA 6010C	METHOD
Iron	380		100	20	ug/L	DISS.	1.000	EPA 6010C	METHOD
Manganese	1,700		5.0	1.0	ug/L	DISS.	1.000	EPA 6010C	METHOD

Curtis & Tompkins, Ltd.

Client Sample ID : D1C85W07-121515X Laboratory Sample ID : 272485-004

Analyte	Result	Flags	LOQ	DL	Units	Basis	IDF	Method	Prep Method
Chlorobenzene	2.6		2.5	0.6	ug/L	As Recd	5.000	EPA 8260C	EPA 5030C
1,3-Dichlorobenzene	4.2		2.5	0.7	ug/L	As Recd	5.000	EPA 8260C	EPA 5030C
1,4-Dichlorobenzene	21		2.5	0.5	ug/L	As Recd	5.000	EPA 8260C	EPA 5030C
1,2-Dichlorobenzene	2.3	J	2.5	0.5	ug/L	As Recd	5.000	EPA 8260C	EPA 5030C
Arsenic	4.7	J	5.0	1.5	ug/L	DISS.	1.000	EPA 6010C	METHOD
Iron	250		100	20	ug/L	DISS.	1.000	EPA 6010C	METHOD
Manganese	1,700		5.0	1.0	ug/L	DISS.	1.000	EPA 6010C	METHOD

Client Sample ID : D1C85W02RA-121515 Laboratory Sample ID : 272485-005

Analyte	Result	Flags	LOQ	DL	Units	Basis	IDF	Method	Prep Method
cis-1,2-Dichloroethene	0.9	J	3.6	0.9	ug/L	As Recd	7.143	EPA 8260C	EPA 5030C

Client Sample ID : D1C85W03-121615 Laboratory Sample ID : 272485-006

No Detections

Client Sample ID : TB-121515 Laboratory Sample ID : 272485-007

No Detections

Client Sample ID : ER-121515 Laboratory Sample ID : 272485-008

No Detections

Client Sample ID : ER-121615 Laboratory Sample ID : 272485-009

No Detections

Client Sample ID : SB-121615 Laboratory Sample ID : 272485-010

No Detections

J = Estimated value

Laboratory Job Number 272485

ANALYTICAL REPORT

Volatile Organics by GC/MS

Matrix: Water

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W01R-121515	Diln Fac:	1.000
Lab ID:	272485-001	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
Freon 12	0.4 U	1.0	0.1	230759	12/29/15
Chloromethane	0.4 U	1.0	0.3	230541	12/18/15
Vinyl Chloride	0.2 J	0.5	0.1	230541	12/18/15
Bromomethane	0.4 U	1.0	0.2	230541	12/18/15
Chloroethane	0.4 U	1.0	0.3	230541	12/18/15
Trichlorofluoromethane	0.4 U	1.0	0.2	230541	12/18/15
Acetone	4.0 U	10	3.3	230541	12/18/15
Freon 113	0.2 U	2.0	0.1	230541	12/18/15
1,1-Dichloroethene	0.2 U	0.5	0.2	230541	12/18/15
Methylene Chloride	0.2 U	10	0.2	230541	12/18/15
Carbon Disulfide	0.2 U	0.5	0.1	230541	12/18/15
MTBE	0.2 U	0.5	0.1	230541	12/18/15
trans-1,2-Dichloroethene	0.2 U	0.5	0.2	230541	12/18/15
Vinyl Acetate	2.0 U	10	1.1	230541	12/18/15
1,1-Dichloroethane	0.2 U	0.5	0.2	230541	12/18/15
2-Butanone	2.0 U	10	0.5	230541	12/18/15
cis-1,2-Dichloroethene	0.2 U	0.5	0.1	230541	12/18/15
2,2-Dichloropropane	0.4 U	0.5	0.1	230541	12/18/15
Chloroform	0.2 U	0.5	0.1	230541	12/18/15
Bromochloromethane	0.2 U	0.5	0.1	230541	12/18/15
1,1,1-Trichloroethane	0.2 U	0.5	0.1	230541	12/18/15
1,1-Dichloropropene	0.2 U	0.5	0.1	230541	12/18/15
Carbon Tetrachloride	0.2 U	0.5	0.1	230541	12/18/15
1,2-Dichloroethane	0.2 U	0.5	0.1	230541	12/18/15
Benzene	0.2 U	0.5	0.1	230541	12/18/15
Trichloroethene	0.2 U	0.5	0.1	230541	12/18/15
1,2-Dichloropropane	0.2 U	0.5	0.1	230541	12/18/15
Bromodichloromethane	0.2 U	0.5	0.1	230541	12/18/15
Dibromomethane	0.2 U	0.5	0.1	230541	12/18/15
4-Methyl-2-Pentanone	2.0 U	10	0.7	230541	12/18/15
cis-1,3-Dichloropropene	0.2 U	0.5	0.1	230541	12/18/15
Toluene	0.2 U	0.5	0.1	230541	12/18/15
trans-1,3-Dichloropropene	0.2 U	0.5	0.1	230541	12/18/15
1,1,2-Trichloroethane	0.2 U	0.5	0.2	230541	12/18/15
2-Hexanone	2.0 U	10	0.5	230541	12/18/15
1,3-Dichloropropane	0.2 U	0.5	0.1	230541	12/18/15
Tetrachloroethene	0.2 U	0.5	0.1	230541	12/18/15
Dibromochloromethane	0.2 U	0.5	0.1	230541	12/18/15
1,2-Dibromoethane	0.2 U	0.5	0.1	230541	12/18/15
Chlorobenzene	0.2 U	0.5	0.1	230541	12/18/15
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1	230541	12/18/15
Ethylbenzene	0.2 U	0.5	0.1	230541	12/18/15
m,p-Xylenes	0.4 U	0.5	0.1	230541	12/18/15
o-Xylene	0.2 U	0.5	0.1	230541	12/18/15
Styrene	0.2 U	0.5	0.1	230541	12/18/15
Bromoform	0.2 U	1.0	0.1	230541	12/18/15
Isopropylbenzene	0.2 U	0.5	0.1	230541	12/18/15
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1	230541	12/18/15
1,2,3-Trichloropropane	0.2 U	0.5	0.2	230541	12/18/15
Propylbenzene	0.2 U	0.5	0.1	230541	12/18/15
Bromobenzene	0.2 U	0.5	0.1	230541	12/18/15
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1	230541	12/18/15

*= Value outside of QC limits; see narrative
J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W01R-121515	Diln Fac:	1.000
Lab ID:	272485-001	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
2-Chlorotoluene	0.2 U	0.5	0.1	230541	12/18/15
4-Chlorotoluene	0.2 U	0.5	0.1	230541	12/18/15
tert-Butylbenzene	0.2 U	0.5	0.1	230541	12/18/15
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1	230541	12/18/15
sec-Butylbenzene	0.2 U	0.5	0.1	230541	12/18/15
para-Isopropyl Toluene	0.2 U	0.5	0.1	230541	12/18/15
1,3-Dichlorobenzene	0.8	0.5	0.2	230759	12/29/15
1,4-Dichlorobenzene	11	0.5	0.1	230541	12/18/15
n-Butylbenzene	0.2 U	0.5	0.1	230541	12/18/15
1,2-Dichlorobenzene	0.2 J	0.5	0.1	230541	12/18/15
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3	230541	12/18/15
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1	230541	12/18/15
Hexachlorobutadiene	0.2 U	2.0	0.1	230541	12/18/15
Naphthalene	0.4 U	2.0	0.1	230541	12/18/15
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1	230541	12/18/15

Surrogate	%REC	Limits	Batch#	Analyzed
Dibromofluoromethane	104	85-115	230541	12/18/15
Dibromofluoromethane	116 *	85-115	230759	12/29/15
1,2-Dichloroethane-d4	125 *	70-120	230541	12/18/15
1,2-Dichloroethane-d4	105	70-120	230759	12/29/15
Toluene-d8	95	85-120	230541	12/18/15
Toluene-d8	92	85-120	230759	12/29/15
Bromofluorobenzene	99	75-120	230541	12/18/15
Bromofluorobenzene	101	75-120	230759	12/29/15

*= Value outside of QC limits; see narrative
J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Diln Fac:	7.143
Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
Freon 12	2.9 U	7.1	0.7	230541	12/19/15
Chloromethane	2.9 U	7.1	1.9	230541	12/19/15
Vinyl Chloride	20	3.6	0.7	230541	12/19/15
Bromomethane	2.9 U	7.1	1.3	230541	12/19/15
Chloroethane	2.9 U	7.1	1.9	230541	12/19/15
Trichlorofluoromethane	2.9 U	7.1	1.6	230541	12/19/15
Acetone	29 U	71	24	230541	12/19/15
Freon 113	1.4 U	14	0.9	230541	12/19/15
1,1-Dichloroethene	1.4 U	3.6	1.1	230541	12/19/15
Methylene Chloride	1.4 U	71	1.3	230541	12/19/15
Carbon Disulfide	1.4 U	3.6	0.7	230541	12/19/15
MTBE	1.4 U	3.6	0.8	230541	12/19/15
trans-1,2-Dichloroethene	4.9	3.6	1.1	230541	12/19/15
Vinyl Acetate	14 U	71	8.2	230541	12/19/15
1,1-Dichloroethane	1.4 U	3.6	1.1	230541	12/19/15
2-Butanone	14 U	71	3.6	230541	12/19/15
cis-1,2-Dichloroethene	3.6	3.6	0.9	230541	12/19/15
2,2-Dichloropropane	2.9 U	3.6	1.0	230541	12/19/15
Chloroform	1.4 U	3.6	0.7	230541	12/19/15
Bromochloromethane	1.4 U	3.6	1.0	230541	12/19/15
1,1,1-Trichloroethane	1.4 U	3.6	0.9	230541	12/19/15
1,1-Dichloropropene	1.4 U	3.6	0.9	230541	12/19/15
Carbon Tetrachloride	1.4 U	3.6	0.9	230541	12/19/15
1,2-Dichloroethane	1.4 U	3.6	0.8	230541	12/19/15
Benzene	1.1 J	3.6	0.7	230541	12/19/15
Trichloroethene	1.4 U	3.6	0.7	230541	12/19/15
1,2-Dichloropropane	1.4 U	3.6	1.0	230541	12/19/15
Bromodichloromethane	1.4 U	3.6	0.9	230541	12/19/15
Dibromomethane	1.4 U	3.6	1.0	230541	12/19/15
4-Methyl-2-Pentanone	14 U	71	4.7	230541	12/19/15
cis-1,3-Dichloropropene	1.4 U	3.6	0.8	230541	12/19/15
Toluene	0.9 J	3.6	0.7	230541	12/19/15
trans-1,3-Dichloropropene	1.4 U	3.6	1.0	230541	12/19/15
1,1,2-Trichloroethane	1.4 U	3.6	1.1	230541	12/19/15
2-Hexanone	14 U	71	3.6	230541	12/19/15
1,3-Dichloropropane	1.4 U	3.6	1.1	230541	12/19/15
Tetrachloroethene	1.4 U	3.6	0.7	230541	12/19/15
Dibromochloromethane	1.4 U	3.6	1.0	230541	12/19/15
1,2-Dibromoethane	1.4 U	3.6	1.0	230541	12/19/15
Chlorobenzene	24	3.6	0.9	230541	12/19/15
1,1,1,2-Tetrachloroethane	1.4 U	3.6	0.7	230541	12/19/15
Ethylbenzene	1.4 U	3.6	0.7	230541	12/19/15
m,p-Xylenes	2.9 U	3.6	1.0	230541	12/19/15
o-Xylene	2.2 J	3.6	0.7	230541	12/19/15
Styrene	1.4 U	3.6	0.7	230541	12/19/15
Bromoform	1.4 U	7.1	1.0	230541	12/19/15
Isopropylbenzene	0.9 J	3.6	0.7	230541	12/19/15
1,1,2,2-Tetrachloroethane	1.4 U	3.6	0.9	230541	12/19/15
1,2,3-Trichloropropane	1.4 U	3.6	1.1	230541	12/19/15
Propylbenzene	1.4 U	3.6	0.7	230541	12/19/15
Bromobenzene	1.4 U	3.6	0.8	230541	12/19/15
1,3,5-Trimethylbenzene	0.8 J	3.6	0.7	230541	12/19/15
2-Chlorotoluene	1.4 U	3.6	0.7	230541	12/19/15

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Diln Fac:	7.143
Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
4-Chlorotoluene	1.4 U	3.6	0.7	230541	12/19/15
tert-Butylbenzene	1.4 U	3.6	0.7	230541	12/19/15
1,2,4-Trimethylbenzene	4.3	3.6	0.7	230541	12/19/15
sec-Butylbenzene	0.9 J	3.6	0.7	230541	12/19/15
para-Isopropyl Toluene	1.4 U	3.6	0.7	230541	12/19/15
1,3-Dichlorobenzene	6.8	3.6	1.0	230760	12/29/15
1,4-Dichlorobenzene	34	3.6	0.7	230541	12/19/15
n-Butylbenzene	1.4 U	3.6	0.7	230541	12/19/15
1,2-Dichlorobenzene	8.4	3.6	0.7	230541	12/19/15
1,2-Dibromo-3-Chloropropane	7.1 U	14	1.8	230541	12/19/15
1,2,4-Trichlorobenzene	1.4 U	3.6	0.9	230541	12/19/15
Hexachlorobutadiene	1.4 U	14	1.0	230541	12/19/15
Naphthalene	2.4 J	14	0.8	230541	12/19/15
1,2,3-Trichlorobenzene	1.4 U	3.6	1.0	230541	12/19/15

Surrogate	%REC	Limits	Batch#	Analyzed
Dibromofluoromethane	101	85-115	230541	12/19/15
Dibromofluoromethane	100	85-115	230760	12/29/15
1,2-Dichloroethane-d4	111	70-120	230541	12/19/15
1,2-Dichloroethane-d4	91	70-120	230760	12/29/15
Toluene-d8	96	85-120	230541	12/19/15
Toluene-d8	101	85-120	230760	12/29/15
Bromofluorobenzene	94	75-120	230541	12/19/15
Bromofluorobenzene	115	75-120	230760	12/29/15

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W07-121515	Diln Fac:	2.000
Lab ID:	272485-003	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
Freon 12	0.8 U	2.0	0.2	230541	12/19/15
Chloromethane	0.8 U	2.0	0.5	230541	12/19/15
Vinyl Chloride	0.4 J	1.0	0.2	230541	12/19/15
Bromomethane	0.8 U	2.0	0.4	230541	12/19/15
Chloroethane	0.8 U	2.0	0.5	230541	12/19/15
Trichlorofluoromethane	0.8 U	2.0	0.5	230541	12/19/15
Acetone	8.0 U	20	6.6	230541	12/19/15
Freon 113	0.4 U	4.0	0.3	230541	12/19/15
1,1-Dichloroethene	0.4 U	1.0	0.3	230541	12/19/15
Methylene Chloride	0.4 U	20	0.4	230541	12/19/15
Carbon Disulfide	0.4 U	1.0	0.2	230541	12/19/15
MTBE	0.4 U	1.0	0.2	230541	12/19/15
trans-1,2-Dichloroethene	0.4 U	1.0	0.3	230541	12/19/15
Vinyl Acetate	4.0 U	20	2.3	230541	12/19/15
1,1-Dichloroethane	0.4 U	1.0	0.3	230541	12/19/15
2-Butanone	4.0 U	20	1.0	230541	12/19/15
cis-1,2-Dichloroethene	0.4 J	1.0	0.3	230541	12/19/15
2,2-Dichloropropane	0.8 U	1.0	0.3	230541	12/19/15
Chloroform	0.4 U	1.0	0.2	230541	12/19/15
Bromochloromethane	0.4 U	1.0	0.3	230541	12/19/15
1,1,1-Trichloroethane	0.4 U	1.0	0.3	230541	12/19/15
1,1-Dichloropropene	0.4 U	1.0	0.3	230541	12/19/15
Carbon Tetrachloride	0.4 U	1.0	0.2	230541	12/19/15
1,2-Dichloroethane	0.4 U	1.0	0.2	230541	12/19/15
Benzene	0.4 U	1.0	0.2	230541	12/19/15
Trichloroethene	0.4 U	1.0	0.2	230541	12/19/15
1,2-Dichloropropane	0.4 U	1.0	0.3	230541	12/19/15
Bromodichloromethane	0.4 U	1.0	0.2	230541	12/19/15
Dibromomethane	0.4 U	1.0	0.3	230541	12/19/15
4-Methyl-2-Pentanone	4.0 U	20	1.3	230541	12/19/15
cis-1,3-Dichloropropene	0.4 U	1.0	0.2	230541	12/19/15
Toluene	0.4 U	1.0	0.2	230541	12/19/15
trans-1,3-Dichloropropene	0.4 U	1.0	0.3	230541	12/19/15
1,1,2-Trichloroethane	0.4 U	1.0	0.3	230541	12/19/15
2-Hexanone	4.0 U	20	1.0	230541	12/19/15
1,3-Dichloropropane	0.4 U	1.0	0.3	230541	12/19/15
Tetrachloroethene	0.4 U	1.0	0.2	230541	12/19/15
Dibromochloromethane	0.4 U	1.0	0.3	230541	12/19/15
1,2-Dibromoethane	0.4 U	1.0	0.3	230541	12/19/15
Chlorobenzene	2.7	1.0	0.3	230541	12/19/15
1,1,1,2-Tetrachloroethane	0.4 U	1.0	0.2	230541	12/19/15
Ethylbenzene	0.4 U	1.0	0.2	230541	12/19/15
m,p-Xylenes	0.8 U	1.0	0.3	230541	12/19/15
o-Xylene	0.4 U	1.0	0.2	230541	12/19/15
Styrene	0.4 U	1.0	0.2	230541	12/19/15
Bromoform	0.4 U	2.0	0.3	230541	12/19/15
Isopropylbenzene	0.4 U	1.0	0.2	230541	12/19/15
1,1,2,2-Tetrachloroethane	0.4 U	1.0	0.2	230541	12/19/15
1,2,3-Trichloropropane	0.4 U	1.0	0.3	230541	12/19/15
Propylbenzene	0.4 U	1.0	0.2	230541	12/19/15
Bromobenzene	0.4 U	1.0	0.2	230541	12/19/15
1,3,5-Trimethylbenzene	0.4 U	1.0	0.2	230541	12/19/15
2-Chlorotoluene	0.4 U	1.0	0.2	230541	12/19/15

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W07-121515	Diln Fac:	2.000
Lab ID:	272485-003	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
4-Chlorotoluene	0.4 U	1.0	0.2	230541	12/19/15
tert-Butylbenzene	0.4 U	1.0	0.2	230541	12/19/15
1,2,4-Trimethylbenzene	0.4 U	1.0	0.2	230541	12/19/15
sec-Butylbenzene	0.4 U	1.0	0.2	230541	12/19/15
para-Isopropyl Toluene	0.4 U	1.0	0.2	230541	12/19/15
1,3-Dichlorobenzene	4.2	1.0	0.3	230760	12/29/15
1,4-Dichlorobenzene	20	1.0	0.2	230541	12/19/15
n-Butylbenzene	0.4 U	1.0	0.2	230541	12/19/15
1,2-Dichlorobenzene	2.1	1.0	0.2	230541	12/19/15
1,2-Dibromo-3-Chloropropane	2.0 U	4.0	0.5	230541	12/19/15
1,2,4-Trichlorobenzene	0.4 U	1.0	0.3	230541	12/19/15
Hexachlorobutadiene	0.4 U	4.0	0.3	230541	12/19/15
Naphthalene	0.8 U	4.0	0.2	230541	12/19/15
1,2,3-Trichlorobenzene	0.4 U	1.0	0.3	230541	12/19/15

Surrogate	%REC	Limits	Batch#	Analyzed
Dibromofluoromethane	99	85-115	230541	12/19/15
Dibromofluoromethane	101	85-115	230760	12/29/15
1,2-Dichloroethane-d4	115	70-120	230541	12/19/15
1,2-Dichloroethane-d4	92	70-120	230760	12/29/15
Toluene-d8	96	85-120	230541	12/19/15
Toluene-d8	101	85-120	230760	12/29/15
Bromofluorobenzene	93	75-120	230541	12/19/15
Bromofluorobenzene	116	75-120	230760	12/29/15

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W07-121515X	Diln Fac:	5.000
Lab ID:	272485-004	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
Freon 12	2.0 U	5.0	0.5	230541	12/19/15
Chloromethane	2.0 U	5.0	1.4	230541	12/19/15
Vinyl Chloride	1.0 U	2.5	0.5	230541	12/19/15
Bromomethane	2.0 U	5.0	0.9	230541	12/19/15
Chloroethane	2.0 U	5.0	1.3	230541	12/19/15
Trichlorofluoromethane	2.0 U	5.0	1.1	230541	12/19/15
Acetone	20 U	50	17	230541	12/19/15
Freon 113	1.0 U	10	0.7	230541	12/19/15
1,1-Dichloroethene	1.0 U	2.5	0.8	230541	12/19/15
Methylene Chloride	1.0 U	50	0.9	230541	12/19/15
Carbon Disulfide	1.0 U	2.5	0.5	230541	12/19/15
MTBE	1.0 U	2.5	0.6	230541	12/19/15
trans-1,2-Dichloroethene	1.0 U	2.5	0.8	230541	12/19/15
Vinyl Acetate	10 U	50	5.7	230541	12/19/15
1,1-Dichloroethane	1.0 U	2.5	0.8	230541	12/19/15
2-Butanone	10 U	50	2.5	230541	12/19/15
cis-1,2-Dichloroethene	1.0 U	2.5	0.6	230541	12/19/15
2,2-Dichloropropane	2.0 U	2.5	0.7	230541	12/19/15
Chloroform	1.0 U	2.5	0.5	230541	12/19/15
Bromochloromethane	1.0 U	2.5	0.7	230541	12/19/15
1,1,1-Trichloroethane	1.0 U	2.5	0.6	230541	12/19/15
1,1-Dichloropropene	1.0 U	2.5	0.6	230541	12/19/15
Carbon Tetrachloride	1.0 U	2.5	0.6	230541	12/19/15
1,2-Dichloroethane	1.0 U	2.5	0.5	230541	12/19/15
Benzene	1.0 U	2.5	0.5	230541	12/19/15
Trichloroethene	1.0 U	2.5	0.5	230541	12/19/15
1,2-Dichloropropane	1.0 U	2.5	0.7	230541	12/19/15
Bromodichloromethane	1.0 U	2.5	0.6	230541	12/19/15
Dibromomethane	1.0 U	2.5	0.7	230541	12/19/15
4-Methyl-2-Pentanone	10 U	50	3.3	230541	12/19/15
cis-1,3-Dichloropropene	1.0 U	2.5	0.5	230541	12/19/15
Toluene	1.0 U	2.5	0.5	230541	12/19/15
trans-1,3-Dichloropropene	1.0 U	2.5	0.7	230541	12/19/15
1,1,2-Trichloroethane	1.0 U	2.5	0.8	230541	12/19/15
2-Hexanone	10 U	50	2.5	230541	12/19/15
1,3-Dichloropropane	1.0 U	2.5	0.7	230541	12/19/15
Tetrachloroethene	1.0 U	2.5	0.5	230541	12/19/15
Dibromochloromethane	1.0 U	2.5	0.7	230541	12/19/15
1,2-Dibromoethane	1.0 U	2.5	0.7	230541	12/19/15
Chlorobenzene	2.6	2.5	0.6	230541	12/19/15
1,1,1,2-Tetrachloroethane	1.0 U	2.5	0.5	230541	12/19/15
Ethylbenzene	1.0 U	2.5	0.5	230541	12/19/15
m,p-Xylenes	2.0 U	2.5	0.7	230541	12/19/15
o-Xylene	1.0 U	2.5	0.5	230541	12/19/15
Styrene	1.0 U	2.5	0.5	230541	12/19/15
Bromoform	1.0 U	5.0	0.7	230541	12/19/15
Isopropylbenzene	1.0 U	2.5	0.5	230541	12/19/15
1,1,2,2-Tetrachloroethane	1.0 U	2.5	0.6	230541	12/19/15
1,2,3-Trichloropropane	1.0 U	2.5	0.8	230541	12/19/15
Propylbenzene	1.0 U	2.5	0.5	230541	12/19/15
Bromobenzene	1.0 U	2.5	0.5	230541	12/19/15
1,3,5-Trimethylbenzene	1.0 U	2.5	0.5	230541	12/19/15
2-Chlorotoluene	1.0 U	2.5	0.5	230541	12/19/15

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W07-121515X	Diln Fac:	5.000
Lab ID:	272485-004	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L		

Analyte	Result	LOQ	DL	Batch#	Analyzed
4-Chlorotoluene	1.0 U	2.5	0.5	230541	12/19/15
tert-Butylbenzene	1.0 U	2.5	0.5	230541	12/19/15
1,2,4-Trimethylbenzene	1.0 U	2.5	0.5	230541	12/19/15
sec-Butylbenzene	1.0 U	2.5	0.5	230541	12/19/15
para-Isopropyl Toluene	1.0 U	2.5	0.5	230541	12/19/15
1,3-Dichlorobenzene	4.2	2.5	0.7	230760	12/29/15
1,4-Dichlorobenzene	21	2.5	0.5	230541	12/19/15
n-Butylbenzene	1.0 U	2.5	0.5	230541	12/19/15
1,2-Dichlorobenzene	2.3 J	2.5	0.5	230541	12/19/15
1,2-Dibromo-3-Chloropropane	5.0 U	10	1.3	230541	12/19/15
1,2,4-Trichlorobenzene	1.0 U	2.5	0.7	230541	12/19/15
Hexachlorobutadiene	1.0 U	10	0.7	230541	12/19/15
Naphthalene	2.0 U	10	0.5	230541	12/19/15
1,2,3-Trichlorobenzene	1.0 U	2.5	0.7	230541	12/19/15

Surrogate	%REC	Limits	Batch#	Analyzed
Dibromofluoromethane	101	85-115	230541	12/19/15
Dibromofluoromethane	98	85-115	230760	12/29/15
1,2-Dichloroethane-d4	115	70-120	230541	12/19/15
1,2-Dichloroethane-d4	93	70-120	230760	12/29/15
Toluene-d8	93	85-120	230541	12/19/15
Toluene-d8	101	85-120	230760	12/29/15
Bromofluorobenzene	96	75-120	230541	12/19/15
Bromofluorobenzene	116	75-120	230760	12/29/15

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W02RA-121515	Batch#:	230541
Lab ID:	272485-005	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Analyte	Result	LOQ	DL
Freon 12	2.9 U	7.1	0.7
Chloromethane	2.9 U	7.1	1.9
Vinyl Chloride	1.4 U	3.6	0.7
Bromomethane	2.9 U	7.1	1.3
Chloroethane	2.9 U	7.1	1.9
Trichlorofluoromethane	2.9 U	7.1	1.6
Acetone	29 U	71	24
Freon 113	1.4 U	14	0.9
1,1-Dichloroethene	1.4 U	3.6	1.1
Methylene Chloride	1.4 U	71	1.3
Carbon Disulfide	1.4 U	3.6	0.7
MTBE	1.4 U	3.6	0.8
trans-1,2-Dichloroethene	1.4 U	3.6	1.1
Vinyl Acetate	14 U	71	8.2
1,1-Dichloroethane	1.4 U	3.6	1.1
2-Butanone	14 U	71	3.6
cis-1,2-Dichloroethene	0.9 J	3.6	0.9
2,2-Dichloropropane	2.9 U	3.6	1.0
Chloroform	1.4 U	3.6	0.7
Bromochloromethane	1.4 U	3.6	1.0
1,1,1-Trichloroethane	1.4 U	3.6	0.9
1,1-Dichloropropene	1.4 U	3.6	0.9
Carbon Tetrachloride	1.4 U	3.6	0.9
1,2-Dichloroethane	1.4 U	3.6	0.8
Benzene	1.4 U	3.6	0.7
Trichloroethene	1.4 U	3.6	0.7
1,2-Dichloropropane	1.4 U	3.6	1.0
Bromodichloromethane	1.4 U	3.6	0.9
Dibromomethane	1.4 U	3.6	1.0
4-Methyl-2-Pentanone	14 U	71	4.7
cis-1,3-Dichloropropene	1.4 U	3.6	0.8
Toluene	1.4 U	3.6	0.7
trans-1,3-Dichloropropene	1.4 U	3.6	1.0
1,1,2-Trichloroethane	1.4 U	3.6	1.1
2-Hexanone	14 U	71	3.6
1,3-Dichloropropane	1.4 U	3.6	1.1
Tetrachloroethene	1.4 U	3.6	0.7
Dibromochloromethane	1.4 U	3.6	1.0
1,2-Dibromoethane	1.4 U	3.6	1.0
Chlorobenzene	1.4 U	3.6	0.9
1,1,1,2-Tetrachloroethane	1.4 U	3.6	0.7
Ethylbenzene	1.4 U	3.6	0.7
m,p-Xylenes	2.9 U	3.6	1.0
o-Xylene	1.4 U	3.6	0.7
Styrene	1.4 U	3.6	0.7
Bromoform	1.4 U	7.1	1.0
Isopropylbenzene	1.4 U	3.6	0.7
1,1,2,2-Tetrachloroethane	1.4 U	3.6	0.9
1,2,3-Trichloropropane	1.4 U	3.6	1.1
Propylbenzene	1.4 U	3.6	0.7
Bromobenzene	1.4 U	3.6	0.8
1,3,5-Trimethylbenzene	1.4 U	3.6	0.7

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W02RA-121515	Batch#:	230541
Lab ID:	272485-005	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Analyte	Result	LOQ	DL
2-Chlorotoluene	1.4 U	3.6	0.7
4-Chlorotoluene	1.4 U	3.6	0.7
tert-Butylbenzene	1.4 U	3.6	0.7
1,2,4-Trimethylbenzene	1.4 U	3.6	0.7
sec-Butylbenzene	1.4 U	3.6	0.7
para-Isopropyl Toluene	1.4 U	3.6	0.7
1,3-Dichlorobenzene	1.4 U	3.6	0.8
1,4-Dichlorobenzene	1.4 U	3.6	0.7
n-Butylbenzene	1.4 U	3.6	0.7
1,2-Dichlorobenzene	1.4 U	3.6	0.7
1,2-Dibromo-3-Chloropropane	7.1 U	14	1.8
1,2,4-Trichlorobenzene	1.4 U	3.6	0.9
Hexachlorobutadiene	1.4 U	14	1.0
Naphthalene	2.9 U	14	0.8
1,2,3-Trichlorobenzene	1.4 U	3.6	1.0

Surrogate	%REC	Limits
Dibromofluoromethane	101	85-115
1,2-Dichloroethane-d4	113	70-120
Toluene-d8	96	85-120
Bromofluorobenzene	91	75-120

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W03-121615	Batch#:	230360
Lab ID:	272485-006	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	5.000		

Analyte	Result	LOQ	DL
Freon 12	2.0 U	5.0	0.5
Chloromethane	2.0 U	5.0	1.4
Vinyl Chloride	1.0 U	2.5	0.5
Bromomethane	2.0 U	5.0	0.9
Chloroethane	2.0 U	5.0	1.3
Trichlorofluoromethane	2.0 U	5.0	1.1
Acetone	20 U	50	17
Freon 113	1.0 U	10	0.7
1,1-Dichloroethene	1.0 U	2.5	0.8
Methylene Chloride	1.0 U	50	0.9
Carbon Disulfide	1.0 U	2.5	0.5
MTBE	1.0 U	2.5	0.6
trans-1,2-Dichloroethene	1.0 U	2.5	0.8
Vinyl Acetate	10 U	50	5.7
1,1-Dichloroethane	1.0 U	2.5	0.8
2-Butanone	10 U	50	2.5
cis-1,2-Dichloroethene	1.0 U	2.5	0.6
2,2-Dichloropropane	2.0 U	2.5	0.7
Chloroform	1.0 U	2.5	0.5
Bromochloromethane	1.0 U	2.5	0.7
1,1,1-Trichloroethane	1.0 U	2.5	0.6
1,1-Dichloropropene	1.0 U	2.5	0.6
Carbon Tetrachloride	1.0 U	2.5	0.6
1,2-Dichloroethane	1.0 U	2.5	0.5
Benzene	1.0 U	2.5	0.5
Trichloroethene	1.0 U	2.5	0.5
1,2-Dichloropropane	1.0 U	2.5	0.7
Bromodichloromethane	1.0 U	2.5	0.6
Dibromomethane	1.0 U	2.5	0.7
4-Methyl-2-Pentanone	10 U	50	3.3
cis-1,3-Dichloropropene	1.0 U	2.5	0.5
Toluene	1.0 U	2.5	0.5
trans-1,3-Dichloropropene	1.0 U	2.5	0.7
1,1,2-Trichloroethane	1.0 U	2.5	0.8
2-Hexanone	10 U	50	2.5
1,3-Dichloropropane	1.0 U	2.5	0.7
Tetrachloroethene	1.0 U	2.5	0.5
Dibromochloromethane	1.0 U	2.5	0.7
1,2-Dibromoethane	1.0 U	2.5	0.7
Chlorobenzene	1.0 U	2.5	0.6
1,1,1,2-Tetrachloroethane	1.0 U	2.5	0.5
Ethylbenzene	1.0 U	2.5	0.5
m,p-Xylenes	2.0 U	2.5	0.7
o-Xylene	1.0 U	2.5	0.5
Styrene	1.0 U	2.5	0.5
Bromoform	1.0 U	5.0	0.7
Isopropylbenzene	1.0 U	2.5	0.5
1,1,2,2-Tetrachloroethane	1.0 U	2.5	0.6
1,2,3-Trichloropropane	1.0 U	2.5	0.8
Propylbenzene	1.0 U	2.5	0.5
Bromobenzene	1.0 U	2.5	0.5
1,3,5-Trimethylbenzene	1.0 U	2.5	0.5
2-Chlorotoluene	1.0 U	2.5	0.5

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W03-121615	Batch#:	230360
Lab ID:	272485-006	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	5.000		

Analyte	Result	LOQ	DL
4-Chlorotoluene	1.0 U	2.5	0.5
tert-Butylbenzene	1.0 U	2.5	0.5
1,2,4-Trimethylbenzene	1.0 U	2.5	0.5
sec-Butylbenzene	1.0 U	2.5	0.5
para-Isopropyl Toluene	1.0 U	2.5	0.5
1,3-Dichlorobenzene	1.0 U	2.5	0.6
1,4-Dichlorobenzene	1.0 U	2.5	0.5
n-Butylbenzene	1.0 U	2.5	0.5
1,2-Dichlorobenzene	1.0 U	2.5	0.5
1,2-Dibromo-3-Chloropropane	5.0 U	10	1.3
1,2,4-Trichlorobenzene	1.0 U	2.5	0.7
Hexachlorobutadiene	1.0 U	10	0.7
Naphthalene	2.0 U	10	0.5
1,2,3-Trichlorobenzene	1.0 U	2.5	0.7

Surrogate	%REC	Limits
Dibromofluoromethane	101	85-115
1,2-Dichloroethane-d4	118	70-120
Toluene-d8	100	85-120
Bromofluorobenzene	101	75-120

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	TB-121515	Batch#:	230360
Lab ID:	272485-007	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
Freon 12	0.4 U	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1
2-Chlorotoluene	0.2 U	0.5	0.1

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	TB-121515	Batch#:	230360
Lab ID:	272485-007	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	104	85-115
1,2-Dichloroethane-d4	115	70-120
Toluene-d8	96	85-120
Bromofluorobenzene	96	75-120

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	ER-121515	Batch#:	230360
Lab ID:	272485-008	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
Freon 12	0.4 U	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1
2-Chlorotoluene	0.2 U	0.5	0.1

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	ER-121515	Batch#:	230360
Lab ID:	272485-008	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	100	85-115
1,2-Dichloroethane-d4	115	70-120
Toluene-d8	101	85-120
Bromofluorobenzene	96	75-120

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	ER-121615	Batch#:	230360
Lab ID:	272485-009	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
Freon 12	0.4 U	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1
2-Chlorotoluene	0.2 U	0.5	0.1

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	ER-121615	Batch#:	230360
Lab ID:	272485-009	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	102	85-115
1,2-Dichloroethane-d4	114	70-120
Toluene-d8	97	85-120
Bromofluorobenzene	98	75-120

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	SB-121615	Batch#:	230360
Lab ID:	272485-010	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
Freon 12	0.4 U	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1

*= Value outside of QC limits; see narrative
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	SB-121615	Batch#:	230360
Lab ID:	272485-010	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
2-Chlorotoluene	0.2 U	0.5	0.1
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	101	85-115
1,2-Dichloroethane-d4	122 *	70-120
Toluene-d8	101	85-120
Bromofluorobenzene	101	75-120

*= Value outside of QC limits; see narrative
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230360
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Type: BS Lab ID: QC816587

Analyte	Spiked	Result	%REC	Limits
Freon 12	10.00	6.545 b	65	30-155
Chloromethane	10.00	11.04	110	40-125
Vinyl Chloride	10.00	11.72	117	50-145
Bromomethane	10.00	16.31 b	163 *	30-145
Chloroethane	10.00	10.66	107	60-135
Trichlorofluoromethane	10.00	10.43	104	60-145
Acetone	12.50	14.24	114	40-140
Freon 113	12.50	12.21	98	61-138
1,1-Dichloroethene	12.50	13.74	110	70-130
Methylene Chloride	12.50	15.57	125	55-140
Carbon Disulfide	12.50	14.47	116	35-160
MTBE	12.50	13.82	111	65-125
trans-1,2-Dichloroethene	12.50	14.12	113	60-140
Vinyl Acetate	12.50	13.44	108	60-194
1,1-Dichloroethane	12.50	14.53	116	70-135
2-Butanone	12.50	13.06	104	30-150
cis-1,2-Dichloroethene	12.50	15.07	121	70-125
2,2-Dichloropropane	12.50	17.85 b	143 *	70-135
Chloroform	12.50	14.86	119	65-135
Bromochloromethane	12.50	13.54	108	65-130
1,1,1-Trichloroethane	12.50	15.54	124	65-130
1,1-Dichloropropene	12.50	13.29	106	75-130
Carbon Tetrachloride	12.50	14.62	117	65-140
1,2-Dichloroethane	12.50	14.70	118	70-130
Benzene	12.50	14.67	117	80-120
Trichloroethene	12.50	14.22	114	70-125
1,2-Dichloropropane	12.50	14.17	113	75-125
Bromodichloromethane	12.50	15.08	121 *	75-120
Dibromomethane	12.50	13.21	106	75-125
4-Methyl-2-Pentanone	12.50	11.19	89	60-135
cis-1,3-Dichloropropene	12.50	16.17	129	70-130
Toluene	12.50	13.12	105	75-120
trans-1,3-Dichloropropene	12.50	13.64	109	55-140
1,1,2-Trichloroethane	12.50	12.08	97	75-125
2-Hexanone	12.50	11.96	96	55-130
1,3-Dichloropropane	12.50	12.97	104	75-125
Tetrachloroethene	12.50	13.16	105	45-150
Dibromochloromethane	12.50	11.71	94	60-135
1,2-Dibromoethane	12.50	11.36	91	80-120
Chlorobenzene	12.50	13.73	110	80-120
1,1,1,2-Tetrachloroethane	12.50	12.63	101	80-130
Ethylbenzene	12.50	12.94	104	75-125
m,p-Xylenes	25.00	28.65	115	75-130
o-Xylene	12.50	13.31	107	80-120
Styrene	12.50	13.77	110	65-135
Bromoform	12.50	11.58	93	70-130
Isopropylbenzene	12.50	14.48	116	75-125
1,1,2,2-Tetrachloroethane	12.50	12.03	96	65-130
1,2,3-Trichloropropane	12.50	11.54	92	75-125
Propylbenzene	12.50	13.42	107	70-130

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230360
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits
Bromobenzene	12.50	13.85	111	75-125
1,3,5-Trimethylbenzene	12.50	14.60	117	75-130
2-Chlorotoluene	12.50	14.56	117	75-125
4-Chlorotoluene	12.50	14.88	119	75-130
tert-Butylbenzene	12.50	13.76	110	70-130
1,2,4-Trimethylbenzene	12.50	14.26	114	75-130
sec-Butylbenzene	12.50	13.55	108	70-125
para-Isopropyl Toluene	12.50	14.65	117	75-130
1,3-Dichlorobenzene	12.50	14.80	118	75-125
1,4-Dichlorobenzene	12.50	14.59	117	75-125
n-Butylbenzene	12.50	14.95	120	70-135
1,2-Dichlorobenzene	12.50	14.39	115	70-120
1,2-Dibromo-3-Chloropropane	12.50	11.19	90	50-130
1,2,4-Trichlorobenzene	12.50	13.41	107	65-135
Hexachlorobutadiene	12.50	14.68	117	50-140
Naphthalene	12.50	10.97	88	55-140
1,2,3-Trichlorobenzene	12.50	12.51	100	55-140

Surrogate	%REC	Limits
Dibromofluoromethane	103	85-115
1,2-Dichloroethane-d4	112	70-120
Toluene-d8	95	85-120
Bromofluorobenzene	102	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230360
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Type: BSD Lab ID: QC816588

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Freon 12	10.00	6.693 b	67	30-155	2	30
Chloromethane	10.00	11.45	115	40-125	4	30
Vinyl Chloride	10.00	12.45	124	50-145	6	30
Bromomethane	10.00	17.21 b	172 *	30-145	5	30
Chloroethane	10.00	11.76	118	60-135	10	30
Trichlorofluoromethane	10.00	11.01	110	60-145	5	30
Acetone	12.50	13.43	107	40-140	6	30
Freon 113	12.50	12.98	104	61-138	6	30
1,1-Dichloroethene	12.50	14.57	117	70-130	6	30
Methylene Chloride	12.50	16.30	130	55-140	5	30
Carbon Disulfide	12.50	16.32	131	35-160	12	30
MTBE	12.50	12.65	101	65-125	9	30
trans-1,2-Dichloroethene	12.50	14.28	114	60-140	1	30
Vinyl Acetate	12.50	13.77	110	60-194	2	30
1,1-Dichloroethane	12.50	15.13	121	70-135	4	30
2-Butanone	12.50	12.76	102	30-150	2	30
cis-1,2-Dichloroethene	12.50	15.98	128 *	70-125	6	30
2,2-Dichloropropane	12.50	18.10 b	145 *	70-135	1	30
Chloroform	12.50	16.10	129	65-135	8	30
Bromochloromethane	12.50	14.32	115	65-130	6	30
1,1,1-Trichloroethane	12.50	15.77	126	65-130	1	30
1,1-Dichloropropene	12.50	13.06	104	75-130	2	30
Carbon Tetrachloride	12.50	14.45	116	65-140	1	30
1,2-Dichloroethane	12.50	15.42	123	70-130	5	30
Benzene	12.50	14.99	120	80-120	2	30
Trichloroethene	12.50	14.69	118	70-125	3	30
1,2-Dichloropropane	12.50	14.86	119	75-125	5	30
Bromodichloromethane	12.50	15.46	124 *	75-120	2	30
Dibromomethane	12.50	13.19	106	75-125	0	30
4-Methyl-2-Pentanone	12.50	10.82	87	60-135	3	30
cis-1,3-Dichloropropene	12.50	16.68	133 *	70-130	3	30
Toluene	12.50	13.22	106	75-120	1	30
trans-1,3-Dichloropropene	12.50	13.33	107	55-140	2	30
1,1,2-Trichloroethane	12.50	11.78	94	75-125	3	30
2-Hexanone	12.50	10.44	84	55-130	14	30
1,3-Dichloropropane	12.50	12.43	99	75-125	4	30
Tetrachloroethene	12.50	13.03	104	45-150	1	30
Dibromochloromethane	12.50	11.64	93	60-135	1	30
1,2-Dibromoethane	12.50	11.18	89	80-120	2	30
Chlorobenzene	12.50	13.91	111	80-120	1	30
1,1,1,2-Tetrachloroethane	12.50	12.41	99	80-130	2	30
Ethylbenzene	12.50	13.58	109	75-125	5	30
m,p-Xylenes	25.00	28.36	113	75-130	1	30
o-Xylene	12.50	13.75	110	80-120	3	30
Styrene	12.50	13.68	109	65-135	1	30
Bromoform	12.50	11.15	89	70-130	4	30
Isopropylbenzene	12.50	13.78	110	75-125	5	30
1,1,2,2-Tetrachloroethane	12.50	11.34	91	65-130	6	30
1,2,3-Trichloropropane	12.50	10.81	87	75-125	6	30
Propylbenzene	12.50	13.59	109	70-130	1	30

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230360
Units:	ug/L	Analyzed:	12/17/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Bromobenzene	12.50	13.89	111	75-125	0	30
1,3,5-Trimethylbenzene	12.50	14.12	113	75-130	3	30
2-Chlorotoluene	12.50	14.44	116	75-125	1	30
4-Chlorotoluene	12.50	14.54	116	75-130	2	30
tert-Butylbenzene	12.50	14.25	114	70-130	4	30
1,2,4-Trimethylbenzene	12.50	14.25	114	75-130	0	30
sec-Butylbenzene	12.50	13.40	107	70-125	1	30
para-Isopropyl Toluene	12.50	14.54	116	75-130	1	30
1,3-Dichlorobenzene	12.50	14.64	117	75-125	1	30
1,4-Dichlorobenzene	12.50	14.60	117	75-125	0	30
n-Butylbenzene	12.50	14.20	114	70-135	5	30
1,2-Dichlorobenzene	12.50	13.65	109	70-120	5	30
1,2-Dibromo-3-Chloropropane	12.50	10.24	82	50-130	9	30
1,2,4-Trichlorobenzene	12.50	13.25	106	65-135	1	30
Hexachlorobutadiene	12.50	13.77	110	50-140	6	30
Naphthalene	12.50	9.369	75	55-140	16	30
1,2,3-Trichlorobenzene	12.50	11.61	93	55-140	7	30

Surrogate	%REC	Limits
Dibromofluoromethane	105	85-115
1,2-Dichloroethane-d4	110	70-120
Toluene-d8	97	85-120
Bromofluorobenzene	99	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC816589	Batch#:	230360
Matrix:	Water	Analyzed:	12/17/15
Units:	ug/L		

Analyte	Result	LOQ	DL
Freon 12	0.4 U b	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC816589	Batch#:	230360
Matrix:	Water	Analyzed:	12/17/15
Units:	ug/L		

Analyte	Result	LOQ	DL
2-Chlorotoluene	0.2 U	0.5	0.1
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	101	85-115
1,2-Dichloroethane-d4	111	70-120
Toluene-d8	98	85-120
Bromofluorobenzene	103	75-120

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Type: BS Lab ID: QC817288

Analyte	Spiked	Result	%REC	Limits
Freon 12	10.00	8.708 b	87	30-155
Chloromethane	10.00	11.19	112	40-125
Vinyl Chloride	10.00	12.40	124	50-145
Bromomethane	10.00	18.23 b	182 *	30-145
Chloroethane	10.00	11.30	113	60-135
Trichlorofluoromethane	10.00	11.86	119	60-145
Acetone	12.50	14.66	117	40-140
Freon 113	12.50	13.36	107	61-138
1,1-Dichloroethene	12.50	14.83	119	70-130
Methylene Chloride	12.50	15.28	122	55-140
Carbon Disulfide	12.50	16.08	129	35-160
MTBE	12.50	14.46	116	65-125
trans-1,2-Dichloroethene	12.50	13.99	112	60-140
Vinyl Acetate	12.50	14.33	115	60-194
1,1-Dichloroethane	12.50	14.75	118	70-135
2-Butanone	12.50	13.58	109	30-150
cis-1,2-Dichloroethene	12.50	15.44	123	70-125
2,2-Dichloropropane	12.50	17.77 b	142 *	70-135
Chloroform	12.50	15.54	124	65-135
Bromochloromethane	12.50	13.92	111	65-130
1,1,1-Trichloroethane	12.50	16.48	132 *	65-130
1,1-Dichloropropene	12.50	13.42	107	75-130
Carbon Tetrachloride	12.50	15.20	122	65-140
1,2-Dichloroethane	12.50	15.87 b	127	70-130
Benzene	12.50	14.70	118	80-120
Trichloroethene	12.50	14.52	116	70-125
1,2-Dichloropropane	12.50	14.97	120	75-125
Bromodichloromethane	12.50	15.39	123 *	75-120
Dibromomethane	12.50	13.99	112	75-125
4-Methyl-2-Pentanone	12.50	12.52	100	60-135
cis-1,3-Dichloropropene	12.50	16.18 b	129	70-130
Toluene	12.50	13.27	106	75-120
trans-1,3-Dichloropropene	12.50	13.96	112	55-140
1,1,2-Trichloroethane	12.50	12.43	99	75-125
2-Hexanone	12.50	11.58	93	55-130
1,3-Dichloropropane	12.50	13.42	107	75-125
Tetrachloroethene	12.50	13.49	108	45-150
Dibromochloromethane	12.50	12.61	101	60-135
1,2-Dibromoethane	12.50	11.62	93	80-120
Chlorobenzene	12.50	13.97	112	80-120
1,1,1,2-Tetrachloroethane	12.50	12.81	102	80-130
Ethylbenzene	12.50	13.83	111	75-125
m,p-Xylenes	25.00	28.62	114	75-130
o-Xylene	12.50	13.87	111	80-120
Styrene	12.50	14.42	115	65-135
Bromoform	12.50	12.44	99	70-130
Isopropylbenzene	12.50	14.30	114	75-125
1,1,2,2-Tetrachloroethane	12.50	12.43	99	65-130
1,2,3-Trichloropropane	12.50	12.07	97	75-125
Propylbenzene	12.50	14.08	113	70-130

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits
Bromobenzene	12.50	14.56	116	75-125
1,3,5-Trimethylbenzene	12.50	14.45	116	75-130
2-Chlorotoluene	12.50	14.29	114	75-125
4-Chlorotoluene	12.50	14.67	117	75-130
tert-Butylbenzene	12.50	14.44	116	70-130
1,2,4-Trimethylbenzene	12.50	14.70	118	75-130
sec-Butylbenzene	12.50	13.66	109	70-125
para-Isopropyl Toluene	12.50	15.08	121	75-130
1,3-Dichlorobenzene	12.50	15.90	127 *	75-125
1,4-Dichlorobenzene	12.50	15.08	121	75-125
n-Butylbenzene	12.50	15.19	122	70-135
1,2-Dichlorobenzene	12.50	14.49	116	70-120
1,2-Dibromo-3-Chloropropane	12.50	11.88	95	50-130
1,2,4-Trichlorobenzene	12.50	14.56	117	65-135
Hexachlorobutadiene	12.50	15.13	121	50-140
Naphthalene	12.50	11.87	95	55-140
1,2,3-Trichlorobenzene	12.50	13.82	111	55-140

Surrogate	%REC	Limits
Dibromofluoromethane	105	85-115
1,2-Dichloroethane-d4	114	70-120
Toluene-d8	95	85-120
Bromofluorobenzene	106	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Type: BSD Lab ID: QC817289

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Freon 12	10.00	8.625 b	86	30-155	1	30
Chloromethane	10.00	10.76	108	40-125	4	30
Vinyl Chloride	10.00	12.01	120	50-145	3	30
Bromomethane	10.00	15.39 b	154 *	30-145	17	30
Chloroethane	10.00	11.46	115	60-135	1	30
Trichlorofluoromethane	10.00	11.41	114	60-145	4	30
Acetone	12.50	11.95	96	40-140	20	30
Freon 113	12.50	13.47	108	61-138	1	30
1,1-Dichloroethene	12.50	14.20	114	70-130	4	30
Methylene Chloride	12.50	13.79	110	55-140	10	30
Carbon Disulfide	12.50	15.24	122	35-160	5	30
MTBE	12.50	13.00	104	65-125	11	30
trans-1,2-Dichloroethene	12.50	13.22	106	60-140	6	30
Vinyl Acetate	12.50	14.03	112	60-194	2	30
1,1-Dichloroethane	12.50	13.84	111	70-135	6	30
2-Butanone	12.50	12.93	103	30-150	5	30
cis-1,2-Dichloroethene	12.50	13.91	111	70-125	10	30
2,2-Dichloropropane	12.50	16.59 b	133	70-135	7	30
Chloroform	12.50	13.73	110	65-135	12	30
Bromochloromethane	12.50	13.50	108	65-130	3	30
1,1,1-Trichloroethane	12.50	15.14	121	65-130	8	30
1,1-Dichloropropene	12.50	12.77	102	75-130	5	30
Carbon Tetrachloride	12.50	14.92	119	65-140	2	30
1,2-Dichloroethane	12.50	15.28 b	122	70-130	4	30
Benzene	12.50	14.04	112	80-120	5	30
Trichloroethene	12.50	13.94	112	70-125	4	30
1,2-Dichloropropane	12.50	13.17	105	75-125	13	30
Bromodichloromethane	12.50	14.09	113	75-120	9	30
Dibromomethane	12.50	13.95	112	75-125	0	30
4-Methyl-2-Pentanone	12.50	12.37	99	60-135	1	30
cis-1,3-Dichloropropene	12.50	15.40 b	123	70-130	5	30
Toluene	12.50	14.44	115	75-120	8	30
trans-1,3-Dichloropropene	12.50	15.06	121	55-140	8	30
1,1,2-Trichloroethane	12.50	13.37	107	75-125	7	30
2-Hexanone	12.50	12.54	100	55-130	8	30
1,3-Dichloropropane	12.50	14.28	114	75-125	6	30
Tetrachloroethene	12.50	14.77	118	45-150	9	30
Dibromochloromethane	12.50	13.43	107	60-135	6	30
1,2-Dibromoethane	12.50	13.20	106	80-120	13	30
Chlorobenzene	12.50	14.65	117	80-120	5	30
1,1,1,2-Tetrachloroethane	12.50	12.83	103	80-130	0	30
Ethylbenzene	12.50	14.56	116	75-125	5	30
m,p-Xylenes	25.00	30.18	121	75-130	5	30
o-Xylene	12.50	14.49	116	80-120	4	30
Styrene	12.50	15.00	120	65-135	4	30
Bromoform	12.50	13.57	109	70-130	9	30
Isopropylbenzene	12.50	14.22	114	75-125	1	30
1,1,2,2-Tetrachloroethane	12.50	12.77	102	65-130	3	30
1,2,3-Trichloropropane	12.50	12.92	103	75-125	7	30
Propylbenzene	12.50	13.50	108	70-130	4	30

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Bromobenzene	12.50	13.30	106	75-125	9	30
1,3,5-Trimethylbenzene	12.50	14.54	116	75-130	1	30
2-Chlorotoluene	12.50	14.49	116	75-125	1	30
4-Chlorotoluene	12.50	14.42	115	75-130	2	30
tert-Butylbenzene	12.50	14.09	113	70-130	2	30
1,2,4-Trimethylbenzene	12.50	14.30	114	75-130	3	30
sec-Butylbenzene	12.50	14.55	116	70-125	6	30
para-Isopropyl Toluene	12.50	14.95	120	75-130	1	30
1,3-Dichlorobenzene	12.50	15.02	120	75-125	6	30
1,4-Dichlorobenzene	12.50	14.87	119	75-125	1	30
n-Butylbenzene	12.50	15.18	121	70-135	0	30
1,2-Dichlorobenzene	12.50	14.37	115	70-120	1	30
1,2-Dibromo-3-Chloropropane	12.50	12.14	97	50-130	2	30
1,2,4-Trichlorobenzene	12.50	14.27	114	65-135	2	30
Hexachlorobutadiene	12.50	16.11	129	50-140	6	30
Naphthalene	12.50	11.88	95	55-140	0	30
1,2,3-Trichlorobenzene	12.50	13.61	109	55-140	2	30

Surrogate	%REC	Limits
Dibromofluoromethane	91	85-115
1,2-Dichloroethane-d4	106	70-120
Toluene-d8	101	85-120
Bromofluorobenzene	97	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC817290	Batch#:	230541
Matrix:	Water	Analyzed:	12/18/15
Units:	ug/L		

Analyte	Result	LOQ	DL
Freon 12	0.4 U b	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC817290	Batch#:	230541
Matrix:	Water	Analyzed:	12/18/15
Units:	ug/L		

Analyte	Result	LOQ	DL
2-Chlorotoluene	0.2 U	0.5	0.1
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	93	85-115
1,2-Dichloroethane-d4	109	70-120
Toluene-d8	98	85-120
Bromofluorobenzene	98	75-120

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Type: MS Lab ID: QC817299

Analyte	MSS Result	Spiked	Result	%REC	Limits
Freon 12	<0.7143	142.9	97.38 b	68	30-155
Chloromethane	<1.946	142.9	125.0	87	40-125
Vinyl Chloride	20.31	142.9	166.2	102	50-145
Bromomethane	<1.307	142.9	131.1 b	92	30-145
Chloroethane	<1.910	142.9	154.3	108	60-135
Trichlorofluoromethane	<1.629	142.9	157.1	110	60-145
Acetone	<23.57	178.6	160.9	90	40-140
Freon 113	<0.9357	178.6	179.1	100	61-138
1,1-Dichloroethene	<1.085	178.6	204.9	115	70-130
Methylene Chloride	<1.255	178.6	222.2	124	55-140
Carbon Disulfide	<0.7143	178.6	216.1	121	35-160
MTBE	<0.7991	178.6	209.3	117	65-125
trans-1,2-Dichloroethene	4.930	178.6	201.2	110	60-140
Vinyl Acetate	<8.180	178.6	203.1	114	60-194
1,1-Dichloroethane	<1.134	178.6	204.5	115	70-135
2-Butanone	<3.571	178.6	183.0	102	30-150
cis-1,2-Dichloroethene	3.573	178.6	217.7	120	70-125
2,2-Dichloropropane	<1.029	178.6	206.3 b	116	70-135
Chloroform	<0.7143	178.6	212.2	119	65-135
Bromochloromethane	<0.9803	178.6	205.2	115	65-130
1,1,1-Trichloroethane	<0.9008	178.6	222.4	125	65-130
1,1-Dichloropropene	<0.9278	178.6	185.2	104	75-130
Carbon Tetrachloride	<0.8792	178.6	219.3	123	65-140
1,2-Dichloroethane	<0.7648	178.6	232.4 b	130	70-130
Benzene	1.069	178.6	214.0	119	80-120
Trichloroethene	<0.7143	178.6	204.1	114	70-125
1,2-Dichloropropane	<0.9795	178.6	215.0	120	75-125
Bromodichloromethane	<0.8658	178.6	219.5	123 *	75-120
Dibromomethane	<1.046	178.6	220.7	124	75-125
4-Methyl-2-Pentanone	<4.671	178.6	184.9	104	60-135
cis-1,3-Dichloropropene	<0.7533	178.6	232.3 b	130	70-130
Toluene	0.9143	178.6	193.6	108	75-120
trans-1,3-Dichloropropene	<0.9945	178.6	203.9	114	55-140
1,1,2-Trichloroethane	<1.100	178.6	199.8	112	75-125
2-Hexanone	<3.571	178.6	192.1	108	55-130
1,3-Dichloropropane	<1.063	178.6	210.0	118	75-125
Tetrachloroethene	<0.7143	178.6	200.3	112	45-150
Dibromochloromethane	<1.043	178.6	199.6	112	60-135
1,2-Dibromoethane	<0.9582	178.6	195.5	109	80-120
Chlorobenzene	23.98	178.6	233.1	117	80-120
1,1,1,2-Tetrachloroethane	<0.7467	178.6	196.5	110	80-130
Ethylbenzene	<0.7143	178.6	193.8	109	75-125
m,p-Xylenes	<1.038	357.1	395.9	111	75-130
o-Xylene	2.191	178.6	198.5	110	80-120
Styrene	<0.7143	178.6	187.0	105	65-135
Bromoform	<1.032	178.6	213.5	120	70-130
Isopropylbenzene	0.9057	178.6	189.8	106	75-125
1,1,2,2-Tetrachloroethane	<0.8547	178.6	191.0	107	65-130

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,2,3-Trichloropropane	<1.100	178.6	177.1	99	75-125
Propylbenzene	<0.7143	178.6	178.5	100	70-130
Bromobenzene	<0.7712	178.6	199.8	112	75-125
1,3,5-Trimethylbenzene	0.7921	178.6	188.1	105	75-130
2-Chlorotoluene	<0.7143	178.6	192.8	108	75-125
4-Chlorotoluene	<0.7143	178.6	185.3	104	75-130
tert-Butylbenzene	<0.7143	178.6	188.6	106	70-130
1,2,4-Trimethylbenzene	4.289	178.6	189.0	103	75-130
sec-Butylbenzene	0.8721	178.6	178.5	99	70-125
para-Isopropyl Toluene	<0.7143	178.6	183.6	103	75-130
1,3-Dichlorobenzene	7.642	178.6	214.2	116	75-125
1,4-Dichlorobenzene	33.59	178.6	246.2	119	75-125
n-Butylbenzene	<0.7143	178.6	184.4	103	70-135
1,2-Dichlorobenzene	8.360	178.6	209.1	112	70-120
1,2-Dibromo-3-Chloropropane	<1.786	178.6	186.7	105	50-130
1,2,4-Trichlorobenzene	<0.9468	178.6	208.8	117	65-135
Hexachlorobutadiene	<0.9955	178.6	196.2	110	50-140
Naphthalene	2.387	178.6	197.8	109	55-140
1,2,3-Trichlorobenzene	<0.9969	178.6	209.6	117	55-140

Surrogate	%REC	Limits
Dibromofluoromethane	100	85-115
1,2-Dichloroethane-d4	114	70-120
Toluene-d8	99	85-120
Bromofluorobenzene	99	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Type: MSD Lab ID: QC817300

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Freon 12	142.9	96.45 b	68	30-155	1	30
Chloromethane	142.9	126.1	88	40-125	1	30
Vinyl Chloride	142.9	169.4	104	50-145	2	30
Bromomethane	142.9	167.4 b	117	30-145	24	30
Chloroethane	142.9	153.7	108	60-135	0	30
Trichlorofluoromethane	142.9	163.0	114	60-145	4	30
Acetone	178.6	194.6	109	40-140	19	30
Freon 113	178.6	186.5	104	61-138	4	30
1,1-Dichloroethene	178.6	211.2	118	70-130	3	30
Methylene Chloride	178.6	229.0	128	55-140	3	30
Carbon Disulfide	178.6	227.0	127	35-160	5	30
MTBE	178.6	221.1	124	65-125	5	30
trans-1,2-Dichloroethene	178.6	203.4	111	60-140	1	30
Vinyl Acetate	178.6	226.1	127	60-194	11	30
1,1-Dichloroethane	178.6	213.0	119	70-135	4	30
2-Butanone	178.6	199.7	112	30-150	9	30
cis-1,2-Dichloroethene	178.6	221.9	122	70-125	2	30
2,2-Dichloropropane	178.6	206.3 b	116	70-135	0	30
Chloroform	178.6	221.8	124	65-135	4	30
Bromochloromethane	178.6	213.1	119	65-130	4	30
1,1,1-Trichloroethane	178.6	220.9	124	65-130	1	30
1,1-Dichloropropene	178.6	170.5	95	75-130	8	30
Carbon Tetrachloride	178.6	202.6	113	65-140	8	30
1,2-Dichloroethane	178.6	227.4 b	127	70-130	2	30
Benzene	178.6	205.6	115	80-120	4	30
Trichloroethene	178.6	194.4	109	70-125	5	30
1,2-Dichloropropane	178.6	208.1	117	75-125	3	30
Bromodichloromethane	178.6	218.6	122 *	75-120	0	30
Dibromomethane	178.6	205.5	115	75-125	7	30
4-Methyl-2-Pentanone	178.6	195.1	109	60-135	5	30
cis-1,3-Dichloropropene	178.6	216.6 b	121	70-130	7	30
Toluene	178.6	193.3	108	75-120	0	30
trans-1,3-Dichloropropene	178.6	194.9	109	55-140	5	30
1,1,2-Trichloroethane	178.6	196.1	110	75-125	2	30
2-Hexanone	178.6	185.8	104	55-130	3	30
1,3-Dichloropropane	178.6	197.0	110	75-125	6	30
Tetrachloroethene	178.6	191.0	107	45-150	5	30
Dibromochloromethane	178.6	195.0	109	60-135	2	30
1,2-Dibromoethane	178.6	189.3	106	80-120	3	30
Chlorobenzene	178.6	220.2	110	80-120	6	30
1,1,1,2-Tetrachloroethane	178.6	184.7	103	80-130	6	30
Ethylbenzene	178.6	191.3	107	75-125	1	30
m,p-Xylenes	357.1	381.8	107	75-130	4	30
o-Xylene	178.6	193.3	107	80-120	3	30
Styrene	178.6	179.3	100	65-135	4	30
Bromoform	178.6	211.3	118	70-130	1	30
Isopropylbenzene	178.6	187.3	104	75-125	1	30
1,1,2,2-Tetrachloroethane	178.6	196.4	110	65-130	3	30

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,2,3-Trichloropropane	178.6	185.0	104	75-125	4	30
Propylbenzene	178.6	175.9	98	70-130	1	30
Bromobenzene	178.6	203.3	114	75-125	2	30
1,3,5-Trimethylbenzene	178.6	186.8	104	75-130	1	30
2-Chlorotoluene	178.6	190.6	107	75-125	1	30
4-Chlorotoluene	178.6	198.4	111	75-130	7	30
tert-Butylbenzene	178.6	193.0	108	70-130	2	30
1,2,4-Trimethylbenzene	178.6	190.9	104	75-130	1	30
sec-Butylbenzene	178.6	183.6	102	70-125	3	30
para-Isopropyl Toluene	178.6	176.9	99	75-130	4	30
1,3-Dichlorobenzene	178.6	211.8	114	75-125	1	30
1,4-Dichlorobenzene	178.6	247.2	120	75-125	0	30
n-Butylbenzene	178.6	179.6	101	70-135	3	30
1,2-Dichlorobenzene	178.6	219.7	118	70-120	5	30
1,2-Dibromo-3-Chloropropane	178.6	198.0	111	50-130	6	30
1,2,4-Trichlorobenzene	178.6	218.2	122	65-135	4	30
Hexachlorobutadiene	178.6	204.8	115	50-140	4	30
Naphthalene	178.6	202.1	112	55-140	2	30
1,2,3-Trichlorobenzene	178.6	223.9	125	55-140	7	30

Surrogate	%REC	Limits
Dibromofluoromethane	104	85-115
1,2-Dichloroethane-d4	111	70-120
Toluene-d8	94	85-120
Bromofluorobenzene	98	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230759
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Type: BS Lab ID: QC818115

Analyte	Spiked	Result	%REC	Limits
Freon 12	10.00	9.212	92	30-155
Chloromethane	10.00	7.157 b	72	40-125
Vinyl Chloride	10.00	8.284	83	50-145
Bromomethane	10.00	11.55 b	115	30-145
Chloroethane	10.00	9.525	95	60-135
Trichlorofluoromethane	10.00	12.29 b	123	60-145
Acetone	12.50	7.657 b	61	40-140
Freon 113	12.50	13.78	110	61-138
1,1-Dichloroethene	12.50	13.75	110	70-130
Methylene Chloride	12.50	14.55	116	55-140
Carbon Disulfide	12.50	14.71	118	35-160
MTBE	12.50	12.86	103	65-125
trans-1,2-Dichloroethene	12.50	13.13	105	60-140
Vinyl Acetate	12.50	8.170 b	65	60-194
1,1-Dichloroethane	12.50	11.45	92	70-135
2-Butanone	12.50	6.806 b	54	30-150
cis-1,2-Dichloroethene	12.50	12.51	100	70-125
2,2-Dichloropropane	12.50	15.05	120	70-135
Chloroform	12.50	14.06	113	65-135
Bromochloromethane	12.50	12.73	102	65-130
1,1,1-Trichloroethane	12.50	15.32 b	123	65-130
1,1-Dichloropropene	12.50	12.26	98	75-130
Carbon Tetrachloride	12.50	19.03 b	152 *	65-140
1,2-Dichloroethane	12.50	13.08	105	70-130
Benzene	12.50	12.20	98	80-120
Trichloroethene	12.50	13.99	112	70-125
1,2-Dichloropropane	12.50	10.74	86	75-125
Bromodichloromethane	12.50	14.06	112	75-120
Dibromomethane	12.50	13.20	106	75-125
4-Methyl-2-Pentanone	12.50	7.314 b	59 *	60-135
cis-1,3-Dichloropropene	12.50	13.46	108	70-130
Toluene	12.50	11.29	90	75-120
trans-1,3-Dichloropropene	12.50	12.52	100	55-140
1,1,2-Trichloroethane	12.50	11.30	90	75-125
2-Hexanone	12.50	6.687 b	53 *	55-130
1,3-Dichloropropane	12.50	11.88	95	75-125
Tetrachloroethene	12.50	14.83	119	45-150
Dibromochloromethane	12.50	14.17	113	60-135
1,2-Dibromoethane	12.50	11.92	95	80-120
Chlorobenzene	12.50	12.62	101	80-120
1,1,1,2-Tetrachloroethane	12.50	12.91	103	80-130
Ethylbenzene	12.50	12.00	96	75-125
m,p-Xylenes	25.00	24.40	98	75-130
o-Xylene	12.50	12.04	96	80-120
Styrene	12.50	12.26	98	65-135
Bromoform	12.50	14.17	113	70-130
Isopropylbenzene	12.50	10.36	83	75-125
1,1,2,2-Tetrachloroethane	12.50	9.988	80	65-130
1,2,3-Trichloropropane	12.50	9.701 b	78	75-125
Propylbenzene	12.50	10.45	84	70-130

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230759
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits
Bromobenzene	12.50	12.24	98	75-125
1,3,5-Trimethylbenzene	12.50	10.93	87	75-130
2-Chlorotoluene	12.50	11.05	88	75-125
4-Chlorotoluene	12.50	11.50	92	75-130
tert-Butylbenzene	12.50	10.92	87	70-130
1,2,4-Trimethylbenzene	12.50	10.58	85	75-130
sec-Butylbenzene	12.50	9.920 b	79	70-125
para-Isopropyl Toluene	12.50	10.39	83	75-130
1,3-Dichlorobenzene	12.50	12.18	97	75-125
1,4-Dichlorobenzene	12.50	11.99	96	75-125
n-Butylbenzene	12.50	10.05	80	70-135
1,2-Dichlorobenzene	12.50	12.45	100	70-120
1,2-Dibromo-3-Chloropropane	12.50	9.189 b	74	50-130
1,2,4-Trichlorobenzene	12.50	11.33	91	65-135
Hexachlorobutadiene	12.50	12.62	101	50-140
Naphthalene	12.50	9.086 b	73	55-140
1,2,3-Trichlorobenzene	12.50	10.76	86	55-140

Surrogate	%REC	Limits
Dibromofluoromethane	108	85-115
1,2-Dichloroethane-d4	99	70-120
Toluene-d8	94	85-120
Bromofluorobenzene	92	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230759
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Type: BSD Lab ID: QC818116

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Freon 12	10.00	9.197	92	30-155	0	30
Chloromethane	10.00	7.311 b	73	40-125	2	30
Vinyl Chloride	10.00	8.357	84	50-145	1	30
Bromomethane	10.00	11.58 b	116	30-145	0	30
Chloroethane	10.00	9.292	93	60-135	2	30
Trichlorofluoromethane	10.00	11.54 b	115	60-145	6	30
Acetone	12.50	7.673 b	61	40-140	0	30
Freon 113	12.50	13.42	107	61-138	3	30
1,1-Dichloroethene	12.50	13.88	111	70-130	1	30
Methylene Chloride	12.50	13.64	109	55-140	6	30
Carbon Disulfide	12.50	14.43	115	35-160	2	30
MTBE	12.50	11.99	96	65-125	7	30
trans-1,2-Dichloroethene	12.50	12.46	100	60-140	5	30
Vinyl Acetate	12.50	7.736 b	62	60-194	5	30
1,1-Dichloroethane	12.50	11.05	88	70-135	4	30
2-Butanone	12.50	6.547 b	52	30-150	4	30
cis-1,2-Dichloroethene	12.50	12.18	97	70-125	3	30
2,2-Dichloropropane	12.50	14.01	112	70-135	7	30
Chloroform	12.50	13.34	107	65-135	5	30
Bromochloromethane	12.50	13.40	107	65-130	5	30
1,1,1-Trichloroethane	12.50	14.18 b	113	65-130	8	30
1,1-Dichloropropene	12.50	11.09	89	75-130	10	30
Carbon Tetrachloride	12.50	17.20 b	138	65-140	10	30
1,2-Dichloroethane	12.50	12.55	100	70-130	4	30
Benzene	12.50	11.81	94	80-120	3	30
Trichloroethene	12.50	13.46	108	70-125	4	30
1,2-Dichloropropane	12.50	10.55	84	75-125	2	30
Bromodichloromethane	12.50	13.09	105	75-120	7	30
Dibromomethane	12.50	13.35	107	75-125	1	30
4-Methyl-2-Pentanone	12.50	7.201 b	58 *	60-135	2	30
cis-1,3-Dichloropropene	12.50	12.48	100	70-130	8	30
Toluene	12.50	10.87	87	75-120	4	30
trans-1,3-Dichloropropene	12.50	11.35	91	55-140	10	30
1,1,2-Trichloroethane	12.50	10.95	88	75-125	3	30
2-Hexanone	12.50	6.537 b	52 *	55-130	2	30
1,3-Dichloropropane	12.50	11.65	93	75-125	2	30
Tetrachloroethene	12.50	14.61	117	45-150	2	30
Dibromochloromethane	12.50	12.99	104	60-135	9	30
1,2-Dibromoethane	12.50	11.70	94	80-120	2	30
Chlorobenzene	12.50	12.39	99	80-120	2	30
1,1,1,2-Tetrachloroethane	12.50	12.56	100	80-130	3	30
Ethylbenzene	12.50	11.79	94	75-125	2	30
m,p-Xylenes	25.00	23.74	95	75-130	3	30
o-Xylene	12.50	11.88	95	80-120	1	30
Styrene	12.50	11.81	94	65-135	4	30
Bromoform	12.50	13.58	109	70-130	4	30
Isopropylbenzene	12.50	9.653	77	75-125	7	30
1,1,2,2-Tetrachloroethane	12.50	9.844	79	65-130	1	30
1,2,3-Trichloropropane	12.50	9.424 b	75	75-125	3	30
Propylbenzene	12.50	9.923	79	70-130	5	30

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230759
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Bromobenzene	12.50	11.81	94	75-125	4	30
1,3,5-Trimethylbenzene	12.50	10.30	82	75-130	6	30
2-Chlorotoluene	12.50	10.14	81	75-125	9	30
4-Chlorotoluene	12.50	10.33	83	75-130	11	30
tert-Butylbenzene	12.50	10.04	80	70-130	8	30
1,2,4-Trimethylbenzene	12.50	9.656	77	75-130	9	30
sec-Butylbenzene	12.50	9.677 b	77	70-125	2	30
para-Isopropyl Toluene	12.50	10.20	82	75-130	2	30
1,3-Dichlorobenzene	12.50	12.20	98	75-125	0	30
1,4-Dichlorobenzene	12.50	11.81	94	75-125	2	30
n-Butylbenzene	12.50	9.634	77	70-135	4	30
1,2-Dichlorobenzene	12.50	12.09	97	70-120	3	30
1,2-Dibromo-3-Chloropropane	12.50	9.019 b	72	50-130	2	30
1,2,4-Trichlorobenzene	12.50	10.61	85	65-135	7	30
Hexachlorobutadiene	12.50	12.18	97	50-140	4	30
Naphthalene	12.50	9.545 b	76	55-140	5	30
1,2,3-Trichlorobenzene	12.50	10.56	85	55-140	2	30

Surrogate	%REC	Limits
Dibromofluoromethane	105	85-115
1,2-Dichloroethane-d4	96	70-120
Toluene-d8	89	85-120
Bromofluorobenzene	89	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC818117	Batch#:	230759
Matrix:	Water	Analyzed:	12/29/15
Units:	ug/L		

Analyte	Result	LOQ	DL
Freon 12	0.4 U	1.0	0.1
Chloromethane	0.4 U b	1.0	0.1
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.8 U b	1.0	0.2
Chloroethane	0.4 U	1.0	0.1
Trichlorofluoromethane	0.2 U	1.0	0.1
Acetone	4.0 U b	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.4 U	0.5	0.1
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.4 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.4 U	0.5	0.1
Vinyl Acetate	0.4 U b	10	0.2
1,1-Dichloroethane	0.2 U	0.5	0.1
2-Butanone	1.0 U b	10	0.3
cis-1,2-Dichloroethene	0.4 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.4 U	0.5	0.1
1,1,1-Trichloroethane	0.4 U	0.5	0.1
1,1-Dichloropropene	0.4 U	0.5	0.1
Carbon Tetrachloride	0.4 U	0.5	0.2
1,2-Dichloroethane	0.4 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	0.4 U b	10	0.1
cis-1,3-Dichloropropene	0.4 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.4 U	0.5	0.1
2-Hexanone	0.4 U b	10	0.3
1,3-Dichloropropane	0.4 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.2
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.4 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.2 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.2
Styrene	0.2 U	0.5	0.1
Bromoform	0.4 U	1.0	0.2
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.4 U	0.5	0.1
1,2,3-Trichloropropane	0.4 U b	0.5	0.1
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC818117	Batch#:	230759
Matrix:	Water	Analyzed:	12/29/15
Units:	ug/L		

Analyte	Result	LOQ	DL
2-Chlorotoluene	0.2 U	0.5	0.2
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U b	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.2
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U b	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.4 U	2.0	0.2
Naphthalene	0.4 U b	2.0	0.2
1,2,3-Trichlorobenzene	0.4 U	0.5	0.2

Surrogate	%REC	Limits
Dibromofluoromethane	113	85-115
1,2-Dichloroethane-d4	105	70-120
Toluene-d8	89	85-120
Bromofluorobenzene	95	75-120

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230760
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Type: BS Lab ID: QC818118

Analyte	Spiked	Result	%REC	Limits
Freon 12	10.00	6.838 b	68	30-155
Chloromethane	10.00	11.27	113	40-125
Vinyl Chloride	10.00	11.78	118	50-145
Bromomethane	10.00	11.73	117	30-145
Chloroethane	10.00	10.54	105	60-135
Trichlorofluoromethane	10.00	9.250	93	60-145
Acetone	12.50	13.48 b	108	40-140
Freon 113	12.50	13.42	107	61-138
1,1-Dichloroethene	12.50	14.34	115	70-130
Methylene Chloride	12.50	14.33	115	55-140
Carbon Disulfide	12.50	15.05	120	35-160
MTBE	12.50	12.40	99	65-125
trans-1,2-Dichloroethene	12.50	13.65	109	60-140
Vinyl Acetate	12.50	15.37 b	123	60-194
1,1-Dichloroethane	12.50	13.95	112	70-135
2-Butanone	12.50	13.12 b	105	30-150
cis-1,2-Dichloroethene	12.50	14.54	116	70-125
2,2-Dichloropropane	12.50	15.39 b	123	70-135
Chloroform	12.50	13.52	108	65-135
Bromochloromethane	12.50	13.79	110	65-130
1,1,1-Trichloroethane	12.50	14.08	113	65-130
1,1-Dichloropropene	12.50	12.19	97	75-130
Carbon Tetrachloride	12.50	13.46	108	65-140
1,2-Dichloroethane	12.50	12.65	101	70-130
Benzene	12.50	13.32	107	80-120
Trichloroethene	12.50	13.14	105	70-125
1,2-Dichloropropane	12.50	13.90	111	75-125
Bromodichloromethane	12.50	12.76	102	75-120
Dibromomethane	12.50	12.71	102	75-125
4-Methyl-2-Pentanone	12.50	10.71	86	60-135
cis-1,3-Dichloropropene	12.50	14.35	115	70-130
Toluene	12.50	13.44	108	75-120
trans-1,3-Dichloropropene	12.50	13.30	106	55-140
1,1,2-Trichloroethane	12.50	13.12	105	75-125
2-Hexanone	12.50	11.45	92	55-130
1,3-Dichloropropane	12.50	13.26	106	75-125
Tetrachloroethene	12.50	14.26	114	45-150
Dibromochloromethane	12.50	12.77	102	60-135
1,2-Dibromoethane	12.50	12.14	97	80-120
Chlorobenzene	12.50	13.47	108	80-120
1,1,1,2-Tetrachloroethane	12.50	12.77	102	80-130
Ethylbenzene	12.50	13.23	106	75-125
m,p-Xylenes	25.00	25.59	102	75-130
o-Xylene	12.50	11.99	96	80-120
Styrene	12.50	12.12	97	65-135
Bromoform	12.50	11.95	96	70-130
Isopropylbenzene	12.50	14.76	118	75-125
1,1,2,2-Tetrachloroethane	12.50	14.64	117	65-130
1,2,3-Trichloropropane	12.50	13.50	108	75-125
Propylbenzene	12.50	13.80	110	70-130

b= See narrative
NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230760
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits
Bromobenzene		NA		
1,3,5-Trimethylbenzene	12.50	12.35	99	75-130
2-Chlorotoluene	12.50	14.01	112	75-125
4-Chlorotoluene	12.50	13.87	111	75-130
tert-Butylbenzene	12.50	13.59	109	70-130
1,2,4-Trimethylbenzene	12.50	11.53	92	75-130
sec-Butylbenzene	12.50	13.47	108	70-125
para-Isopropyl Toluene	12.50	12.02	96	75-130
1,3-Dichlorobenzene	12.50	14.17	113	75-125
1,4-Dichlorobenzene	12.50	13.63	109	75-125
n-Butylbenzene	12.50	12.38	99	70-135
1,2-Dichlorobenzene	12.50	13.57	109	70-120
1,2-Dibromo-3-Chloropropane	12.50	11.62	93	50-130
1,2,4-Trichlorobenzene		NA		
Hexachlorobutadiene	12.50	12.97 b	104	50-140
Naphthalene		NA		
1,2,3-Trichlorobenzene		NA		

Surrogate	%REC	Limits
Dibromofluoromethane	99	85-115
1,2-Dichloroethane-d4	94	70-120
Toluene-d8	101	85-120
Bromofluorobenzene	109	75-120

b= See narrative
NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230760
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Type: BSD Lab ID: QC818119

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Freon 12	10.00	6.160 b	62	30-155	10	30
Chloromethane	10.00	10.10	101	40-125	11	30
Vinyl Chloride	10.00	10.72	107	50-145	9	30
Bromomethane	10.00	11.97	120	30-145	2	30
Chloroethane	10.00	9.616	96	60-135	9	30
Trichlorofluoromethane	10.00	8.469	85	60-145	9	30
Acetone	12.50	13.33 b	107	40-140	1	30
Freon 113	12.50	12.12	97	61-138	10	30
1,1-Dichloroethene	12.50	13.12	105	70-130	9	30
Methylene Chloride	12.50	13.59	109	55-140	5	30
Carbon Disulfide	12.50	13.66	109	35-160	10	30
MTBE	12.50	11.48	92	65-125	8	30
trans-1,2-Dichloroethene	12.50	12.28	98	60-140	11	30
Vinyl Acetate	12.50	14.57 b	117	60-194	5	30
1,1-Dichloroethane	12.50	12.72	102	70-135	9	30
2-Butanone	12.50	12.58 b	101	30-150	4	30
cis-1,2-Dichloroethene	12.50	13.21	106	70-125	10	30
2,2-Dichloropropane	12.50	14.12 b	113	70-135	9	30
Chloroform	12.50	12.37	99	65-135	9	30
Bromochloromethane	12.50	12.92	103	65-130	7	30
1,1,1-Trichloroethane	12.50	13.10	105	65-130	7	30
1,1-Dichloropropene	12.50	11.09	89	75-130	9	30
Carbon Tetrachloride	12.50	12.81	102	65-140	5	30
1,2-Dichloroethane	12.50	11.80	94	70-130	7	30
Benzene	12.50	12.33	99	80-120	8	30
Trichloroethene	12.50	12.56	100	70-125	5	30
1,2-Dichloropropane	12.50	12.76	102	75-125	9	30
Bromodichloromethane	12.50	11.88	95	75-120	7	30
Dibromomethane	12.50	11.74	94	75-125	8	30
4-Methyl-2-Pentanone	12.50	10.44	84	60-135	3	30
cis-1,3-Dichloropropene	12.50	13.14	105	70-130	9	30
Toluene	12.50	12.62	101	75-120	6	30
trans-1,3-Dichloropropene	12.50	12.37	99	55-140	7	30
1,1,2-Trichloroethane	12.50	12.39	99	75-125	6	30
2-Hexanone	12.50	11.27	90	55-130	2	30
1,3-Dichloropropane	12.50	12.55	100	75-125	5	30
Tetrachloroethene	12.50	13.58	109	45-150	5	30
Dibromochloromethane	12.50	11.94	96	60-135	7	30
1,2-Dibromoethane	12.50	11.76	94	80-120	3	30
Chlorobenzene	12.50	12.92	103	80-120	4	30
1,1,1,2-Tetrachloroethane	12.50	11.64	93	80-130	9	30
Ethylbenzene	12.50	12.51	100	75-125	6	30
m,p-Xylenes	25.00	23.88	96	75-130	7	30
o-Xylene	12.50	11.49	92	80-120	4	30
Styrene	12.50	11.73	94	65-135	3	30
Bromoform	12.50	11.46	92	70-130	4	30
Isopropylbenzene	12.50	13.58	109	75-125	8	30
1,1,2,2-Tetrachloroethane	12.50	14.17	113	65-130	3	30
1,2,3-Trichloropropane	12.50	12.83	103	75-125	5	30
Propylbenzene	12.50	12.68	101	70-130	8	30

b= See narrative
NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230760
Units:	ug/L	Analyzed:	12/29/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Bromobenzene		NA				
1,3,5-Trimethylbenzene	12.50	12.01	96	75-130	3	30
2-Chlorotoluene	12.50	13.13	105	75-125	7	30
4-Chlorotoluene	12.50	12.52	100	75-130	10	30
tert-Butylbenzene	12.50	12.84	103	70-130	6	30
1,2,4-Trimethylbenzene	12.50	11.21	90	75-130	3	30
sec-Butylbenzene	12.50	12.73	102	70-125	6	30
para-Isopropyl Toluene	12.50	11.81	94	75-130	2	30
1,3-Dichlorobenzene	12.50	13.52	108	75-125	5	30
1,4-Dichlorobenzene	12.50	13.20	106	75-125	3	30
n-Butylbenzene	12.50	11.78	94	70-135	5	30
1,2-Dichlorobenzene	12.50	12.88	103	70-120	5	30
1,2-Dibromo-3-Chloropropane	12.50	11.33	91	50-130	2	30
1,2,4-Trichlorobenzene		NA				
Hexachlorobutadiene	12.50	14.28 b	114	50-140	10	30
Naphthalene		NA				
1,2,3-Trichlorobenzene		NA				

Surrogate	%REC	Limits
Dibromofluoromethane	99	85-115
1,2-Dichloroethane-d4	94	70-120
Toluene-d8	103	85-120
Bromofluorobenzene	107	75-120

b= See narrative
NA= Not Analyzed
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC818120	Batch#:	230760
Matrix:	Water	Analyzed:	12/29/15
Units:	ug/L		

Analyte	Result	LOQ	DL
Freon 12	0.6 U b	1.0	0.2
Chloromethane	0.4 U	1.0	0.1
Vinyl Chloride	0.2 U	0.5	0.2
Bromomethane	0.6 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.2
Trichlorofluoromethane	0.2 U	1.0	0.1
Acetone	4.0 U b	10	3.3
Freon 113	0.4 U	2.0	0.2
1,1-Dichloroethene	0.2 U	0.5	0.1
Methylene Chloride	0.2 U	10	0.1
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.1
Vinyl Acetate	1.0 U	10	0.3
1,1-Dichloroethane	0.2 U	0.5	0.1
2-Butanone	1.0 U b	10	0.4
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U b	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.4 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	0.4 U	10	0.1
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.1
2-Hexanone	0.4 U	10	0.2
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.2 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.4 U	1.0	0.1
Isopropylbenzene	0.4 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.1
Propylbenzene	0.2 U	0.5	0.1

J= Estimated value
U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
NA= Not Analyzed
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC818120	Batch#:	230760
Matrix:	Water	Analyzed:	12/29/15
Units:	ug/L		

Analyte	Result	LOQ	DL
Bromobenzene	NA		
1,3,5-Trimethylbenzene	0.4 U	0.5	0.1
2-Chlorotoluene	0.2 U	0.5	0.1
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.4 U	0.5	0.1
1,2,4-Trimethylbenzene	0.4 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.4 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.1 J	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	NA		
Hexachlorobutadiene	1.0 U b	2.0	0.3
Naphthalene	NA		
1,2,3-Trichlorobenzene	NA		

Surrogate	%REC	Limits
Dibromofluoromethane	99	85-115
1,2-Dichloroethane-d4	95	70-120
Toluene-d8	101	85-120
Bromofluorobenzene	120	75-120

J= Estimated value
U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
NA= Not Analyzed
LOQ= Limit of Quantitation

Initial & Continuing Calibration Data

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA06 Run Name : BFB IDF : 1.0
Seqnum : 455443988004 File : fk404 Time : 04-NOV-2015 12:01

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	46184	23.59	
75	30% - 60% of mass 95	90024	45.98	
95		195776	100.00	
96	5% - 9% of mass 95	12676	6.47	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	141312	72.18	
175	5% - 9% of mass 174	10485	7.42	
176	> 95% and < 101% of mass 174	137536	97.33	
177	5% - 9% of mass 176	9366	6.81	

Analyst: MCT Date: 11/05/15 Reviewer: LW Date: 11/06/15

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA06 Run Name : BFB IDF : 1.0
Seqnum : 455523093011 File : flt11 Time : 29-DEC-2015 11:05

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	36464	19.07	
75	30% - 60% of mass 95	82911	43.37	
95		191189	100.00	
96	5% - 9% of mass 95	12286	6.43	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	148586	77.72	
175	5% - 9% of mass 174	11032	7.42	
176	> 95% and < 101% of mass 174	143552	96.61	
177	5% - 9% of mass 176	9152	6.38	

Analyst: MCT Date: 12/29/15 Reviewer: LW Date: 12/30/15

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA08 Run Name : BFB IDF : 1.0
Seqnum : 475492027004 File : hl704 Time : 07-DEC-2015 18:27

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	4082	23.41	
75	30% - 60% of mass 95	8174	46.89	
95		17434	100.00	
96	5% - 9% of mass 95	1305	7.49	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	14010	80.36	
175	5% - 9% of mass 174	1090	7.78	
176	> 95% and < 101% of mass 174	13520	96.50	
177	5% - 9% of mass 176	1005	7.43	

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA08 Run Name : BFB IDF : 1.0
Seqnum : 475506105002 File : hlh02 Time : 17-DEC-2015 11:57

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	3040	22.85	
75	30% - 60% of mass 95	5990	45.01	
95		13307	100.00	
96	5% - 9% of mass 95	985	7.40	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	11078	83.25	
175	5% - 9% of mass 174	865	7.81	
176	> 95% and < 101% of mass 174	10893	98.33	
177	5% - 9% of mass 176	759	6.97	

Analyst: DAR Date: 12/17/15 Reviewer: LW Date: 12/17/15

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA08 Run Name : BFB IDF : 1.0
Seqnum : 475507613009 File : hli09 Time : 18-DEC-2015 16:20

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	2419	23.69	
75	30% - 60% of mass 95	4730	46.33	
95		10210	100.00	
96	5% - 9% of mass 95	748	7.33	
173	< 2% of mass 174	61	0.68	
174	> 50% and < 100% of mass 95	8937	87.53	
175	5% - 9% of mass 174	724	8.10	
176	> 95% and < 101% of mass 174	8648	96.77	
177	5% - 9% of mass 176	596	6.89	

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/21/15

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA10 Run Name : BFB IDF : 1.0
Seqnum : 495473163004 File : jko04 Time : 24-NOV-2015 15:39

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	45704	29.23	
75	30% - 60% of mass 95	85693	54.81	
95		156352	100.00	
96	5% - 9% of mass 95	10243	6.55	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	106130	67.88	
175	5% - 9% of mass 174	7232	6.81	
176	> 95% and < 101% of mass 174	102720	96.79	
177	5% - 9% of mass 176	6948	6.76	

Analyst: KER Date: 11/30/15 Reviewer: LW Date: 11/30/15

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA10 Run Name : BFB IDF : 1.0
Seqnum : 495474457002 File : jkp02 Time : 25-NOV-2015 12:55

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	52160	28.89	
75	30% - 60% of mass 95	97240	53.86	
95		180544	100.00	
96	5% - 9% of mass 95	11570	6.41	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	120749	66.88	
175	5% - 9% of mass 174	8250	6.83	
176	> 95% and < 101% of mass 174	117328	97.17	
177	5% - 9% of mass 176	7441	6.34	

Analyst: KER Date: 11/30/15 Reviewer: LW Date: 11/30/15

CURTIS & TOMPKINS BFB TUNE FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA10 Run Name : BFB IDF : 1.0
Seqnum : 495523084004 File : jlt04 Time : 29-DEC-2015 07:47

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	56176	28.17	
75	30% - 60% of mass 95	107616	53.96	
95		199424	100.00	
96	5% - 9% of mass 95	13025	6.53	
173	< 2% of mass 174	295	0.22	
174	> 50% and < 100% of mass 95	134941	67.67	
175	5% - 9% of mass 174	9592	7.11	
176	> 95% and < 101% of mass 174	128437	95.18	
177	5% - 9% of mass 176	8410	6.55	

Analyst: MCT Date: 12/29/15 Reviewer: LW Date: 12/30/15

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 272485 MSVOA Water: EPA 8260C

Inst : MSVOA06 Name : 826GOX6W
Calnum : 455443988001 Date : 04-NOV-2015 15:41 Type : WATER
Units : ug/L X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	fk411	455443988011	.25/.5PPB	04-NOV-2015 15:41	S27004 (2000000X), S28295 (2000000X), S28355 (2000000X), S27081 (1000000X), S28450 (5000X)
L2	fk412	455443988012	.5/1PPB	04-NOV-2015 16:13	S28450 (5000X), S27004 (1000000X), S28295 (1000000X), S28355 (1000000X), S27081 (500000X)
L3	fk413	455443988013	2PPB	04-NOV-2015 16:45	S27004 (500000X), S28295 (250000X), S28355 (250000X), S27081 (250000X), S28450 (5000X)
L4	fk414	455443988014	5PPB	04-NOV-2015 17:17	S28450 (5000X), S27004 (200000X), S28295 (100000X), S28355 (100000X), S27081 (100000X)
L5	fk415	455443988015	10PPB	04-NOV-2015 17:49	S28450 (5000X), S27004 (100000X), S28295 (50000X), S28355 (50000X), S27081 (50000X)
L6	fk416	455443988016	20PPB	04-NOV-2015 18:22	S28450 (5000X), S27004 (50000X), S28295 (25000X), S28355 (25000X), S27081 (25000X)
L7	fk417	455443988017	50PPB	04-NOV-2015 18:55	S28450 (5000X), S27004 (20000X), S28295 (10000X), S28355 (10000X), S27081 (10000X)
L8	fk418	455443988018	75PPB	04-NOV-2015 19:29	S28450 (5000X), S27004 (13330X), S28295 (6667X), S28355 (6667X), S27081 (6667X)
L9	fk419	455443988019	100PPB	04-NOV-2015 20:01	S28450 (5000X), S27004 (10000X), S28295 (5000X), S28355 (5000X), S27081 (5000X)

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Freon 12		1.8317m	1.8070m	1.9006	1.7708m	1.7796	1.6286	1.6595m	1.6400	AVRG		0.57070		1.7522	6	15	0.100	0.99	
Chloromethane		2.2017m	2.1072m	2.1530m	2.0193m	1.7521m	1.6050m	1.4670m		AVRG		0.52611		1.9008	15	15	0.100	0.99	
Vinyl Chloride	1.7229	1.7882m	1.6253	1.6382	1.6450	1.4923	1.3040	1.2386	1.2655	AVRG		0.65598		1.5244	14	15	0.100	0.99	
Bromomethane		0.6746m	0.7690m	0.7577	0.8257	0.7861	0.7542	0.7473	0.7597	AVRG		1.31701		0.7593	6	15	0.100	0.99	
Chloroethane		0.8553	0.9961m	0.9080	0.9422	0.9296	0.9159	0.9271	0.8688	AVRG		1.08946		0.9179	5	15	0.100	0.99	
Trichlorofluoromethane		1.5212	1.6239	1.6561	1.5767	1.6123	1.5354	1.6358	1.5446	AVRG		0.62963		1.5882	3	15	0.100	0.99	
Acetone			0.8005	0.8700	0.8058	0.7507	0.8474	0.8365	0.8300	AVRG		1.21931		0.8201	5	15	0.100	0.99	
Freon 113		0.7974	0.8100	0.8355	0.7430	0.8088	0.8366	0.8179	0.8118	AVRG		1.23819		0.8076	4	15	0.100	0.99	
1,1-Dichloroethene		0.9296	0.7896	0.7650m	0.6603	0.6966	0.7209	0.7311	0.7211	AVRG		1.33018		0.7518	11	15	0.100	0.99	
Methylene Chloride		0.8143	0.9181	0.9353	0.9486	0.9376	0.8998	0.8914	0.8883	AVRG		1.10599		0.9042	5	15	0.100	0.99	
Carbon Disulfide		2.9918	2.8900	2.6655	2.6078	2.7112	2.6670	2.6447	2.5440	AVRG		0.36829		2.7152	6	15	0.100	0.99	
MTBE		2.4024	2.4541	2.3677	2.5834	2.6126	2.6128	2.6194	2.5623	AVRG		0.39575		2.5268	4	15	0.100	0.99	
trans-1,2-Dichloroethene		0.9314m	0.8267	0.8678	0.8308	0.8169	0.8226	0.8024	0.8005	AVRG		1.19418		0.8374	5	15	0.100	0.99	
Vinyl Acetate			3.1864	3.2507	3.6447	3.8079	3.7325	3.6202	3.3460	AVRG		0.28469		3.5126	7	15	0.05	0.99	
1,1-Dichloroethane		1.8841	1.9635	1.9719	1.9476	1.9167	1.9331	1.8958	1.8175	AVRG		0.52185		1.9163	3	15	0.200	0.99	
2-Butanone			1.0271	1.1030	1.1874	1.1544	1.2841	1.2252	1.2126	AVRG		0.85431		1.1705	7	15	0.100	0.99	
2,2-Dichloropropane		1.3392	1.3305	1.2863	1.3065	1.3207	1.2475	1.2321	1.1924	AVRG		0.78009		1.2819	4	15	0.05	0.99	
cis-1,2-Dichloroethene		0.9031m	1.0486	0.9317m	0.9980	0.9550	0.9477	0.9400	0.9385	AVRG		1.04406		0.9578	5	15	0.100	0.99	
Chloroform		1.7948	1.6989	1.6323	1.5993	1.5893	1.5665	1.5247	1.4825	AVRG		0.62072		1.6110	6	15	0.200	0.99	
Bromochloromethane		0.3245	0.4344	0.4217	0.4230	0.4199	0.4081	0.4048	0.3890	AVRG		2.48034		0.4032	9	15	0.05	0.99	
1,1,1-Trichloroethane		1.3020	1.3349	1.2579	1.1920	1.2079	1.2360	1.1559	1.1346	AVRG		0.81456		1.2277	6	15	0.100	0.99	
1,1-Dichloropropene		0.7707	0.7999	0.7942	0.7250	0.7683	0.7562	0.7536	0.7258	AVRG		1.31283		0.7617	4	15	0.05	0.99	
Carbon Tetrachloride		0.3875	0.4824	0.5094	0.4915	0.5379	0.5452	0.5408	0.5478	AVRG		1.97906		0.5053	11	15	0.100	0.99	
1,2-Dichloroethane		0.7598	0.7680	0.7738	0.8001	0.7786	0.7354	0.7272	0.7318	AVRG		1.31692		0.7593	3	15	0.100	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Benzene		1.9623	2.0239	1.9769	1.9603	2.0539	1.9647	1.9832	1.9249	AVRG		0.50473		1.9813	2	15	0.500	0.99	
Trichloroethene		0.5003	0.5004	0.4625	0.4785	0.4928	0.4935	0.4874	0.4878	AVRG		2.04965		0.4879	3	15	0.200	0.99	
1,2-Dichloropropane		0.5979	0.6185	0.6107	0.6429	0.6475	0.6275	0.6243	0.5924	AVRG		1.61237		0.6202	3	15	0.100	0.99	
Bromodichloromethane		0.6248	0.7281	0.7208	0.7228	0.7173	0.7097	0.7046	0.6895	AVRG		1.42411		0.7022	5	15	0.200	0.99	
Dibromomethane		0.3887	0.4087	0.3896	0.3919	0.3918	0.3756	0.3845	0.3796	AVRG		2.57209		0.3888	3	15	0.05	0.99	
4-Methyl-2-Pentanone			1.1636	1.1983	1.3003	1.2531	1.2901	1.2635	1.1904	AVRG		0.80838		1.2370	4	15	0.100	0.99	
cis-1,3-Dichloropropene		0.7882	0.8108	0.8095	0.8437	0.8739	0.8573	0.8406	0.7968	AVRG		1.20834		0.8276	4	15	0.200	0.99	
Toluene		1.6301	1.3482	1.3129	1.3212	1.3813	1.3822	1.3775	1.2828	AVRG		0.72489		1.3795	8	15	0.400	0.99	
trans-1,3-Dichloropropene		0.8281	0.8370	0.8650	0.8914	0.9141	0.9658	0.9007	0.8970	AVRG		1.12687		0.8874	5	15	0.100	0.99	
1,1,2-Trichloroethane		0.3338	0.3028	0.3058	0.3090	0.3118	0.3236	0.3134	0.3104	AVRG		3.18651		0.3138	3	15	0.100	0.99	
2-Hexanone			1.1582	1.1592	1.2857	1.2127	1.3292	1.2012	1.1344	AVRG		0.82542		1.2115	6	15	0.100	0.99	
1,3-Dichloropropane		0.8272	0.9433	0.9211	0.9560	0.9782	1.0199	0.9508	0.9154	AVRG		1.06499		0.9390	6	15	0.05	0.99	
Tetrachloroethene		0.4577	0.4625	0.4713	0.4368	0.4619	0.5031	0.4774	0.4747	AVRG		2.13602		0.4682	4	15	0.200	0.99	
Dibromochloromethane		0.4788	0.5421	0.5444	0.5858	0.5884	0.6102	0.6017	0.5866	AVRG		1.76283		0.5673	8	15	0.100	0.99	
1,2-Dibromoethane		0.5518	0.5632	0.5803	0.5773	0.6125	0.6416	0.6120	0.6136	AVRG		1.68333		0.5941	5	15	0.100	0.99	
Chlorobenzene		1.3106	1.3066	1.2969	1.2760	1.3035	1.3604	1.2895	1.2884	AVRG		0.76688		1.3040	2	15	0.500	0.99	
1,1,1,2-Tetrachloroethane		0.4050	0.4598	0.4534	0.4724	0.4899	0.5146	0.4956	0.4827	AVRG		2.12008		0.4717	7	15	0.05	0.99	
Ethylbenzene		2.7158	2.6752	2.6356	2.5973	2.5658	2.6887	2.4418	2.3474	AVRG		0.38708		2.5834	5	15	0.100	0.99	
m,p-Xylenes	0.8532	0.8927	0.8802	0.8731	0.8527	0.8742	0.9537	0.8738	0.7734	AVRG		1.14986		0.8697	5	15	0.100	0.99	
o-Xylene		0.8938	0.8454	0.8762	0.8429	0.8899	0.9328	0.8563	0.8451	AVRG		1.14574		0.8728	4	15	0.300	0.99	
Styrene		1.4549	1.4376	1.4636	1.4919	1.5731	1.6435	1.4948	1.4823	AVRG		0.66436		1.5052	5	15	0.300	0.99	
Bromoform		0.3632	0.4011	0.3990	0.4092	0.4377	0.4794	0.4561	0.4669	AVRG		2.34432		0.4266	9	15	0.100	0.99	
Isopropylbenzene		3.8925	4.2266	4.0672	3.8724	3.9614	4.4745	4.1265	3.8806	AVRG		0.24614		4.0627	5	15	0.100	0.99	
1,1,2,2-Tetrachloroethane		1.5239	1.5354	1.5405	1.6144	1.6123	1.7417	1.6893	1.6547	AVRG		0.61957		1.6140	5	15	0.300	0.99	
1,2,3-Trichloropropane		1.4414	1.3883	1.3014	1.4023	1.3923	1.4478	1.4165	1.3436	AVRG		0.71854		1.3917	4	15	0.05	0.99	
Propylbenzene		5.8497	5.9527	5.6030	5.4004	5.6346	6.0003	5.3816	5.1059	AVRG		0.17806		5.6160	6	15	0.05	0.99	
Bromobenzene		0.9275	1.0054	0.9557	0.9798	1.0322	1.1140	1.0441	1.0510	AVRG		0.98647		1.0137	6	15	0.05	0.99	
1,3,5-Trimethylbenzene		3.3209	3.4522	3.2703	3.2475	3.3593	3.7059	3.1706	3.2816	AVRG		0.29842		3.3510	5	15	0.05	0.99	
2-Chlorotoluene		4.1063	3.7975	3.5504	3.5860	3.6155	3.9900	3.5613	3.5460	AVRG		0.26888		3.7191	6	15	0.05	0.99	
4-Chlorotoluene		3.7112	3.5285	3.4843	3.3991	3.4413	3.6508	3.3256	3.3204	AVRG		0.28714		3.4826	4	15	0.05	0.99	
tert-Butylbenzene		2.5263	2.7757	2.5882	2.5114	2.5230	2.8993	2.6399	2.6553	AVRG		0.37881		2.6399	5	15	0.05	0.99	
1,2,4-Trimethylbenzene		3.5093	3.4035	3.3814	3.3850	3.4337	3.6105	3.4730	3.3253	AVRG		0.29068		3.4402	3	15	0.05	0.99	
sec-Butylbenzene		4.2220	4.3077	4.1581	4.0279	4.2087	4.8434	4.3492	4.1932	AVRG		0.23317		4.2888	6	15	0.05	0.99	
para-Isopropyl Toluene		3.2688	3.2631	3.2931	3.1968	3.2218	3.5751	3.3434	3.3701	AVRG		0.30152		3.3165	4	15	0.05	0.99	
1,3-Dichlorobenzene		1.6336	1.6472	1.7140	1.7444	1.7421	1.9005	1.7721	1.8234	AVRG		0.57235		1.7472	5	15	0.600	0.99	
1,4-Dichlorobenzene		1.7960	1.8745	1.7177	1.7332	1.7557	1.9048	1.7490	1.7884	AVRG		0.55869		1.7899	4	15	0.500	0.99	
n-Butylbenzene		3.9950	3.7241	3.6183	3.4695	3.6115	4.0539	3.6101	3.5290	AVRG		0.27017		3.7014	6	15	0.05	0.99	
1,2-Dichlorobenzene		1.5035	1.6164	1.6102	1.5979	1.6442	1.8084	1.6747	1.6923	AVRG		0.60848		1.6434	5	15	0.400	0.99	
1,2-Dibromo-3-Chloropropane			0.4395	0.3970	0.4360	0.4146	0.4569	0.4111	0.4158	AVRG		2.35627		0.4244	5	15	0.050	0.99	
1,2,4-Trichlorobenzene		0.8576	0.9050	0.9045	0.9085	0.9433	1.0663	0.9842	0.9800	AVRG		1.05968		0.9437	7	15	0.200	0.99	
Hexachlorobutadiene		0.3054	0.4055	0.4071	0.3692	0.4128	0.4610	0.4383	0.4280	AVRG		2.47893		0.4034	12	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Naphthalene		2.7085	2.9022	2.8060	3.0379	3.1109	3.3834	3.0872	3.0968	AVRG		0.33150		3.0166	7	15	0.05	0.99	
1,2,3-Trichlorobenzene		0.8177	0.8258	0.7948	0.7990	0.8359	0.9341	0.8844	0.8622	AVRG		1.18449		0.8442	6	15	0.05	0.99	
Dibromofluoromethane	0.6827	0.6876	0.6845	0.6863	0.6872	0.6741	0.6740	0.6643	0.6626	AVRG		1.47461		0.6781	1	15	0.05	0.99	
1,2-Dichloroethane-d4	0.5132	0.5181	0.5200	0.5207	0.5058	0.5081	0.4636	0.4580	0.4481	AVRG		2.01989		0.4951	6	15	0.05	0.99	
Toluene-d8	1.3772	1.4043	1.3705	1.4268	1.4198	1.4203	1.4395	1.3635	1.3826	AVRG		0.71403		1.4005	2	15	0.05	0.99	
Bromofluorobenzene	1.1137	1.1276	1.1221	1.1135	1.1321	1.0977	1.1518	1.1376	1.1517	AVRG		0.88688		1.1275	2	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Freon 12			1.0000	5	2.0000	3	5.0000	8	10.000	1	20.000	2	50.000	-7	75.000	-5	100.00	-6
Chloromethane			1.0000	16	2.0000	11	5.0000	13	10.000	6	20.000	-8	50.000	-16	75.000	**-23**		
Vinyl Chloride	0.5000	13	1.0000	17	2.0000	7	5.0000	7	10.000	8	20.000	-2	50.000	-14	75.000	-19	100.00	-17
Bromomethane			1.0000	-11	2.0000	1	5.0000	0	10.000	9	20.000	4	50.000	-1	75.000	-2	100.00	0
Chloroethane			1.0000	-7	2.0000	9	5.0000	-1	10.000	3	20.000	1	50.000	0	75.000	1	100.00	-5
Trichlorofluoromethane			1.0000	-4	2.0000	2	5.0000	4	10.000	-1	20.000	2	50.000	-3	75.000	3	100.00	-3
Acetone					2.0000	-2	5.0000	6	10.000	-2	20.000	-8	50.000	3	75.000	2	100.00	1
Freon 113			0.5000	-1	2.0000	0	5.0000	3	10.000	-8	20.000	0	50.000	4	75.000	1	100.00	1
1,1-Dichloroethene			0.5000	**24**	2.0000	5	5.0000	2	10.000	-12	20.000	-7	50.000	-4	75.000	-3	100.00	-4
Methylene Chloride			0.5000	-10	2.0000	2	5.0000	3	10.000	5	20.000	4	50.000	0	75.000	-1	100.00	-2
Carbon Disulfide			0.5000	10	2.0000	6	5.0000	-2	10.000	-4	20.000	0	50.000	-2	75.000	-3	100.00	-6
MTBE			0.5000	-5	2.0000	-3	5.0000	-6	10.000	2	20.000	3	50.000	3	75.000	4	100.00	1
trans-1,2-Dichloroethene			0.5000	11	2.0000	-1	5.0000	4	10.000	-1	20.000	-2	50.000	-2	75.000	-4	100.00	-4
Vinyl Acetate					2.0000	-9	5.0000	-7	10.000	4	20.000	8	50.000	6	75.000	3	100.00	-5
1,1-Dichloroethane			0.5000	-2	2.0000	2	5.0000	3	10.000	2	20.000	0	50.000	1	75.000	-1	100.00	-5
2-Butanone					2.0000	-12	5.0000	-6	10.000	1	20.000	-1	50.000	10	75.000	5	100.00	4
2,2-Dichloropropane			0.5000	4	2.0000	4	5.0000	0	10.000	2	20.000	3	50.000	-3	75.000	-4	100.00	-7
cis-1,2-Dichloroethene			0.5000	-6	2.0000	9	5.0000	-3	10.000	4	20.000	0	50.000	-1	75.000	-2	100.00	-2
Chloroform			0.5000	11	2.0000	5	5.0000	1	10.000	-1	20.000	-1	50.000	-3	75.000	-5	100.00	-8
Bromochloromethane			0.5000	-20	2.0000	8	5.0000	5	10.000	5	20.000	4	50.000	1	75.000	0	100.00	-4
1,1,1-Trichloroethane			0.5000	6	2.0000	9	5.0000	2	10.000	-3	20.000	-2	50.000	1	75.000	-6	100.00	-8
1,1-Dichloropropene			0.5000	1	2.0000	5	5.0000	4	10.000	-5	20.000	1	50.000	-1	75.000	-1	100.00	-5
Carbon Tetrachloride			0.5000	**-23**	2.0000	-5	5.0000	1	10.000	-3	20.000	6	50.000	8	75.000	7	100.00	8
1,2-Dichloroethane			0.5000	0	2.0000	1	5.0000	2	10.000	5	20.000	3	50.000	-3	75.000	-4	100.00	-4
Benzene			0.5000	-1	2.0000	2	5.0000	0	10.000	-1	20.000	4	50.000	-1	75.000	0	100.00	-3
Trichloroethene			0.5000	3	2.0000	3	5.0000	-5	10.000	-2	20.000	1	50.000	1	75.000	0	100.00	0
1,2-Dichloropropane			0.5000	-4	2.0000	0	5.0000	-2	10.000	4	20.000	4	50.000	1	75.000	1	100.00	-4
Bromodichloromethane			0.5000	-11	2.0000	4	5.0000	3	10.000	3	20.000	2	50.000	1	75.000	0	100.00	-2
Dibromomethane			0.5000	0	2.0000	5	5.0000	0	10.000	1	20.000	1	50.000	-3	75.000	-1	100.00	-2
4-Methyl-2-Pentanone					2.0000	-6	5.0000	-3	10.000	5	20.000	1	50.000	4	75.000	2	100.00	-4
cis-1,3-Dichloropropene			0.5000	-5	2.0000	-2	5.0000	-2	10.000	2	20.000	6	50.000	4	75.000	2	100.00	-4
Toluene			0.5000	18	2.0000	-2	5.0000	-5	10.000	-4	20.000	0	50.000	0	75.000	0	100.00	-7
trans-1,3-Dichloropropene			0.5000	-7	2.0000	-6	5.0000	-3	10.000	0	20.000	3	50.000	9	75.000	2	100.00	1
1,1,2-Trichloroethane			0.5000	6	2.0000	-4	5.0000	-3	10.000	-2	20.000	-1	50.000	3	75.000	0	100.00	-1
2-Hexanone					2.0000	-4	5.0000	-4	10.000	6	20.000	0	50.000	10	75.000	-1	100.00	-6
1,3-Dichloropropane			0.5000	-12	2.0000	0	5.0000	-2	10.000	2	20.000	4	50.000	9	75.000	1	100.00	-3
Tetrachloroethene			0.5000	-2	2.0000	-1	5.0000	1	10.000	-7	20.000	-1	50.000	7	75.000	2	100.00	1
Dibromochloromethane			0.5000	-16	2.0000	-4	5.0000	-4	10.000	3	20.000	4	50.000	8	75.000	6	100.00	3
1,2-Dibromoethane			0.5000	-7	2.0000	-5	5.0000	-2	10.000	-3	20.000	3	50.000	8	75.000	3	100.00	3
Chlorobenzene			0.5000	1	2.0000	0	5.0000	-1	10.000	-2	20.000	0	50.000	4	75.000	-1	100.00	-1
1,1,1,2-Tetrachloroethane			0.5000	-14	2.0000	-3	5.0000	-4	10.000	0	20.000	4	50.000	9	75.000	5	100.00	2
Ethylbenzene			0.5000	5	2.0000	4	5.0000	2	10.000	1	20.000	-1	50.000	4	75.000	-5	100.00	-9

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
m,p-Xylenes	0.5000	-2	1.0000	3	4.0000	1	10.000	0	20.000	-2	40.000	1	100.00	10	150.00	0	200.00	-11
o-Xylene			0.5000	2	2.0000	-3	5.0000	0	10.000	-3	20.000	2	50.000	7	75.000	-2	100.00	-3
Styrene			0.5000	-3	2.0000	-4	5.0000	-3	10.000	-1	20.000	5	50.000	9	75.000	-1	100.00	-2
Bromoform			0.5000	-15	2.0000	-6	5.0000	-6	10.000	-4	20.000	3	50.000	12	75.000	7	100.00	9
Isopropylbenzene			0.5000	-4	2.0000	4	5.0000	0	10.000	-5	20.000	-2	50.000	10	75.000	2	100.00	-4
1,1,2,2-Tetrachloroethane			0.5000	-6	2.0000	-5	5.0000	-5	10.000	0	20.000	0	50.000	8	75.000	5	100.00	3
1,2,3-Trichloropropane			0.5000	4	2.0000	0	5.0000	-6	10.000	1	20.000	0	50.000	4	75.000	2	100.00	-3
Propylbenzene			0.5000	4	2.0000	6	5.0000	0	10.000	-4	20.000	0	50.000	7	75.000	-4	100.00	-9
Bromobenzene			0.5000	-9	2.0000	-1	5.0000	-6	10.000	-3	20.000	2	50.000	10	75.000	3	100.00	4
1,3,5-Trimethylbenzene			0.5000	-1	2.0000	3	5.0000	-2	10.000	-3	20.000	0	50.000	11	75.000	-5	100.00	-2
2-Chlorotoluene			0.5000	10	2.0000	2	5.0000	-5	10.000	-4	20.000	-3	50.000	7	75.000	-4	100.00	-5
4-Chlorotoluene			0.5000	7	2.0000	1	5.0000	0	10.000	-2	20.000	-1	50.000	5	75.000	-5	100.00	-5
tert-Butylbenzene			0.5000	-4	2.0000	5	5.0000	-2	10.000	-5	20.000	-4	50.000	10	75.000	0	100.00	1
1,2,4-Trimethylbenzene			0.5000	2	2.0000	-1	5.0000	-2	10.000	-2	20.000	0	50.000	5	75.000	1	100.00	-3
sec-Butylbenzene			0.5000	-2	2.0000	0	5.0000	-3	10.000	-6	20.000	-2	50.000	13	75.000	1	100.00	-2
para-Isopropyl Toluene			0.5000	-1	2.0000	-2	5.0000	-1	10.000	-4	20.000	-3	50.000	8	75.000	1	100.00	2
1,3-Dichlorobenzene			0.5000	-6	2.0000	-6	5.0000	-2	10.000	0	20.000	0	50.000	9	75.000	1	100.00	4
1,4-Dichlorobenzene			0.5000	0	2.0000	5	5.0000	-4	10.000	-3	20.000	-2	50.000	6	75.000	-2	100.00	0
n-Butylbenzene			0.5000	8	2.0000	1	5.0000	-2	10.000	-6	20.000	-2	50.000	10	75.000	-2	100.00	-5
1,2-Dichlorobenzene			0.5000	-9	2.0000	-2	5.0000	-2	10.000	-3	20.000	0	50.000	10	75.000	2	100.00	3
1,2-Dibromo-3-Chloropropane					2.0000	4	5.0000	-6	10.000	3	20.000	-2	50.000	8	75.000	-3	100.00	-2
1,2,4-Trichlorobenzene			0.5000	-9	2.0000	-4	5.0000	-4	10.000	-4	20.000	0	50.000	13	75.000	4	100.00	4
Hexachlorobutadiene			0.5000	**-24**	2.0000	1	5.0000	1	10.000	-8	20.000	2	50.000	14	75.000	9	100.00	6
Naphthalene			0.5000	-10	2.0000	-4	5.0000	-7	10.000	1	20.000	3	50.000	12	75.000	2	100.00	3
1,2,3-Trichlorobenzene			0.5000	-3	2.0000	-2	5.0000	-6	10.000	-5	20.000	-1	50.000	11	75.000	5	100.00	2
Dibromofluoromethane	50.000	1	50.000	1	50.000	1	50.000	1	50.000	1	50.000	-1	50.000	-1	50.000	-2	50.000	-2
1,2-Dichloroethane-d4	50.000	4	50.000	5	50.000	5	50.000	5	50.000	2	50.000	3	50.000	-6	50.000	-7	50.000	-9
Toluene-d8	50.000	-2	50.000	0	50.000	-2	50.000	2	50.000	1	50.000	1	50.000	3	50.000	-3	50.000	-1
Bromofluorobenzene	50.000	-1	50.000	0	50.000	0	50.000	-1	50.000	0	50.000	-3	50.000	2	50.000	1	50.000	2

MCT 11/05/15 [Freon 12]: Combined split peak in multiple levels.

MCT 11/05/15 [Chloromethane]: Combined split peak in all levels.

MCT 11/05/15 [Bromomethane]: Combined split peak in multiple levels.

MCT 11/05/15 [Chloroethane]: Combined split peak in multiple levels.

MCT 11/05/15 [Iodomethane]: Combined split peak in multiple levels.

MCT 11/05/15 [Vinyl Chloride]: Combined split peak1PPB (fk412).

MCT 11/05/15 [Ethanol]: Combined split peak1PPB (fk412).

MCT 11/05/15 [Isopropanol]: Combined split peak1PPB (fk412).

MCT 11/05/15 [trans-1,2-Dichloroethene]: Corrected baseline noise or negative peak1PPB (fk412).

MCT 11/05/15 [cis-1,2-Dichloroethene]: Corrected baseline noise or negative peak in multiple levels.

MCT 11/05/15 [2-Butanone]: Corrected baseline noise or negative peak1PPB (fk412).

MCT 11/05/15 [Trifluorotoluene]: Picked or reassigned peak in multiple levels.

MCT 11/06/15 [1,1-Dichloroethene]: Combined split peak in 5PPB (fk414).

Analyst: MCT Date: 11/05/15 Reviewer: LW Date: 11/06/15

m=manual integration

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA06 Name : 826GOX6W
Calnum : 455443988001 Cal Date : 04-NOV-2015 Type : WATER

ICV 455443988020 (fk420 04-NOV-2015) stds: S28123 (10000X), S28450 (5000X)
ICV 455443988021 (fk421 04-NOV-2015) stds: S28219 (10000X), S28220 (10000X), S28167 (10000X), S28450 (5000X)

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
Freon 12	455443988020	20.00	18.16	ug/L	-9	20	
Chloromethane	455443988020	20.00	14.54	ug/L	**-27**	20	v- *** m
Vinyl Chloride	455443988020	20.00	16.01	ug/L	-20	20	
Bromomethane	455443988020	20.00	15.43	ug/L	**-23**	20	v- ***
Chloroethane	455443988020	20.00	21.41	ug/L	7	20	
Trichlorofluoromethane	455443988020	20.00	20.97	ug/L	5	20	
Acetone	455443988021	25.00	24.04	ug/L	-4	20	
Freon 113	455443988021	25.00	24.39	ug/L	-2	20	
1,1-Dichloroethene	455443988021	25.00	26.03	ug/L	4	20	
Methylene Chloride	455443988021	25.00	26.67	ug/L	7	20	
Carbon Disulfide	455443988021	25.00	25.92	ug/L	4	20	
MTBE	455443988021	25.00	28.75	ug/L	15	20	
trans-1,2-Dichloroethene	455443988021	25.00	24.79	ug/L	-1	20	
Vinyl Acetate	455443988021	25.00	29.61	ug/L	18	20	
1,1-Dichloroethane	455443988021	25.00	26.60	ug/L	6	20	
2-Butanone	455443988021	25.00	25.35	ug/L	1	20	
2,2-Dichloropropane	455443988021	25.00	26.33	ug/L	5	20	
cis-1,2-Dichloroethene	455443988021	25.00	26.95	ug/L	8	20	
Chloroform	455443988021	25.00	26.29	ug/L	5	20	
Bromochloromethane	455443988021	25.00	26.73	ug/L	7	20	
1,1,1-Trichloroethane	455443988021	25.00	27.53	ug/L	10	20	
1,1-Dichloropropene	455443988021	25.00	23.28	ug/L	-7	20	
Carbon Tetrachloride	455443988021	25.00	29.99	ug/L	20	20	
1,2-Dichloroethane	455443988021	25.00	25.77	ug/L	3	20	
Benzene	455443988021	25.00	27.01	ug/L	8	20	
Trichloroethene	455443988021	25.00	27.16	ug/L	9	20	
1,2-Dichloropropane	455443988021	25.00	26.19	ug/L	5	20	
Bromodichloromethane	455443988021	25.00	26.78	ug/L	7	20	
Dibromomethane	455443988021	25.00	26.12	ug/L	4	20	
4-Methyl-2-Pentanone	455443988021	25.00	26.53	ug/L	6	20	
cis-1,3-Dichloropropene	455443988021	25.00	28.65	ug/L	15	20	
Toluene	455443988021	25.00	26.35	ug/L	5	20	
trans-1,3-Dichloropropene	455443988021	25.00	27.67	ug/L	11	20	
1,1,2-Trichloroethane	455443988021	25.00	26.87	ug/L	7	20	
2-Hexanone	455443988021	25.00	26.38	ug/L	6	20	
1,3-Dichloropropane	455443988021	25.00	28.18	ug/L	13	20	
Tetrachloroethene	455443988021	25.00	29.15	ug/L	17	20	
Dibromochloromethane	455443988021	25.00	27.82	ug/L	11	20	
1,2-Dibromoethane	455443988021	25.00	27.32	ug/L	9	20	
Chlorobenzene	455443988021	25.00	27.26	ug/L	9	20	
1,1,1,2-Tetrachloroethane	455443988021	25.00	27.84	ug/L	11	20	
Ethylbenzene	455443988021	25.00	27.18	ug/L	9	20	
m,p-Xylenes	455443988021	50.00	56.10	ug/L	12	20	
o-Xylene	455443988021	25.00	26.66	ug/L	7	20	
Styrene	455443988021	25.00	28.21	ug/L	13	20	
Bromoform	455443988021	25.00	28.10	ug/L	12	20	
Isopropylbenzene	455443988021	25.00	28.97	ug/L	16	20	

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
1,1,2,2-Tetrachloroethane	455443988021	25.00	27.97	ug/L	12	20	
1,2,3-Trichloropropane	455443988021	25.00	26.38	ug/L	6	20	
Propylbenzene	455443988021	25.00	26.81	ug/L	7	20	
Bromobenzene	455443988021	25.00	27.53	ug/L	10	20	
1,3,5-Trimethylbenzene	455443988021	25.00	29.16	ug/L	17	20	
2-Chlorotoluene	455443988021	25.00	27.10	ug/L	8	20	
4-Chlorotoluene	455443988021	25.00	27.49	ug/L	10	20	
tert-Butylbenzene	455443988021	25.00	27.10	ug/L	8	20	
1,2,4-Trimethylbenzene	455443988021	25.00	27.95	ug/L	12	20	
sec-Butylbenzene	455443988021	25.00	28.34	ug/L	13	20	
para-Isopropyl Toluene	455443988021	25.00	28.04	ug/L	12	20	
1,3-Dichlorobenzene	455443988021	25.00	27.79	ug/L	11	20	
1,4-Dichlorobenzene	455443988021	25.00	28.41	ug/L	14	20	
n-Butylbenzene	455443988021	25.00	26.88	ug/L	8	20	
1,2-Dichlorobenzene	455443988021	25.00	27.55	ug/L	10	20	
1,2-Dibromo-3-Chloropropane	455443988021	25.00	25.45	ug/L	2	20	
1,2,4-Trichlorobenzene	455443988021	25.00	27.61	ug/L	10	20	
Hexachlorobutadiene	455443988021	25.00	28.57	ug/L	14	20	
Naphthalene	455443988021	25.00	25.70	ug/L	3	20	
1,2,3-Trichlorobenzene	455443988021	25.00	27.75	ug/L	11	20	

455443988020: Analyst: MCT Date: 11/05/15 Reviewer: LW Date: 11/06/15
455443988021: Analyst: MCT Date: 11/05/15 Reviewer: LW Date: 11/06/15

-=low bias m=manual integration v=ICV

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 272485 MSVOA Water: EPA 8260C

Inst : MSVOA08 Name : 826GOX8
Calnum : 475492027002 Date : 07-DEC-2015 21:20 Type : WATER
Units : ug/L X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	hl709	475492027009	.25PPB	07-DEC-2015 21:20	S27004 (2000000X), S28295 (2000000X), S28355 (2000000X), S27081 (1000000X), S28588 (5000X)
L2	hl710	475492027010	.5PPB	07-DEC-2015 21:54	S28588 (5000X), S27004 (1000000X), S28295 (1000000X), S28355 (1000000X), S27081 (500000X)
L3	hl711	475492027011	2PPB	07-DEC-2015 22:28	S27004 (500000X), S28295 (250000X), S28355 (250000X), S27081 (250000X), S28588 (5000X)
L4	hl712	475492027012	5PPB	07-DEC-2015 23:03	S28588 (5000X), S27004 (200000X), S28295 (100000X), S28355 (100000X), S27081 (100000X)
L5	hl713	475492027013	10PPB	07-DEC-2015 23:37	S28588 (5000X), S27004 (100000X), S28295 (50000X), S28355 (50000X), S27081 (50000X)
L6	hl714	475492027014	20PPB	08-DEC-2015 00:11	S28588 (5000X), S27004 (50000X), S28295 (25000X), S28355 (25000X), S27081 (25000X)
L7	hl715	475492027015	50PPB	08-DEC-2015 00:45	S28588 (5000X), S27004 (20000X), S28295 (10000X), S28355 (10000X), S27081 (10000X)
L8	hl716	475492027016	75PPB	08-DEC-2015 01:20	S28588 (5000X), S27004 (13330X), S28295 (6667X), S28355 (6667X), S27081 (6667X)
L9	hl717	475492027017	100PPB	08-DEC-2015 01:54	S28588 (5000X), S27004 (10000X), S28295 (5000X), S28355 (5000X), S27081 (5000X)

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Freon 12		0.8463	0.7872	0.8185	0.6879	0.7983	0.7105	0.7196	0.7432	AVRG		1.30899		0.7639	7	15	0.100	0.99	
Chloromethane	1.0329	1.0245	0.9871	0.8970	0.9121	0.8893	0.7923	0.8286	0.7951	AVRG		1.10309		0.9065	10	15	0.100	0.99	
Vinyl Chloride	0.7914	0.7334	0.7547	0.7622	0.7268	0.7489	0.6745	0.6767	0.7305	AVRG		1.36385		0.7332	5	15	0.100	0.99	
Bromomethane	0.2025	0.2101	0.2102	0.2098	0.2320	0.2707	0.3619			QUAD	0.37279	4.09742	-0.07493	0.2425	1.000	15	0.100	0.99	
Chloroethane		0.5521	0.5253	0.5088	0.5473	0.5212	0.4692	0.4870	0.4919	AVRG		1.94998		0.5128	6	15	0.100	0.99	
Trichlorofluoromethane		0.8477	0.8109	0.8770	0.7787	0.8254	0.7267	0.7969	0.7862	AVRG		1.24041		0.8062	6	15	0.100	0.99	
Acetone			0.1541	0.1370	0.1380	0.1431	0.1655	0.1508	0.1327	AVRG		6.85468		0.1459	8	15	0.100	0.99	
Freon 113		0.5170	0.4853	0.4824	0.4856	0.4603	0.4509	0.4425	0.4260	AVRG		2.13339		0.4687	6	15	0.100	0.99	
1,1-Dichloroethene		0.5275	0.4995	0.4686	0.4841	0.4786	0.4533	0.4391	0.4345	AVRG		2.11350		0.4731	7	15	0.100	0.99	
Methylene Chloride		0.5935	0.5816	0.5583	0.5710	0.5964	0.4978	0.5343	0.5393	AVRG		1.78880		0.5590	6	15	0.100	0.99	
Carbon Disulfide		2.2028	2.0174	1.9554	1.9369	2.0007	1.8058	1.7809	1.7783	AVRG		0.51685		1.9348	8	15	0.100	0.99	
MTBE		1.2425	1.3178	1.2409	1.2680	1.3404	1.0735	1.2030	1.2482	AVRG		0.80529		1.2418	7	15	0.100	0.99	
trans-1,2-Dichloroethene		0.5316	0.5689	0.5333	0.5440	0.5790	0.4895	0.4928	0.5127	AVRG		1.88158		0.5315	6	15	0.100	0.99	
Vinyl Acetate			1.2288	1.1736	1.2428	1.2530	1.0424	1.2518	1.1592	AVRG		0.83817		1.1931	6	15	0.05	0.99	
1,1-Dichloroethane		1.2239	1.1315	1.1061	1.1245	1.1364	0.9571	0.9740	1.0116	AVRG		0.92323		1.0832	9	15	0.200	0.99	
2-Butanone			0.2119	0.2337	0.2181	0.2304	0.2461	0.2388	0.2096	AVRG		4.40617		0.2270	6	15	0.100	0.99	
2,2-Dichloropropane		0.7684	0.7187	0.6971	0.6508	0.6550	0.5842	0.5815	0.5843	AVRG		1.52677		0.6550	11	15	0.05	0.99	
cis-1,2-Dichloroethene		0.6669	0.6677	0.6267	0.6423	0.6523	0.5564	0.5838	0.5998	AVRG		1.60131		0.6245	7	15	0.100	0.99	
Chloroform		1.0351	1.0004	0.9735	0.9740	0.9756	0.8485	0.8563	0.9271	AVRG		1.05397		0.9488	7	15	0.200	0.99	
Bromochloromethane		0.2851	0.3133	0.3309	0.3277	0.3301	0.2744	0.2992	0.3030	AVRG		3.24708		0.3080	7	15	0.05	0.99	
1,1,1-Trichloroethane		0.7653	0.7142	0.6680	0.6882	0.6813	0.6161	0.6230	0.6257	AVRG		1.48649		0.6727	8	15	0.100	0.99	
1,1-Dichloropropene		0.6445	0.5054	0.4747	0.5088	0.4739	0.5342	0.4648	0.4252	AVRG		1.98440		0.5039	13	15	0.05	0.99	
Carbon Tetrachloride		0.4875	0.3841	0.3819	0.3987	0.3807	0.4293	0.3789	0.3647	AVRG		2.49547		0.4007	10	15	0.100	0.99	
1,2-Dichloroethane		0.4528	0.3840	0.3835	0.4127	0.3918	0.3782	0.3948	0.3743	AVRG		2.52198		0.3965	6	15	0.100	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Benzene		1.7246	1.3482	1.3610	1.4222	1.3665	1.3419	1.3136	1.1586	AVRG		0.72486		1.3796	12	15	0.500	0.99	
Trichloroethene		0.4648	0.3320	0.3430	0.3705	0.3431	0.3662	0.3275	0.3170	AVRG		2.79327		0.3580	13	15	0.200	0.99	
1,2-Dichloropropane		0.4121	0.4105	0.4147	0.4190	0.3871	0.3955	0.3837	0.3689	AVRG		2.50666		0.3989	4	15	0.100	0.99	
Bromodichloromethane		0.4645	0.4339	0.4331	0.4781	0.4528	0.4507	0.4431	0.4413	AVRG		2.22365		0.4497	3	15	0.200	0.99	
Dibromomethane		0.2276	0.2109	0.2113	0.2295	0.2204	0.2189	0.2239	0.2027	AVRG		4.58392		0.2182	4	15	0.05	0.99	
4-Methyl-2-Pentanone			0.3203	0.3174	0.3452	0.3234	0.3833	0.3725	0.3063	AVRG		2.95582		0.3383	9	15	0.100	0.99	
cis-1,3-Dichloropropene		0.5803	0.5419	0.5379	0.5528	0.5364	0.5138	0.5294	0.5106	AVRG		1.85911		0.5379	4	15	0.200	0.99	
Toluene		1.2651	0.9463	0.9255	0.9602	1.0083	1.0713	0.9062	0.8330	AVRG		1.01063		0.9895	13	15	0.400	0.99	
trans-1,3-Dichloropropene		0.5595	0.4607	0.4734	0.5136	0.5356	0.5515	0.5138	0.4675	AVRG		1.96293		0.5094	8	15	0.100	0.99	
1,1,2-Trichloroethane		0.2323	0.1704	0.1734	0.1830	0.1862	0.1985	0.1828	0.1623	AVRG		5.37287		0.1861	12	15	0.100	0.99	
2-Hexanone			0.2483	0.2449	0.2626	0.2800	0.3291	0.2945	0.2367	AVRG		3.69202		0.2709	12	15	0.100	0.99	
1,3-Dichloropropane		0.6480	0.5322	0.5295	0.5555	0.5872	0.5805	0.5707	0.5079	AVRG		1.77323		0.5639	8	15	0.05	0.99	
Tetrachloroethene	0.4705	0.5443	0.3926	0.3535	0.3938	0.3988	0.4845	0.3824		AVRG		2.33891		0.4276	15	15	0.200	0.99	
Dibromochloromethane		0.4942	0.4065	0.3982	0.4358	0.4564	0.4788	0.4360	0.3982	AVRG		2.28307		0.4380	8	15	0.100	0.99	
1,2-Dibromoethane		0.4052	0.3438	0.3288	0.3595	0.3706	0.4061	0.3669	0.3264	AVRG		2.75163		0.3634	8	15	0.100	0.99	
Chlorobenzene		1.4205	1.0348	1.0094	1.0914	1.0966	1.1587	1.0063	0.9475	AVRG		0.91270		1.0956	13	15	0.500	0.99	
1,1,1,2-Tetrachloroethane		0.5561	0.3915	0.3814	0.4191	0.4392	0.4350	0.3990	0.3747	AVRG		2.35572		0.4245	14	15	0.05	0.99	
Ethylbenzene		2.3986	1.7541	1.6787	1.7950	1.8397	1.9882	1.6476	1.5082	AVRG		0.54757		1.8263	15	15	0.100	0.99	
m,p-Xylenes	0.8053	0.9713	0.6525	0.6498	0.6333	0.6660	0.7580			QUAD	-0.2872	1.62499	-0.00399	0.7337	1.000	15	0.100	0.99	
o-Xylene		0.8605	0.6664	0.6313	0.7103	0.7049	0.7639	0.6260	0.5889	AVRG		1.44088		0.6940	13	15	0.300	0.99	
Styrene		1.3857	1.0806	1.0425	1.1902	1.2216	1.3099	1.1256	0.9900	AVRG		0.85597		1.1683	12	15	0.300	0.99	
Bromoform		0.3002	0.2389	0.2340	0.2661	0.2802	0.3139	0.2815	0.2468	AVRG		3.70108		0.2702	11	15	0.100	0.99	
Isopropylbenzene		4.3930	3.2787	3.0984	3.1900	3.1583	3.7040	3.0754	2.8823	AVRG		0.29873		3.3475	14	15	0.100	0.99	
1,1,2,2-Tetrachloroethane		0.9771	0.7654	0.7285	0.7981	0.8012	0.8735	0.8592	0.7292	AVRG		1.22468		0.8165	10	15	0.300	0.99	
1,2,3-Trichloropropane		0.2662	0.1931	0.1769	0.1799	0.1859	0.1984	0.2055	0.1712	AVRG		5.07245		0.1971	15	15	0.05	0.99	
Propylbenzene		5.3566	3.9617	3.6951	3.9037	3.7498	4.5071	3.6583		AVRG		0.24278		4.1189	15	15	0.05	0.99	
Bromobenzene		1.1297	0.9152	0.8740	0.9342	0.9170	0.9655	0.9042	0.8455	AVRG		1.06875		0.9357	9	15	0.05	0.99	
1,3,5-Trimethylbenzene		3.5943	2.7164	2.4690	2.6779	2.4569	3.0477	2.5067		AVRG		0.35955		2.7813	15	15	0.05	0.99	
2-Chlorotoluene		3.4665	2.6255	2.4170	2.5710	2.4285	2.8708	2.4720	2.1312	AVRG		0.38127		2.6228	15	15	0.05	0.99	
4-Chlorotoluene		3.1275	2.4437	2.2350	2.2467	2.2572	2.4186	2.2275	1.9979	AVRG		0.42207		2.3693	14	15	0.05	0.99	
tert-Butylbenzene		3.2340	2.2879	2.1452	2.2967	2.2380	2.6268	2.3084	2.1052	AVRG		0.41575		2.4053	15	15	0.05	0.99	
1,2,4-Trimethylbenzene		3.6607	2.6266	2.3856	2.6427	2.5809	2.9269	2.5866	2.3812	AVRG		0.36712		2.7239	15	15	0.05	0.99	
sec-Butylbenzene		4.8879	3.6645	3.3083	3.4641	3.3897	4.0259	3.4593		AVRG		0.26718		3.7428	15	15	0.05	0.99	
para-Isopropyl Toluene		3.6720	2.7726	2.5864	2.6640	2.5833	3.0582	2.6893	2.2977	AVRG		0.35837		2.7904	15	15	0.05	0.99	
1,3-Dichlorobenzene		1.9813	1.5792	1.4476	1.5652	1.5323	1.7001	1.5924	1.4091	AVRG		0.62465		1.6009	11	15	0.600	0.99	
1,4-Dichlorobenzene		2.0079	1.6066	1.4927	1.5293	1.5219	1.6812	1.5616	1.4261	AVRG		0.62367		1.6034	11	15	0.500	0.99	
n-Butylbenzene	2.5589	3.2389	2.2644	2.1436	2.2877	2.1656	2.7796	2.2771	2.1103	AVRG		0.41235		2.4251	15	15	0.05	0.99	
1,2-Dichlorobenzene		2.0203	1.5286	1.4124	1.5560	1.5049	1.6322	1.5333	1.4334	AVRG		0.63387		1.5776	12	15	0.400	0.99	
1,2-Dibromo-3-Chloropropane		0.1192	0.1017	0.1015	0.1084	0.1074	0.1385	0.1332	0.1079	AVRG		8.71555		0.1147	12	15	0.050	0.99	
1,2,4-Trichlorobenzene		0.9213	0.7560	0.7433	0.7849	0.8087	0.9522	0.9102	0.8449	AVRG		1.19021		0.8402	9	15	0.200	0.99	
Hexachlorobutadiene		0.4376	0.4059	0.3871	0.3999	0.3801	0.5310	0.4474	0.3954	AVRG		2.36374		0.4231	12	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Naphthalene		1.5778	1.4047	1.4653	1.6930	1.7459	2.0930	2.1143	1.7804	AVRG		0.57660		1.7343	15	15	0.05	0.99	
1,2,3-Trichlorobenzene		0.8088	0.7226	0.7204	0.7639	0.7787	0.9205	0.8775	0.7921	AVRG		1.25304		0.7981	9	15	0.05	0.99	
Dibromofluoromethane	0.5747	0.4427	0.5739	0.5738	0.5664	0.5578	0.4352	0.5159	0.5555	AVRG		1.87659		0.5329	11	15	0.05	0.99	
1,2-Dichloroethane-d4	0.3064	0.2554	0.2963	0.3131	0.3050	0.2905	0.2472	0.2880	0.2669	AVRG		3.50352		0.2854	8	15	0.05	0.99	
Toluene-d8	1.2336	1.3003	1.1810	1.1604	1.1998	1.2719	1.3767	1.1853	1.1749	AVRG		0.81199		1.2315	6	15	0.05	0.99	
Bromofluorobenzene	0.9273	0.9061	0.9349	0.9347	0.9080	0.9599	0.9194	0.9428	0.9667	AVRG		1.07145		0.9333	2	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Freon 12			1.0000	11	2.0000	3	5.0000	7	10.000	-10	20.000	4	50.000	-7	75.000	-6	100.00	-3
Chloromethane	0.5000	14	1.0000	13	2.0000	9	5.0000	-1	10.000	1	20.000	-2	50.000	-13	75.000	-9	100.00	-12
Vinyl Chloride	0.5000	8	1.0000	0	2.0000	3	5.0000	4	10.000	-1	20.000	2	50.000	-8	75.000	-8	100.00	0
Bromomethane	0.5000	**57**	1.0000	**23**	2.0000	4	5.0000	-8	10.000	-5	20.000	2	50.000	0				
Chloroethane			1.0000	8	2.0000	2	5.0000	-1	10.000	7	20.000	2	50.000	-9	75.000	-5	100.00	-4
Trichlorofluoromethane			1.0000	5	2.0000	1	5.0000	9	10.000	-3	20.000	2	50.000	-10	75.000	-1	100.00	-2
Acetone					2.0000	6	5.0000	-6	10.000	-5	20.000	-2	50.000	13	75.000	3	100.00	-9
Freon 113			0.5000	10	2.0000	4	5.0000	3	10.000	4	20.000	-2	50.000	-4	75.000	-6	100.00	-9
1,1-Dichloroethene			0.5000	11	2.0000	6	5.0000	-1	10.000	2	20.000	1	50.000	-4	75.000	-7	100.00	-8
Methylene Chloride			0.5000	6	2.0000	4	5.0000	0	10.000	2	20.000	7	50.000	-11	75.000	-4	100.00	-4
Carbon Disulfide			0.5000	14	2.0000	4	5.0000	1	10.000	0	20.000	3	50.000	-7	75.000	-8	100.00	-8
MTBE			0.5000	0	2.0000	6	5.0000	0	10.000	2	20.000	8	50.000	-14	75.000	-3	100.00	1
trans-1,2-Dichloroethene			0.5000	0	2.0000	7	5.0000	0	10.000	2	20.000	9	50.000	-8	75.000	-7	100.00	-4
Vinyl Acetate					2.0000	3	5.0000	-2	10.000	4	20.000	5	50.000	-13	75.000	5	100.00	-3
1,1-Dichloroethane			0.5000	13	2.0000	4	5.0000	2	10.000	4	20.000	5	50.000	-12	75.000	-10	100.00	-7
2-Butanone					2.0000	-7	5.0000	3	10.000	-4	20.000	2	50.000	8	75.000	5	100.00	-8
2,2-Dichloropropane			0.5000	17	2.0000	10	5.0000	6	10.000	-1	20.000	0	50.000	-11	75.000	-11	100.00	-11
cis-1,2-Dichloroethene			0.5000	7	2.0000	7	5.0000	0	10.000	3	20.000	4	50.000	-11	75.000	-7	100.00	-4
Chloroform			0.5000	9	2.0000	5	5.0000	3	10.000	3	20.000	3	50.000	-11	75.000	-10	100.00	-2
Bromochloromethane			0.5000	-7	2.0000	2	5.0000	7	10.000	6	20.000	7	50.000	-11	75.000	-3	100.00	-2
1,1,1-Trichloroethane			0.5000	14	2.0000	6	5.0000	-1	10.000	2	20.000	1	50.000	-8	75.000	-7	100.00	-7
1,1-Dichloropropene			0.5000	**28**	2.0000	0	5.0000	-6	10.000	1	20.000	-6	50.000	6	75.000	-8	100.00	-16
Carbon Tetrachloride			0.5000	**22**	2.0000	-4	5.0000	-5	10.000	-1	20.000	-5	50.000	7	75.000	-5	100.00	-9
1,2-Dichloroethane			0.5000	14	2.0000	-3	5.0000	-3	10.000	4	20.000	-1	50.000	-5	75.000	0	100.00	-6
Benzene			0.5000	**25**	2.0000	-2	5.0000	-1	10.000	3	20.000	-1	50.000	-3	75.000	-5	100.00	-16
Trichloroethene			0.5000	**30**	2.0000	-7	5.0000	-4	10.000	3	20.000	-4	50.000	2	75.000	-9	100.00	-11
1,2-Dichloropropane			0.5000	3	2.0000	3	5.0000	4	10.000	5	20.000	-3	50.000	-1	75.000	-4	100.00	-8
Bromodichloromethane			0.5000	3	2.0000	-4	5.0000	-4	10.000	6	20.000	1	50.000	0	75.000	-1	100.00	-2
Dibromomethane			0.5000	4	2.0000	-3	5.0000	-3	10.000	5	20.000	1	50.000	0	75.000	3	100.00	-7
4-Methyl-2-Pentanone					2.0000	-5	5.0000	-6	10.000	2	20.000	-4	50.000	13	75.000	10	100.00	-9
cis-1,3-Dichloropropene			0.5000	8	2.0000	1	5.0000	0	10.000	3	20.000	0	50.000	-4	75.000	-2	100.00	-5
Toluene			0.5000	**28**	2.0000	-4	5.0000	-6	10.000	-3	20.000	2	50.000	8	75.000	-8	100.00	-16
trans-1,3-Dichloropropene			0.5000	10	2.0000	-10	5.0000	-7	10.000	1	20.000	5	50.000	8	75.000	1	100.00	-8
1,1,2-Trichloroethane			0.5000	**25**	2.0000	-8	5.0000	-7	10.000	-2	20.000	0	50.000	7	75.000	-2	100.00	-13
2-Hexanone					2.0000	-8	5.0000	-10	10.000	-3	20.000	3	50.000	**22**	75.000	9	100.00	-13
1,3-Dichloropropane			0.5000	15	2.0000	-6	5.0000	-6	10.000	-1	20.000	4	50.000	3	75.000	1	100.00	-10
Tetrachloroethene	0.2500	10	0.5000	**27**	2.0000	-8	5.0000	-17	10.000	-8	20.000	-7	50.000	13	75.000	-11		
Dibromochloromethane			0.5000	13	2.0000	-7	5.0000	-9	10.000	-1	20.000	4	50.000	9	75.000	0	100.00	-9
1,2-Dibromoethane			0.5000	12	2.0000	-5	5.0000	-10	10.000	-1	20.000	2	50.000	12	75.000	1	100.00	-10
Chlorobenzene			0.5000	**30**	2.0000	-6	5.0000	-8	10.000	0	20.000	0	50.000	6	75.000	-8	100.00	-14
1,1,1,2-Tetrachloroethane			0.5000	**31**	2.0000	-8	5.0000	-10	10.000	-1	20.000	3	50.000	2	75.000	-6	100.00	-12
Ethylbenzene			0.5000	**31**	2.0000	-4	5.0000	-8	10.000	-2	20.000	1	50.000	9	75.000	-10	100.00	-17

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
m,p-Xylenes	0.5000	**-27**	1.0000	**29**	4.0000	-2	10.000	1	20.000	-2	40.000	0	100.00	0				
o-Xylene			0.5000	**24**	2.0000	-4	5.0000	-9	10.000	2	20.000	2	50.000	10	75.000	-10	100.00	-15
Styrene			0.5000	19	2.0000	-8	5.0000	-11	10.000	2	20.000	5	50.000	12	75.000	-4	100.00	-15
Bromoform			0.5000	11	2.0000	-12	5.0000	-13	10.000	-2	20.000	4	50.000	16	75.000	4	100.00	-9
Isopropylbenzene			0.5000	**31**	2.0000	-2	5.0000	-7	10.000	-5	20.000	-6	50.000	11	75.000	-8	100.00	-14
1,1,2,2-Tetrachloroethane			0.5000	20	2.0000	-6	5.0000	-11	10.000	-2	20.000	-2	50.000	7	75.000	5	100.00	-11
1,2,3-Trichloropropane			0.5000	**35**	2.0000	-2	5.0000	-10	10.000	-9	20.000	-6	50.000	1	75.000	4	100.00	-13
Propylbenzene			0.5000	**30**	2.0000	-4	5.0000	-10	10.000	-5	20.000	-9	50.000	9	75.000	-11		
Bromobenzene			0.5000	**21**	2.0000	-2	5.0000	-7	10.000	0	20.000	-2	50.000	3	75.000	-3	100.00	-10
1,3,5-Trimethylbenzene			0.5000	**29**	2.0000	-2	5.0000	-11	10.000	-4	20.000	-12	50.000	10	75.000	-10		
2-Chlorotoluene			0.5000	**32**	2.0000	0	5.0000	-8	10.000	-2	20.000	-7	50.000	9	75.000	-6	100.00	-19
4-Chlorotoluene			0.5000	**32**	2.0000	3	5.0000	-6	10.000	-5	20.000	-5	50.000	2	75.000	-6	100.00	-16
tert-Butylbenzene			0.5000	**34**	2.0000	-5	5.0000	-11	10.000	-5	20.000	-7	50.000	9	75.000	-4	100.00	-12
1,2,4-Trimethylbenzene			0.5000	**34**	2.0000	-4	5.0000	-12	10.000	-3	20.000	-5	50.000	7	75.000	-5	100.00	-13
sec-Butylbenzene			0.5000	**31**	2.0000	-2	5.0000	-12	10.000	-7	20.000	-9	50.000	8	75.000	-8		
para-Isopropyl Toluene			0.5000	**32**	2.0000	-1	5.0000	-7	10.000	-5	20.000	-7	50.000	10	75.000	-4	100.00	-18
1,3-Dichlorobenzene			0.5000	**24**	2.0000	-1	5.0000	-10	10.000	-2	20.000	-4	50.000	6	75.000	-1	100.00	-12
1,4-Dichlorobenzene			0.5000	**25**	2.0000	0	5.0000	-7	10.000	-5	20.000	-5	50.000	5	75.000	-3	100.00	-11
n-Butylbenzene	0.2500	6	0.5000	**34**	2.0000	-7	5.0000	-12	10.000	-6	20.000	-11	50.000	15	75.000	-6	100.00	-13
1,2-Dichlorobenzene			0.5000	**28**	2.0000	-3	5.0000	-10	10.000	-1	20.000	-5	50.000	3	75.000	-3	100.00	-9
1,2-Dibromo-3-Chloropropane			0.5000	4	2.0000	-11	5.0000	-12	10.000	-5	20.000	-6	50.000	**21**	75.000	16	100.00	-6
1,2,4-Trichlorobenzene			0.5000	10	2.0000	-10	5.0000	-12	10.000	-7	20.000	-4	50.000	13	75.000	8	100.00	1
Hexachlorobutadiene			0.5000	3	2.0000	-4	5.0000	-8	10.000	-5	20.000	-10	50.000	**26**	75.000	6	100.00	-7
Naphthalene			0.5000	-9	2.0000	-19	5.0000	-16	10.000	-2	20.000	1	50.000	**21**	75.000	**22**	100.00	3
1,2,3-Trichlorobenzene			0.5000	1	2.0000	-9	5.0000	-10	10.000	-4	20.000	-2	50.000	15	75.000	10	100.00	-1
Dibromofluoromethane	50.000	8	50.000	-17	50.000	8	50.000	8	50.000	6	50.000	5	50.000	-18	50.000	-3	50.000	4
1,2-Dichloroethane-d4	50.000	7	50.000	-11	50.000	4	50.000	10	50.000	7	50.000	2	50.000	-13	50.000	1	50.000	-6
Toluene-d8	50.000	0	50.000	6	50.000	-4	50.000	-6	50.000	-3	50.000	3	50.000	12	50.000	-4	50.000	-5
Bromofluorobenzene	50.000	-1	50.000	-3	50.000	0	50.000	0	50.000	-3	50.000	3	50.000	-1	50.000	1	50.000	4

DAR 12/08/15 [Iodomethane]: icv -35%

DAR 12/08/15 : For >LR samples consult "by average" for calculating dilution factors

DAR 12/08/15 [Tetrachloroethene]: only calibrated to 75 ppb

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; QUAD=Quadratic regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA08 Name : 826GOX8
Calnum : 475492027002 Cal Date : 07-DEC-2015 Type : WATER

ICV 475492027018 (hl718 08-DEC-2015) stds: S28588 (5000X), S28123 (10000X)
ICV 475492027019 (hl719 08-DEC-2015) stds: S28588 (5000X), S28489 (10000X), S28592 (10000X), S28593 (10000X)

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
Freon 12	475492027018	20.00	14.63	ug/L	**-27**	20	v- ***
Chloromethane	475492027018	20.00	17.32	ug/L	-13	20	
Vinyl Chloride	475492027018	20.00	17.99	ug/L	-10	20	
Bromomethane	475492027018	20.00	16.66	ug/L	-17	20	
Chloroethane	475492027018	20.00	18.12	ug/L	-9	20	
Trichlorofluoromethane	475492027018	20.00	18.45	ug/L	-8	20	
Acetone	475492027019	25.00	26.50	ug/L	6	20	
Freon 113	475492027019	25.00	22.24	ug/L	-11	20	
1,1-Dichloroethene	475492027019	25.00	25.34	ug/L	1	20	
Methylene Chloride	475492027019	25.00	26.28	ug/L	5	20	
Carbon Disulfide	475492027019	25.00	25.92	ug/L	4	20	
MTBE	475492027019	25.00	24.44	ug/L	-2	20	
trans-1,2-Dichloroethene	475492027019	25.00	24.46	ug/L	-2	20	
Vinyl Acetate	475492027019	25.00	24.18	ug/L	-3	20	
1,1-Dichloroethane	475492027019	25.00	24.32	ug/L	-3	20	
2-Butanone	475492027019	25.00	24.86	ug/L	-1	20	
2,2-Dichloropropane	475492027019	25.00	21.86	ug/L	-13	20	
cis-1,2-Dichloroethene	475492027019	25.00	25.31	ug/L	1	20	
Chloroform	475492027019	25.00	25.88	ug/L	4	20	
Bromochloromethane	475492027019	25.00	25.05	ug/L	0	20	
1,1,1-Trichloroethane	475492027019	25.00	25.27	ug/L	1	20	
1,1-Dichloropropene	475492027019	25.00	21.45	ug/L	-14	20	
Carbon Tetrachloride	475492027019	25.00	25.22	ug/L	1	20	
1,2-Dichloroethane	475492027019	25.00	25.54	ug/L	2	20	
Benzene	475492027019	25.00	24.46	ug/L	-2	20	
Trichloroethene	475492027019	25.00	24.60	ug/L	-2	20	
1,2-Dichloropropane	475492027019	25.00	23.97	ug/L	-4	20	
Bromodichloromethane	475492027019	25.00	24.67	ug/L	-1	20	
Dibromomethane	475492027019	25.00	25.33	ug/L	1	20	
4-Methyl-2-Pentanone	475492027019	25.00	23.54	ug/L	-6	20	
cis-1,3-Dichloropropene	475492027019	25.00	26.48	ug/L	6	20	
Toluene	475492027019	25.00	21.95	ug/L	-12	20	
trans-1,3-Dichloropropene	475492027019	25.00	22.84	ug/L	-9	20	
1,1,2-Trichloroethane	475492027019	25.00	22.51	ug/L	-10	20	
2-Hexanone	475492027019	25.00	23.26	ug/L	-7	20	
1,3-Dichloropropane	475492027019	25.00	23.57	ug/L	-6	20	
Tetrachloroethene	475492027019	25.00	21.49	ug/L	-14	20	
Dibromochloromethane	475492027019	25.00	22.66	ug/L	-9	20	
1,2-Dibromoethane	475492027019	25.00	22.87	ug/L	-9	20	
Chlorobenzene	475492027019	25.00	23.32	ug/L	-7	20	
1,1,1,2-Tetrachloroethane	475492027019	25.00	21.78	ug/L	-13	20	
Ethylbenzene	475492027019	25.00	21.84	ug/L	-13	20	
m,p-Xylenes	475492027019	50.00	46.46	ug/L	-7	20	
o-Xylene	475492027019	25.00	22.61	ug/L	-10	20	
Styrene	475492027019	25.00	23.00	ug/L	-8	20	
Bromoform	475492027019	25.00	23.01	ug/L	-8	20	
Isopropylbenzene	475492027019	25.00	22.03	ug/L	-12	20	

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
1,1,2,2-Tetrachloroethane	475492027019	25.00	23.37	ug/L	-7	20	
1,2,3-Trichloropropane	475492027019	25.00	23.74	ug/L	-5	20	
Propylbenzene	475492027019	25.00	21.78	ug/L	-13	20	
Bromobenzene	475492027019	25.00	23.32	ug/L	-7	20	
1,3,5-Trimethylbenzene	475492027019	25.00	22.63	ug/L	-9	20	
2-Chlorotoluene	475492027019	25.00	22.35	ug/L	-11	20	
4-Chlorotoluene	475492027019	25.00	22.91	ug/L	-8	20	
tert-Butylbenzene	475492027019	25.00	23.33	ug/L	-7	20	
1,2,4-Trimethylbenzene	475492027019	25.00	22.39	ug/L	-10	20	
sec-Butylbenzene	475492027019	25.00	22.47	ug/L	-10	20	
para-Isopropyl Toluene	475492027019	25.00	22.89	ug/L	-8	20	
1,3-Dichlorobenzene	475492027019	25.00	24.13	ug/L	-3	20	
1,4-Dichlorobenzene	475492027019	25.00	24.12	ug/L	-4	20	
n-Butylbenzene	475492027019	25.00	21.24	ug/L	-15	20	
1,2-Dichlorobenzene	475492027019	25.00	24.08	ug/L	-4	20	
1,2-Dibromo-3-Chloropropane	475492027019	25.00	22.49	ug/L	-10	20	
1,2,4-Trichlorobenzene	475492027019	25.00	23.98	ug/L	-4	20	
Hexachlorobutadiene	475492027019	25.00	23.05	ug/L	-8	20	
Naphthalene	475492027019	25.00	22.06	ug/L	-12	20	
1,2,3-Trichlorobenzene	475492027019	25.00	24.38	ug/L	-2	20	

475492027018: Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15
475492027019: Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

-=low bias v=ICV

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 272485 MSVOA Water: EPA 8260C

Inst : MSVOA10 Name : 826GOX10
Calnum : 495473163001 Date : 24-NOV-2015 18:40 Type : WATER
Units : ug/L X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	jko10	495473163010		24-NOV-2015 18:40	S27980 (2000000X), S28295 (2000000X), S28355 (2000000X), S27081 (1000000X), S28487 (2500X)
L2	jko11	495473163011		24-NOV-2015 19:11	S27980 (1000000X), S28295 (1000000X), S28355 (1000000X), S27081 (500000X), S28487 (2500X)
L3	jko12	495473163012		24-NOV-2015 19:43	S27980 (500000X), S28295 (250000X), S28355 (250000X), S27081 (250000X), S28487 (2500X)
L4	jko13	495473163013		24-NOV-2015 20:14	S27980 (200000X), S28295 (100000X), S28355 (100000X), S27081 (100000X), S28487 (2500X)
L5	jko14	495473163014		24-NOV-2015 20:46	S27980 (100000X), S28295 (50000X), S28355 (50000X), S27081 (50000X), S28487 (2500X)
L6	jko15	495473163015		24-NOV-2015 21:17	S27980 (50000X), S28295 (25000X), S28355 (25000X), S27081 (25000X), S28487 (2500X)
L7	jko16	495473163016		24-NOV-2015 21:49	S27980 (20000X), S28295 (10000X), S28355 (10000X), S27081 (10000X), S28487 (2500X)
L8	jko17	495473163017		24-NOV-2015 22:21	S27980 (13330X), S28295 (6667X), S28355 (6667X), S27081 (6667X), S28487 (2500X)
L9	jko18	495473163018		24-NOV-2015 22:52	S27980 (10000X), S28295 (5000X), S28355 (5000X), S27081 (5000X), S28487 (2500X)

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Freon 12		1.9173m	1.7441	1.7799	1.8899	1.8143	1.5755	1.7627	1.6811	AVRG		0.56478		1.7706	6	15	0.100	0.99	
Chloromethane	1.9559	1.9116	1.8170m	1.6996	1.7891	1.7287	1.5868	1.6658	1.6659	AVRG		0.56889		1.7578	7	15	0.100	0.99	
Vinyl Chloride	1.4869	1.5093	1.3504	1.4117	1.4952	1.4261	1.2811	1.3711	1.3336	AVRG		0.71061		1.4072	6	15	0.100	0.99	
Bromomethane		0.2879	0.3126	0.3487	0.4007	0.4353	0.4789	0.5637		QUAD	0.43511	2.44282	-0.01603	0.4040	1.000	15	0.100	0.99	
Chloroethane		0.8396	0.8099	0.8231	0.8401	0.8262	0.7886	0.8489	0.8257	AVRG		1.21176		0.8252	2	15	0.100	0.99	
Trichlorofluoromethane		1.4956	1.3757	1.3957	1.5146	1.4515	1.3144	1.4642	1.4411	AVRG		0.69852		1.4316	5	15	0.100	0.99	
Acetone				0.5730	0.5556	0.5575	0.5417	0.5628	0.5711	AVRG		1.78482		0.5603	2	15	0.100	0.99	
Freon 113		0.7105	0.6570	0.7407	0.5363	0.6496	0.6635	0.7086	0.7137	AVRG		1.48703		0.6725	9	15	0.100	0.99	
1,1-Dichloroethene		0.6673	0.5968	0.6314	0.5435	0.6003	0.6015	0.6173	0.6270	AVRG		1.63766		0.6106	6	15	0.100	0.99	
Methylene Chloride		0.7368	0.7929	0.8051	0.7870	0.8215	0.8095	0.8521	0.8544	AVRG		1.23852		0.8074	5	15	0.100	0.99	
Carbon Disulfide		3.0762	2.6753	2.6924	2.4243	2.7177	2.6123	2.6882	2.7022	AVRG		0.37056		2.6986	7	15	0.100	0.99	
MTBE		2.6686	2.5114	2.4816	2.4321	2.5563	2.4799	2.5835	2.5747	AVRG		0.39432		2.5360	3	15	0.100	0.99	
trans-1,2-Dichloroethene		0.7198	0.6488	0.6893	0.6405	0.6861	0.6811	0.7061	0.7146	AVRG		1.45824		0.6858	4	15	0.100	0.99	
Vinyl Acetate		3.4680	3.1428	2.6362	2.5898	2.8195	2.6765	2.5499	2.5656	AVRG		0.35637		2.8060	12	15	0.05	0.99	
1,1-Dichloroethane		1.7734	1.6921	1.6920	1.5979	1.7119	1.6656	1.7248	1.7254	AVRG		0.58897		1.6979	3	15	0.200	0.99	
2-Butanone				0.7475	0.7189	0.7434	0.7195	0.7614	0.7516	AVRG		1.35066		0.7404	2	15	0.100	0.99	
2,2-Dichloropropane		1.2228	1.1829	1.1967	1.0383	1.1315	1.1061	1.1371	1.1378	AVRG		0.87401		1.1442	5	15	0.05	0.99	
cis-1,2-Dichloroethene		0.7849	0.7924	0.7883	0.7598	0.8037	0.7905	0.8311	0.8390	AVRG		1.25200		0.7987	3	15	0.100	0.99	
Chloroform		1.5490	1.4597	1.4259	1.3505	1.4655	1.4237	1.4850	1.5385	AVRG		0.68389		1.4622	4	15	0.200	0.99	
Bromochloromethane		0.3625	0.3787	0.3636	0.3661	0.4039	0.4036	0.4221	0.4191	AVRG		2.56441		0.3900	6	15	0.05	0.99	
1,1,1-Trichloroethane		1.0956	1.0037	1.1050	0.9651	1.0645	1.0774	1.1509	1.1643	AVRG		0.92738		1.0783	6	15	0.100	0.99	
1,1-Dichloropropene		0.7230	0.6785	0.7138	0.6023	0.6900	0.6877	0.7210	0.7497	AVRG		1.43732		0.6957	6	15	0.05	0.99	
Carbon Tetrachloride		0.4991	0.4986	0.5306	0.4532	0.5233	0.5305	0.5687	0.5863	AVRG		1.90921		0.5238	8	15	0.100	0.99	
1,2-Dichloroethane		0.8137	0.7319	0.7596	0.7438	0.7849	0.7692	0.8076	0.8226	AVRG		1.28342		0.7792	4	15	0.100	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Benzene		1.8312	1.7117	1.8073	1.7050	1.8226	1.7673	1.8798	1.8813	AVRG		0.55531		1.8008	4	15	0.500	0.99	
Trichloroethene		0.4108	0.4097	0.4391	0.4042	0.4347	0.4295	0.4619	0.4674	AVRG		2.31394		0.4322	5	15	0.200	0.99	
1,2-Dichloropropane		0.5105	0.5101	0.5360	0.5181	0.5430	0.5279	0.5584	0.5719	AVRG		1.87098		0.5345	4	15	0.100	0.99	
Bromodichloromethane		0.6540	0.6360	0.6527	0.6422	0.6913	0.6675	0.7157	0.7253	AVRG		1.48566		0.6731	5	15	0.200	0.99	
Dibromomethane		0.2997	0.3343	0.3349	0.3298	0.3562	0.3467	0.3664	0.3731	AVRG		2.91856		0.3426	7	15	0.05	0.99	
4-Methyl-2-Pentanone				0.8567	0.8385	0.8919	0.8400	0.8993	0.8945	AVRG		1.14919		0.8702	3	15	0.100	0.99	
cis-1,3-Dichloropropene		0.7792	0.7673	0.7705	0.7671	0.8184	0.7953	0.8324	0.8421	AVRG		1.25544		0.7965	4	15	0.200	0.99	
Toluene		1.2111	1.1241	1.2057	1.0925	1.1955	1.1798	1.2430	1.2503	AVRG		0.84193		1.1878	5	15	0.400	0.99	
trans-1,3-Dichloropropene		0.9292	0.9091	0.8859	0.8718	0.9318	0.9134	0.9544	0.9619	AVRG		1.08734		0.9197	3	15	0.100	0.99	
1,1,2-Trichloroethane		0.2968	0.2759	0.2939	0.2753	0.2976	0.2848	0.2976	0.3012	AVRG		3.44368		0.2904	4	15	0.100	0.99	
2-Hexanone				0.7367	0.7063	0.7636	0.7481	0.7893	0.7715	AVRG		1.32877		0.7526	4	15	0.100	0.99	
1,3-Dichloropropane		1.0005	0.9493	0.9584	0.9098	0.9777	0.9496	0.9960	0.9978	AVRG		1.03371		0.9674	3	15	0.05	0.99	
Tetrachloroethene		0.3976	0.4147	0.4257	0.3592	0.4104	0.4110	0.4477	0.4586	AVRG		2.40610		0.4156	7	15	0.200	0.99	
Dibromochloromethane		0.5039	0.5345	0.5621	0.5361	0.5734	0.5738	0.6045	0.6080	AVRG		1.77924		0.5620	6	15	0.100	0.99	
1,2-Dibromoethane		0.5543	0.5048	0.5276	0.5057	0.5481	0.5345	0.5607	0.5623	AVRG		1.86141		0.5372	4	15	0.100	0.99	
Chlorobenzene		1.2427	1.1513	1.1704	1.0988	1.1948	1.1678	1.2498	1.2512	AVRG		0.83974		1.1908	5	15	0.500	0.99	
1,1,1,2-Tetrachloroethane		0.4457	0.4398	0.4514	0.4240	0.4685	0.4579	0.4938	0.4991	AVRG		2.17370		0.4600	6	15	0.05	0.99	
Ethylbenzene		2.2926	2.1079	2.2570	2.0203	2.2437	2.1958	2.3579	2.3491	AVRG		0.44882		2.2280	5	15	0.100	0.99	
m,p-Xylenes	0.6240	0.6774	0.6451	0.6851	0.6430	0.7219	0.7556	0.8315	0.8425	AVRG		1.40050		0.7140	11	15	0.100	0.99	
o-Xylene		0.6812	0.6373	0.6623	0.6371	0.7192	0.7518	0.8349	0.8484	AVRG		1.38597		0.7215	12	15	0.300	0.99	
Styrene		0.9910	0.9189	1.0248	1.0727	1.2046	1.2704	1.4077		AVRG		0.88716		1.1272	15	15	0.300	0.99	
Bromoform		0.3695	0.3335	0.3534	0.3409	0.3749	0.3687	0.3962	0.4001	AVRG		2.72376		0.3671	7	15	0.100	0.99	
Isopropylbenzene		5.4943	4.9026	5.0964	4.3969	4.6244	4.4120	4.6835	4.7757	AVRG		0.20841		4.7982	8	15	0.100	0.99	
1,1,2,2-Tetrachloroethane		2.0310	2.1054	1.9294	1.7765	1.7412	1.6008	1.5943	1.6086	AVRG		0.55605		1.7984	11	15	0.300	0.99	
1,2,3-Trichloropropane		2.1080	1.9898	1.8578	1.7916	1.7257	1.6168	1.6578	1.6419	AVRG		0.55597		1.7987	10	15	0.05	0.99	
Propylbenzene		5.9559	5.1310	5.6016	4.8968	5.3902	5.3992	5.8801	5.9154	AVRG		0.18112		5.5213	7	15	0.05	0.99	
Bromobenzene		1.4096	1.4634	1.3759	1.3070	1.2934	1.2306	1.2993	1.3264	AVRG		0.74729		1.3382	6	15	0.05	0.99	
1,3,5-Trimethylbenzene		2.8948	2.4588	2.6773	2.4717	2.7570	2.9310	3.3149	3.4589	AVRG		0.34837		2.8705	13	15	0.05	0.99	
2-Chlorotoluene		4.0772	4.0723	4.2392	3.8434	4.0217	3.8570	4.1092	4.1210	AVRG		0.24736		4.0426	3	15	0.05	0.99	
4-Chlorotoluene		3.6185	3.5668	3.5666	3.4202	3.5461	3.4011	3.6380	3.6918	AVRG		0.28120		3.5561	3	15	0.05	0.99	
tert-Butylbenzene		2.6896	2.5550	2.7629	2.4001	2.6647	2.7081	3.0206	3.1163	AVRG		0.36501		2.7397	9	15	0.05	0.99	
1,2,4-Trimethylbenzene		2.2184	2.0918	2.1366	2.1315	2.3338	2.5472	2.8649	3.0429	AVRG		0.41307		2.4209	15	15	0.05	0.99	
sec-Butylbenzene		4.0965	3.4767	4.0084	3.4201	3.9380	4.0441	4.5487	4.7243	AVRG		0.24801		4.0321	11	15	0.05	0.99	
para-Isopropyl Toluene		2.5624	2.2251	2.5476	2.2371	2.5465	2.7536	3.1697	3.3247	AVRG		0.37442		2.6708	15	15	0.05	0.99	
1,3-Dichlorobenzene		1.9343	1.9127	1.9570	1.8153	1.9247	1.8390	1.9429	1.9887	AVRG		0.52238		1.9143	3	15	0.600	0.99	
1,4-Dichlorobenzene		1.8886	1.8216	1.8009	1.7532	1.8241	1.8078	1.9122	1.9623	AVRG		0.54161		1.8463	4	15	0.500	0.99	
n-Butylbenzene	2.3334	2.7202	1.9907	2.0391	1.7765	2.0250	2.2469	2.6637		AVRG		0.44955		2.2244	15	15	0.05	0.99	
1,2-Dichlorobenzene		1.8873	1.7842	1.8282	1.7537	1.8193	1.7575	1.8912	1.8939	AVRG		0.54737		1.8269	3	15	0.400	0.99	
1,2-Dibromo-3-Chloropropane			0.3277	0.3202	0.3205	0.3243	0.3066	0.3143	0.3184	AVRG		3.13608		0.3189	2	15	0.050	0.99	
1,2,4-Trichlorobenzene		1.0199	0.7722	0.7045	0.5851	0.5780	0.5935			LINR	-0.3987	1.70690		0.7089	0.999	15	0.200	0.99	
Hexachlorobutadiene		0.3844	0.3533	0.4511	0.3618	0.4104	0.3991	0.4729	0.4792	AVRG		2.41538		0.4140	12	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Naphthalene		3.1831	2.6595	2.1906	1.8553	1.5096	1.2305	1.2805	1.2800	AVRG		0.52669		1.8986	**38**	15	0.05	0.99	rsd ***
1,2,3-Trichlorobenzene		0.8513	0.8170	0.6704	0.5649	0.5305	0.5409	0.6005	0.6289	AVRG		1.53717		0.6505	**19**	15	0.05	0.99	rsd ***
Dibromofluoromethane	0.7165	0.7201	0.7231	0.6955	0.7045	0.7203	0.7108	0.7265	0.7222	AVRG		1.39759		0.7155	1	15	0.05	0.99	
1,2-Dichloroethane-d4	0.5919	0.5878	0.5867	0.5810	0.5854	0.5869	0.5987	0.6076	0.5975	AVRG		1.69062		0.5915	1	15	0.05	0.99	
Toluene-d8	1.5184	1.5113	1.5362	1.5074	1.4969	1.5251	1.5261	1.4988	1.4887	AVRG		0.66134		1.5121	1	15	0.05	0.99	
Bromofluorobenzene	1.7448	1.6253	1.6728	1.6155	1.5823	1.4853	1.3930	1.3581	1.3491	AVRG		0.65094		1.5362	9	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Freon 12			1.0000	8	2.0000	-1	5.0000	1	10.000	7	20.000	2	50.000	-11	75.000	0	100.00	-5
Chloromethane	0.5000	11	1.0000	9	2.0000	3	5.0000	-3	10.000	2	20.000	-2	50.000	-10	75.000	-5	100.00	-5
Vinyl Chloride	0.5000	6	1.0000	7	2.0000	-4	5.0000	0	10.000	6	20.000	1	50.000	-9	75.000	-3	100.00	-5
Bromomethane			1.0000	14	2.0000	-2	5.0000	-7	10.000	0	20.000	2	50.000	-1	75.000	0		
Chloroethane			1.0000	2	2.0000	-2	5.0000	0	10.000	2	20.000	0	50.000	-4	75.000	3	100.00	0
Trichlorofluoromethane			1.0000	4	2.0000	-4	5.0000	-3	10.000	6	20.000	1	50.000	-8	75.000	2	100.00	1
Acetone							5.0000	2	10.000	-1	20.000	0	50.000	-3	75.000	0	100.00	2
Freon 113			0.5000	6	2.0000	-2	5.0000	10	10.000	-20	20.000	-3	50.000	-1	75.000	5	100.00	6
1,1-Dichloroethene			0.5000	9	2.0000	-2	5.0000	3	10.000	-11	20.000	-2	50.000	-1	75.000	1	100.00	3
Methylene Chloride			0.5000	-9	2.0000	-2	5.0000	0	10.000	-3	20.000	2	50.000	0	75.000	6	100.00	6
Carbon Disulfide			0.5000	14	2.0000	-1	5.0000	0	10.000	-10	20.000	1	50.000	-3	75.000	0	100.00	0
MTBE			0.5000	5	2.0000	-1	5.0000	-2	10.000	-4	20.000	1	50.000	-2	75.000	2	100.00	2
trans-1,2-Dichloroethene			0.5000	5	2.0000	-5	5.0000	1	10.000	-7	20.000	0	50.000	-1	75.000	3	100.00	4
Vinyl Acetate			0.5000	**24**	2.0000	12	5.0000	-6	10.000	-8	20.000	0	50.000	-5	75.000	-9	100.00	-9
1,1-Dichloroethane			0.5000	4	2.0000	0	5.0000	0	10.000	-6	20.000	1	50.000	-2	75.000	2	100.00	2
2-Butanone							5.0000	1	10.000	-3	20.000	0	50.000	-3	75.000	3	100.00	2
2,2-Dichloropropane			0.5000	7	2.0000	3	5.0000	5	10.000	-9	20.000	-1	50.000	-3	75.000	-1	100.00	-1
cis-1,2-Dichloroethene			0.5000	-2	2.0000	-1	5.0000	-1	10.000	-5	20.000	1	50.000	-1	75.000	4	100.00	5
Chloroform			0.5000	6	2.0000	0	5.0000	-2	10.000	-8	20.000	0	50.000	-3	75.000	2	100.00	5
Bromochloromethane			0.5000	-7	2.0000	-3	5.0000	-7	10.000	-6	20.000	4	50.000	4	75.000	8	100.00	7
1,1,1-Trichloroethane			0.5000	2	2.0000	-7	5.0000	2	10.000	-11	20.000	-1	50.000	0	75.000	7	100.00	8
1,1-Dichloropropene			0.5000	4	2.0000	-2	5.0000	3	10.000	-13	20.000	-1	50.000	-1	75.000	4	100.00	8
Carbon Tetrachloride			0.5000	-5	2.0000	-5	5.0000	1	10.000	-13	20.000	0	50.000	1	75.000	9	100.00	12
1,2-Dichloroethane			0.5000	4	2.0000	-6	5.0000	-3	10.000	-5	20.000	1	50.000	-1	75.000	4	100.00	6
Benzene			0.5000	2	2.0000	-5	5.0000	0	10.000	-5	20.000	1	50.000	-2	75.000	4	100.00	4
Trichloroethene			0.5000	-5	2.0000	-5	5.0000	2	10.000	-6	20.000	1	50.000	-1	75.000	7	100.00	8
1,2-Dichloropropane			0.5000	-4	2.0000	-5	5.0000	0	10.000	-3	20.000	2	50.000	-1	75.000	4	100.00	7
Bromodichloromethane			0.5000	-3	2.0000	-6	5.0000	-3	10.000	-5	20.000	3	50.000	-1	75.000	6	100.00	8
Dibromomethane			0.5000	-13	2.0000	-2	5.0000	-2	10.000	-4	20.000	4	50.000	1	75.000	7	100.00	9
4-Methyl-2-Pentanone							5.0000	-2	10.000	-4	20.000	3	50.000	-3	75.000	3	100.00	3
cis-1,3-Dichloropropene			0.5000	-2	2.0000	-4	5.0000	-3	10.000	-4	20.000	3	50.000	0	75.000	4	100.00	6
Toluene			0.5000	2	2.0000	-5	5.0000	2	10.000	-8	20.000	1	50.000	-1	75.000	5	100.00	5
trans-1,3-Dichloropropene			0.5000	1	2.0000	-1	5.0000	-4	10.000	-5	20.000	1	50.000	-1	75.000	4	100.00	5
1,1,2-Trichloroethane			0.5000	2	2.0000	-5	5.0000	1	10.000	-5	20.000	2	50.000	-2	75.000	2	100.00	4
2-Hexanone							5.0000	-2	10.000	-6	20.000	1	50.000	-1	75.000	5	100.00	3
1,3-Dichloropropane			0.5000	3	2.0000	-2	5.0000	-1	10.000	-6	20.000	1	50.000	-2	75.000	3	100.00	3
Tetrachloroethene			0.5000	-4	2.0000	0	5.0000	2	10.000	-14	20.000	-1	50.000	-1	75.000	8	100.00	10
Dibromochloromethane			0.5000	-10	2.0000	-5	5.0000	0	10.000	-5	20.000	2	50.000	2	75.000	8	100.00	8
1,2-Dibromoethane			0.5000	3	2.0000	-6	5.0000	-2	10.000	-6	20.000	2	50.000	-1	75.000	4	100.00	5
Chlorobenzene			0.5000	4	2.0000	-3	5.0000	-2	10.000	-8	20.000	0	50.000	-2	75.000	5	100.00	5
1,1,1,2-Tetrachloroethane			0.5000	-3	2.0000	-4	5.0000	-2	10.000	-8	20.000	2	50.000	0	75.000	7	100.00	8
Ethylbenzene			0.5000	3	2.0000	-5	5.0000	1	10.000	-9	20.000	1	50.000	-1	75.000	6	100.00	5

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
m,p-Xylenes	0.5000	-13	1.0000	-5	4.0000	-10	10.000	-4	20.000	-10	40.000	1	100.00	6	150.00	16	200.00	18
o-Xylene			0.5000	-6	2.0000	-12	5.0000	-8	10.000	-12	20.000	0	50.000	4	75.000	16	100.00	18
Styrene			0.5000	-12	2.0000	-18	5.0000	-9	10.000	-5	20.000	7	50.000	13	75.000	**25**		
Bromoform			0.5000	1	2.0000	-9	5.0000	-4	10.000	-7	20.000	2	50.000	0	75.000	8	100.00	9
Isopropylbenzene			0.5000	15	2.0000	2	5.0000	6	10.000	-8	20.000	-4	50.000	-8	75.000	-2	100.00	0
1,1,2,2-Tetrachloroethane			0.5000	13	2.0000	17	5.0000	7	10.000	-1	20.000	-3	50.000	-11	75.000	-11	100.00	-11
1,2,3-Trichloropropane			0.5000	17	2.0000	11	5.0000	3	10.000	0	20.000	-4	50.000	-10	75.000	-8	100.00	-9
Propylbenzene			0.5000	8	2.0000	-7	5.0000	1	10.000	-11	20.000	-2	50.000	-2	75.000	6	100.00	7
Bromobenzene			0.5000	5	2.0000	9	5.0000	3	10.000	-2	20.000	-3	50.000	-8	75.000	-3	100.00	-1
1,3,5-Trimethylbenzene			0.5000	1	2.0000	-14	5.0000	-7	10.000	-14	20.000	-4	50.000	2	75.000	15	100.00	20
2-Chlorotoluene			0.5000	1	2.0000	1	5.0000	5	10.000	-5	20.000	-1	50.000	-5	75.000	2	100.00	2
4-Chlorotoluene			0.5000	2	2.0000	0	5.0000	0	10.000	-4	20.000	0	50.000	-4	75.000	2	100.00	4
tert-Butylbenzene			0.5000	-2	2.0000	-7	5.0000	1	10.000	-12	20.000	-3	50.000	-1	75.000	10	100.00	14
1,2,4-Trimethylbenzene			0.5000	-8	2.0000	-14	5.0000	-12	10.000	-12	20.000	-4	50.000	5	75.000	18	100.00	**26**
sec-Butylbenzene			0.5000	2	2.0000	-14	5.0000	-1	10.000	-15	20.000	-2	50.000	0	75.000	13	100.00	17
para-Isopropyl Toluene			0.5000	-4	2.0000	-17	5.0000	-5	10.000	-16	20.000	-5	50.000	3	75.000	19	100.00	**24**
1,3-Dichlorobenzene			0.5000	1	2.0000	0	5.0000	2	10.000	-5	20.000	1	50.000	-4	75.000	1	100.00	4
1,4-Dichlorobenzene			0.5000	2	2.0000	-1	5.0000	-2	10.000	-5	20.000	-1	50.000	-2	75.000	4	100.00	6
n-Butylbenzene	0.2500	5	0.5000	**22**	2.0000	-11	5.0000	-8	10.000	-20	20.000	-9	50.000	1	75.000	20		
1,2-Dichlorobenzene			0.5000	3	2.0000	-2	5.0000	0	10.000	-4	20.000	0	50.000	-4	75.000	4	100.00	4
1,2-Dibromo-3-Chloropropane					2.0000	3	5.0000	0	10.000	1	20.000	2	50.000	-4	75.000	-1	100.00	0
1,2,4-Trichlorobenzene			0.5000	-6	2.0000	12	5.0000	12	10.000	-4	20.000	-3	50.000	1				
Hexachlorobutadiene			0.5000	-7	2.0000	-15	5.0000	9	10.000	-13	20.000	-1	50.000	-4	75.000	14	100.00	16
Naphthalene			0.5000	**68**	2.0000	**40**	5.0000	15	10.000	-2	20.000	-20	50.000	**-35**	75.000	**-33**	100.00	**-33**
1,2,3-Trichlorobenzene			0.5000	**31**	2.0000	**26**	5.0000	3	10.000	-13	20.000	-18	50.000	-17	75.000	-8	100.00	-3
Dibromofluoromethane	50.000	0	50.000	1	50.000	1	50.000	-3	50.000	-2	50.000	1	50.000	-1	50.000	2	50.000	1
1,2-Dichloroethane-d4	50.000	0	50.000	-1	50.000	-1	50.000	-2	50.000	-1	50.000	-1	50.000	1	50.000	3	50.000	1
Toluene-d8	50.000	0	50.000	0	50.000	2	50.000	0	50.000	-1	50.000	1	50.000	1	50.000	-1	50.000	-2
Bromofluorobenzene	50.000	14	50.000	6	50.000	9	50.000	5	50.000	3	50.000	-3	50.000	-9	50.000	-12	50.000	-12

KER 12/01/15 : calibration only used for 8010MS samples

KER 12/01/15 [Freon 12]: Corrected fronting or tailing peak integration in (jko11).

KER 12/01/15 [Chloromethane]: Corrected fronting or tailing peak integration in (jko12).

Analyst: KER Date: 12/01/15 Reviewer: LW Date: 12/01/15

m=manual integration rsd=ICAL %RSD failure

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; LINR=Linear regression; QUAD=Quadratic regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA10 Name : 826GOX10
Calnum : 495473163001 Cal Date : 24-NOV-2015 Type : WATER

ICV 495473163019 (jko19 24-NOV-2015) stds: S28451 (10000X), S28487 (2500X)
ICV 495473163021 (jko21 25-NOV-2015) stds: S28489 (10000X), S28592 (10000X), S28593 (10000X), S28487 (2500X)
ICV 495474457006 (jkp06 25-NOV-2015) stds: S28593 (20000X), S28487 (2500X)

Analyte	ICV Seqnum	Date	Spiked	Quant	Units	%D	Max	Flags
Freon 12	495473163019	24-NOV-2015	20.00	13.99	ug/L	**-30**	20	v- ***
Chloromethane	495473163019	24-NOV-2015	20.00	16.91	ug/L	-15	20	
Vinyl Chloride	495473163019	24-NOV-2015	20.00	18.17	ug/L	-9	20	
Bromomethane	495473163019	24-NOV-2015	20.00	17.51	ug/L	-12	20	
Chloroethane	495473163019	24-NOV-2015	20.00	18.63	ug/L	-7	20	
Trichlorofluoromethane	495473163019	24-NOV-2015	20.00	18.97	ug/L	-5	20	
Acetone	495474457006	25-NOV-2015	12.50	19.34	ug/L	**55**	20	v+ ***
Freon 113	495474457006	25-NOV-2015	12.50	11.91	ug/L	-5	20	
1,1-Dichloroethene	495474457006	25-NOV-2015	12.50	12.54	ug/L	0	20	
Methylene Chloride	495474457006	25-NOV-2015	12.50	12.81	ug/L	2	20	
Carbon Disulfide	495474457006	25-NOV-2015	12.50	13.14	ug/L	5	20	
MTBE	495473163021	25-NOV-2015	25.00	25.05	ug/L	0	20	
trans-1,2-Dichloroethene	495474457006	25-NOV-2015	12.50	12.30	ug/L	-2	20	
Vinyl Acetate	495474457006	25-NOV-2015	12.50	14.53	ug/L	16	20	
1,1-Dichloroethane	495474457006	25-NOV-2015	12.50	12.51	ug/L	0	20	
2-Butanone	495474457006	25-NOV-2015	12.50	15.17	ug/L	**21**	20	v+ ***
2,2-Dichloropropane	495474457006	25-NOV-2015	12.50	15.15	ug/L	**21**	20	v+ ***
cis-1,2-Dichloroethene	495474457006	25-NOV-2015	12.50	13.01	ug/L	4	20	
Chloroform	495474457006	25-NOV-2015	12.50	12.74	ug/L	2	20	
Bromochloromethane	495474457006	25-NOV-2015	12.50	12.08	ug/L	-3	20	
1,1,1-Trichloroethane	495474457006	25-NOV-2015	12.50	13.47	ug/L	8	20	
1,1-Dichloropropene	495474457006	25-NOV-2015	12.50	11.37	ug/L	-9	20	
Carbon Tetrachloride	495474457006	25-NOV-2015	12.50	13.81	ug/L	10	20	
1,2-Dichloroethane	495474457006	25-NOV-2015	12.50	12.17	ug/L	-3	20	
Benzene	495474457006	25-NOV-2015	12.50	12.26	ug/L	-2	20	
Trichloroethene	495474457006	25-NOV-2015	12.50	12.66	ug/L	1	20	
1,2-Dichloropropane	495474457006	25-NOV-2015	12.50	12.90	ug/L	3	20	
Bromodichloromethane	495474457006	25-NOV-2015	12.50	12.36	ug/L	-1	20	
Dibromomethane	495474457006	25-NOV-2015	12.50	12.13	ug/L	-3	20	
4-Methyl-2-Pentanone	495474457006	25-NOV-2015	12.50	11.06	ug/L	-12	20	
cis-1,3-Dichloropropene	495474457006	25-NOV-2015	12.50	13.54	ug/L	8	20	
Toluene	495474457006	25-NOV-2015	12.50	12.57	ug/L	1	20	
trans-1,3-Dichloropropene	495474457006	25-NOV-2015	12.50	12.80	ug/L	2	20	
1,1,2-Trichloroethane	495474457006	25-NOV-2015	12.50	12.06	ug/L	-4	20	
2-Hexanone	495474457006	25-NOV-2015	12.50	13.64	ug/L	9	20	
1,3-Dichloropropane	495474457006	25-NOV-2015	12.50	12.33	ug/L	-1	20	
Tetrachloroethene	495474457006	25-NOV-2015	12.50	13.54	ug/L	8	20	
Dibromochloromethane	495474457006	25-NOV-2015	12.50	11.97	ug/L	-4	20	
1,2-Dibromoethane	495474457006	25-NOV-2015	12.50	11.73	ug/L	-6	20	
Chlorobenzene	495474457006	25-NOV-2015	12.50	12.69	ug/L	2	20	
1,1,1,2-Tetrachloroethane	495474457006	25-NOV-2015	12.50	12.03	ug/L	-4	20	
Ethylbenzene	495474457006	25-NOV-2015	12.50	12.25	ug/L	-2	20	
m,p-Xylenes	495474457006	25-NOV-2015	25.00	23.49	ug/L	-6	20	
o-Xylene	495474457006	25-NOV-2015	12.50	11.28	ug/L	-10	20	
Styrene	495474457006	25-NOV-2015	12.50	12.08	ug/L	-3	20	
Bromoform	495474457006	25-NOV-2015	12.50	11.61	ug/L	-7	20	

Analyte	ICV Seqnum	Date	Spiked	Quant	Units	%D	Max	Flags
Isopropylbenzene	495474457006	25-NOV-2015	12.50	13.34	ug/L	7	20	
1,1,2,2-Tetrachloroethane	495474457006	25-NOV-2015	12.50	13.42	ug/L	7	20	
1,2,3-Trichloropropane	495474457006	25-NOV-2015	12.50	12.56	ug/L	0	20	
Propylbenzene	495474457006	25-NOV-2015	12.50	12.92	ug/L	3	20	
Bromobenzene	495474457006	25-NOV-2015	12.50	12.85	ug/L	3	20	
1,3,5-Trimethylbenzene	495474457006	25-NOV-2015	12.50	12.16	ug/L	-3	20	
2-Chlorotoluene	495474457006	25-NOV-2015	12.50	12.70	ug/L	2	20	
4-Chlorotoluene	495474457006	25-NOV-2015	12.50	12.74	ug/L	2	20	
tert-Butylbenzene	495474457006	25-NOV-2015	12.50	13.27	ug/L	6	20	
1,2,4-Trimethylbenzene	495474457006	25-NOV-2015	12.50	11.59	ug/L	-7	20	
sec-Butylbenzene	495474457006	25-NOV-2015	12.50	13.57	ug/L	9	20	
para-Isopropyl Toluene	495474457006	25-NOV-2015	12.50	12.88	ug/L	3	20	
1,3-Dichlorobenzene	495474457006	25-NOV-2015	12.50	13.50	ug/L	8	20	
1,4-Dichlorobenzene	495474457006	25-NOV-2015	12.50	13.34	ug/L	7	20	
n-Butylbenzene	495474457006	25-NOV-2015	12.50	13.22	ug/L	6	20	
1,2-Dichlorobenzene	495474457006	25-NOV-2015	12.50	12.93	ug/L	3	20	
1,2-Dibromo-3-Chloropropane	495474457006	25-NOV-2015	12.50	12.59	ug/L	1	20	
1,2,4-Trichlorobenzene	495474457006	25-NOV-2015	12.50	12.98	ug/L	4	20	
Hexachlorobutadiene	495474457006	25-NOV-2015	12.50	15.22	ug/L	**22**	20	v+ ***
Naphthalene	495474457006	25-NOV-2015	12.50	11.19	ug/L	-10	20	
1,2,3-Trichlorobenzene	495474457006	25-NOV-2015	12.50	11.25	ug/L	-10	20	

495473163019: Analyst: KER Date: 12/01/15 Reviewer: LW Date: 12/01/15
495473163021: Analyst: KKM Date: 12/01/15 Reviewer: LW Date: 12/01/15
495474457006: Analyst: KER Date: 12/01/15 Reviewer: LW Date: 12/01/15

+=high bias -=low bias v=ICV

CURTIS & TOMPKINS SPIKE USER REPORT FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA06 Run Name : QC818115 IDF : 1.0
Seqnum : 455523093013.4 File : flt13 Time : 29-DEC-2015 12:28
Cal : 455443988001 Caldate : 04-NOV-2015 Caltype : WATER
Standards: S28489 (20000X), S28592 (20000X), S28593 (20000X), S28451 (20000X), S28450 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	1.7522	1.6141	10.00	9.212	ug/L	-8	20	0.1000	m u
Chloromethane	1.9008	1.3603	10.00	7.157	ug/L	**-28**	20	0.1000	c- m u v- ***
Vinyl Chloride	1.5244	1.2629	10.00	8.284	ug/L	-17	20	0.1000	m u
Bromomethane	0.7593	0.8770	10.00	11.55	ug/L	15	20	0.1000	m u v- ***
Chloroethane	0.9179	0.8743	10.00	9.525	ug/L	-5	20	0.1000	u
Trichlorofluoromethane	1.5882	1.9514	10.00	12.29	ug/L	**23**	20	0.1000	c+ u ***
Acetone	0.8201	0.5024	12.50	7.657	ug/L	**-39**	20	0.1000	c- u ***
Freon 113	0.8076	0.8903	12.50	13.78	ug/L	10	20	0.1000	u
1,1-Dichloroethene	0.7518	0.8267	12.50	13.75	ug/L	10	20	0.1000	u
Methylene Chloride	0.9042	1.0525	12.50	14.55	ug/L	16	20	0.1000	u
Carbon Disulfide	2.7152	3.1963	12.50	14.71	ug/L	18	20	0.1000	u
MTBE	2.5268	2.5993	12.50	12.86	ug/L	3	20	0.1000	u
trans-1,2-Dichloroethene	0.8374	0.8795	12.50	13.13	ug/L	5	20	0.1000	u
Vinyl Acetate	3.5126	2.2957	12.50	8.170	ug/L	**-35**	20	0.0500	c- u ***
1,1-Dichloroethane	1.9163	1.7548	12.50	11.45	ug/L	-8	20	0.2000	u
2-Butanone	1.1705	0.6373	12.50	6.806	ug/L	**-46**	20	0.1000	c- u ***
cis-1,2-Dichloroethene	0.9578	0.9583	12.50	12.51	ug/L	0	20	0.1000	u
2,2-Dichloropropane	1.2819	1.5433	12.50	15.05	ug/L	20	20	0.0500	u
Chloroform	1.6110	1.8126	12.50	14.06	ug/L	13	20	0.2000	u
Bromochloromethane	0.4032	0.4105	12.50	12.73	ug/L	2	20	0.0500	u
1,1,1-Trichloroethane	1.2277	1.5051	12.50	15.32	ug/L	**23**	20	0.1000	c+ u ***
1,1-Dichloropropene	0.7617	0.7472	12.50	12.26	ug/L	-2	20	0.0500	u
Carbon Tetrachloride	0.5053	0.7694	12.50	19.03	ug/L	**52**	20	0.1000	c+ u ***
1,2-Dichloroethane	0.7593	0.7943	12.50	13.08	ug/L	5	20	0.1000	u
Benzene	1.9813	1.9332	12.50	12.20	ug/L	-2	20	0.5000	u
Trichloroethene	0.4879	0.5462	12.50	13.99	ug/L	12	20	0.2000	u
1,2-Dichloropropane	0.6202	0.5329	12.50	10.74	ug/L	-14	20	0.1000	u
Bromodichloromethane	0.7022	0.7898	12.50	14.06	ug/L	12	20	0.2000	u
Dibromomethane	0.3888	0.4106	12.50	13.20	ug/L	6	20	0.0500	u
4-Methyl-2-Pentanone	1.2370	0.7238	12.50	7.314	ug/L	**-41**	20	0.1000	c- u ***
cis-1,3-Dichloropropene	0.8276	0.8909	12.50	13.46	ug/L	8	20	0.2000	u
Toluene	1.3795	1.2456	12.50	11.29	ug/L	-10	20	0.4000	u
trans-1,3-Dichloropropene	0.8874	0.8886	12.50	12.52	ug/L	0	20	0.1000	u
1,1,2-Trichloroethane	0.3138	0.2837	12.50	11.30	ug/L	-10	20	0.1000	u
2-Hexanone	1.2115	0.6481	12.50	6.687	ug/L	**-47**	20	0.1000	c- u ***
1,3-Dichloropropane	0.9390	0.8921	12.50	11.88	ug/L	-5	20	0.0500	u
Tetrachloroethene	0.4682	0.5554	12.50	14.83	ug/L	19	20	0.2000	u
Dibromochloromethane	0.5673	0.6429	12.50	14.17	ug/L	13	20	0.1000	u
1,2-Dibromoethane	0.5941	0.5666	12.50	11.92	ug/L	-5	20	0.1000	u
Chlorobenzene	1.3040	1.3165	12.50	12.62	ug/L	1	20	0.5000	u
1,1,1,2-Tetrachloroethane	0.4717	0.4872	12.50	12.91	ug/L	3	20	0.0500	u
Ethylbenzene	2.5834	2.4807	12.50	12.00	ug/L	-4	20	0.1000	u
m,p-Xylenes	0.8697	0.8489	25.00	24.40	ug/L	-2	20	0.1000	u
o-Xylene	0.8728	0.8409	12.50	12.04	ug/L	-4	20	0.3000	u
Styrene	1.5052	1.4760	12.50	12.26	ug/L	-2	20	0.3000	u
Bromoform	0.4266	0.4837	12.50	14.17	ug/L	13	20	0.1000	u
Isopropylbenzene	4.0627	3.3657	12.50	10.36	ug/L	-17	20	0.1000	u

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
1,1,2,2-Tetrachloroethane	1.6140	1.2897	12.50	9.988	ug/L	-20	20	0.3000	u
1,2,3-Trichloropropane	1.3917	1.0800	12.50	9.701	ug/L	**-22**	20	0.0500	c- u ***
Propylbenzene	5.6160	4.6929	12.50	10.45	ug/L	-16	20	0.0500	u
Bromobenzene	1.0137	0.9924	12.50	12.24	ug/L	-2	20	0.0500	u
1,3,5-Trimethylbenzene	3.3510	2.9289	12.50	10.93	ug/L	-13	20	0.0500	u
2-Chlorotoluene	3.7191	3.2864	12.50	11.05	ug/L	-12	20	0.0500	u
4-Chlorotoluene	3.4826	3.2046	12.50	11.50	ug/L	-8	20	0.0500	u
tert-Butylbenzene	2.6399	2.3072	12.50	10.92	ug/L	-13	20	0.0500	u
1,2,4-Trimethylbenzene	3.4402	2.9115	12.50	10.58	ug/L	-15	20	0.0500	u
sec-Butylbenzene	4.2888	3.4035	12.50	9.920	ug/L	**-21**	20	0.0500	c- u ***
para-Isopropyl Toluene	3.3165	2.7554	12.50	10.39	ug/L	-17	20	0.0500	u
1,3-Dichlorobenzene	1.7472	1.7021	12.50	12.18	ug/L	-3	20	0.6000	u
1,4-Dichlorobenzene	1.7899	1.7172	12.50	11.99	ug/L	-4	20	0.5000	u
n-Butylbenzene	3.7014	2.9758	12.50	10.05	ug/L	-20	20	0.0500	u
1,2-Dichlorobenzene	1.6434	1.6372	12.50	12.45	ug/L	0	20	0.4000	u
1,2-Dibromo-3-Chloropropane	0.4244	0.3120	12.50	9.189	ug/L	**-26**	20	0.0500	c- u ***
1,2,4-Trichlorobenzene	0.9437	0.8552	12.50	11.33	ug/L	-9	20	0.2000	u
Hexachlorobutadiene	0.4034	0.4071	12.50	12.62	ug/L	1	20	0.0500	u
Naphthalene	3.0166	2.1927	12.50	9.086	ug/L	**-27**	20	0.0500	c- u ***
1,2,3-Trichlorobenzene	0.8442	0.7268	12.50	10.76	ug/L	-14	20	0.0500	u
Dibromofluoromethane	0.6781	0.7318	50.00	53.96	ug/L	8	20	0.0500	u
1,2-Dichloroethane-d4	0.4951	0.4894	50.00	49.43	ug/L	-1	20	0.0500	u
Toluene-d8	1.4005	1.3233	50.00	47.24	ug/L	-6	20	0.0500	u
Bromofluorobenzene	1.1275	1.0430	50.00	46.25	ug/L	-8	20	0.0500	u

ISTD (ICAL fk417)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	409051	398971	-2.46	11.72	11.71	-0.01
1,4-Difluorobenzene	694147	650318	-6.31	13.04	13.04	0.00
Chlorobenzene-d5	540483	597600	10.57	17.77	17.76	-0.01
1,4-Dichlorobenzene-d4	288644	379941	31.63	20.50	20.50	0.00

MCT 12/30/15 [Freon 12]: Combined split peak. [general version]

MCT 12/30/15 [Chloromethane]: Combined split peak. [general version]

MCT 12/30/15 [Vinyl Chloride]: Combined split peak. [general version]

MCT 12/30/15 [Bromomethane]: Combined split peak. [general version]

MCT 12/30/15 [Ethanol]: Combined split peak. [general version]

MCT 12/30/15 [Iodomethane]: Combined split peak. [general version]

Analyst: KKM Date: 12/30/15 Reviewer: LW Date: 12/30/15

+=high bias -=low bias c=CCV m=manual integration u=use v=ICV

CURTIS & TOMPKINS SPIKE USER REPORT FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA06 Run Name : QC818174 IDF : 1.0
Seqnum : 455523093016.4 File : flt16 Time : 29-DEC-2015 14:36
Cal : 455443988001 Caldate : 04-NOV-2015 Caltype : WATER
Standards: S27677 (10000X), S28450 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Dibromofluoromethane	0.6781	0.7653	50.00	56.43	ug/L	13	20	0.0500	u
1,2-Dichloroethane-d4	0.4951	0.5132	50.00	51.83	ug/L	4	20	0.0500	u
Toluene-d8	1.4005	1.2363	50.00	44.14	ug/L	-12	20	0.0500	u
Bromofluorobenzene	1.1275	1.0538	50.00	46.73	ug/L	-7	20	0.0500	u

ISTD (ICAL fk417)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	409051	400219	-2.16	11.72	11.71	-0.01
1,4-Difluorobenzene	694147	659518	-4.99	13.04	13.04	0.00
Chlorobenzene-d5	540483	634653	17.42	17.77	17.76	-0.01
1,4-Dichlorobenzene-d4	288644	402371	39.40	20.50	20.50	0.00

ISTD (ICAL fkf09)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Chlorobenzene-d5 TIC	1694835	2082168	22.85	17.76	17.76	0.00

MCT 12/30/15 [Gasoline C5-C12]: Separated from coeluting peak. [general version]

MCT 12/30/15 [Gasoline C6-C10]: Separated from coeluting peak. [general version]

MCT 12/30/15 [Gasoline C7-C12]: Separated from coeluting peak. [general version]

Analyst: KKM Date: 12/30/15 Reviewer: LW Date: 12/30/15

u=use

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA08 IDF : 1.0
Seqnum : 475506105003.2 File : hlh03 Time : 17-DEC-2015 12:35
Cal : 475492027002 Caldate : 07-DEC-2015 Caltype : WATER
Standards: S27004 (20000X), S28693 (20000X), S28355 (20000X), S27081 (20000X), S28588 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	0.7639	0.8217	25.00	26.89	ug/L	8	20	0.1000	v- ***
Chloromethane	0.9065	0.9657	25.00	26.63	ug/L	7	20	0.1000	
Vinyl Chloride	0.7332	0.8116	25.00	27.67	ug/L	11	20	0.1000	
Bromomethane	0.2425	0.3717	25.00	31.98	ug/L	**28**	20	0.1000	c+ ***
Chloroethane	0.5128	0.5672	25.00	27.65	ug/L	11	20	0.1000	
Trichlorofluoromethane	0.8062	0.8984	25.00	27.86	ug/L	11	20	0.1000	
Acetone	0.1459	0.1505	25.00	25.78	ug/L	3	20	0.1000	
Freon 113	0.4687	0.4550	25.00	24.27	ug/L	-3	20	0.1000	
1,1-Dichloroethene	0.4731	0.4576	25.00	24.18	ug/L	-3	20	0.1000	
Methylene Chloride	0.5590	0.6076	25.00	27.17	ug/L	9	20	0.1000	
Carbon Disulfide	1.9348	1.9757	25.00	25.53	ug/L	2	20	0.1000	
MTBE	1.2418	1.2676	25.00	25.52	ug/L	2	20	0.1000	
trans-1,2-Dichloroethene	0.5315	0.5622	25.00	26.44	ug/L	6	20	0.1000	
Vinyl Acetate	1.1931	1.3086	25.00	27.42	ug/L	10	20	0.0500	
1,1-Dichloroethane	1.0832	1.1770	25.00	27.17	ug/L	9	20	0.2000	
2-Butanone	0.2270	0.2225	25.00	24.51	ug/L	-2	20	0.1000	
2,2-Dichloropropane	0.6550	0.8348	25.00	31.87	ug/L	**27**	20	0.0500	c+ ***
cis-1,2-Dichloroethene	0.6245	0.6594	25.00	26.40	ug/L	6	20	0.1000	
Chloroform	0.9488	1.0707	25.00	28.21	ug/L	13	20	0.2000	
Bromochloromethane	0.3080	0.3197	25.00	25.95	ug/L	4	20	0.0500	
1,1,1-Trichloroethane	0.6727	0.7326	25.00	27.23	ug/L	9	20	0.1000	
1,1-Dichloropropene	0.5039	0.5105	25.00	25.33	ug/L	1	20	0.0500	
Carbon Tetrachloride	0.4007	0.3966	25.00	24.74	ug/L	-1	20	0.1000	
1,2-Dichloroethane	0.3965	0.4665	25.00	29.41	ug/L	18	20	0.1000	
Benzene	1.3796	1.5052	25.00	27.28	ug/L	9	20	0.5000	
Trichloroethene	0.3580	0.3761	25.00	26.26	ug/L	5	20	0.2000	
1,2-Dichloropropane	0.3989	0.4437	25.00	27.81	ug/L	11	20	0.1000	
Bromodichloromethane	0.4497	0.5116	25.00	28.44	ug/L	14	20	0.2000	
Dibromomethane	0.2182	0.2244	25.00	25.71	ug/L	3	20	0.0500	
4-Methyl-2-Pentanone	0.3383	0.3299	25.00	24.38	ug/L	-2	20	0.1000	
cis-1,3-Dichloropropene	0.5379	0.6429	25.00	29.88	ug/L	20	20	0.2000	
Toluene	0.9895	0.9615	25.00	24.29	ug/L	-3	20	0.4000	
trans-1,3-Dichloropropene	0.5094	0.5357	25.00	26.29	ug/L	5	20	0.1000	
1,1,2-Trichloroethane	0.1861	0.1753	25.00	23.55	ug/L	-6	20	0.1000	
2-Hexanone	0.2709	0.2408	25.00	22.23	ug/L	-11	20	0.1000	
1,3-Dichloropropane	0.5639	0.5438	25.00	24.10	ug/L	-4	20	0.0500	
Tetrachloroethene	0.4276	0.3938	25.00	23.03	ug/L	-8	20	0.2000	
Dibromochloromethane	0.4380	0.4098	25.00	23.39	ug/L	-6	20	0.1000	
1,2-Dibromoethane	0.3634	0.3338	25.00	22.96	ug/L	-8	20	0.1000	
Chlorobenzene	1.0956	1.0808	25.00	24.66	ug/L	-1	20	0.5000	
1,1,1,2-Tetrachloroethane	0.4245	0.4033	25.00	23.75	ug/L	-5	20	0.0500	
Ethylbenzene	1.8263	1.7761	25.00	24.31	ug/L	-3	20	0.1000	
m,p-Xylenes	0.7337	0.6440	50.00	47.90	ug/L	-4	20	0.1000	
o-Xylene	0.6940	0.6774	25.00	24.40	ug/L	-2	20	0.3000	
Styrene	1.1683	1.1500	25.00	24.61	ug/L	-2	20	0.3000	
Bromoform	0.2702	0.2470	25.00	22.86	ug/L	-9	20	0.1000	
Isopropylbenzene	3.3475	3.0132	25.00	22.50	ug/L	-10	20	0.1000	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
1,1,2,2-Tetrachloroethane	0.8165	0.7049	25.00	21.58	ug/L	-14	20	0.3000	
1,2,3-Trichloropropane	0.1971	0.1712	25.00	21.71	ug/L	-13	20	0.0500	
Propylbenzene	4.1189	3.5922	25.00	21.80	ug/L	-13	20	0.0500	
Bromobenzene	0.9357	0.8863	25.00	23.68	ug/L	-5	20	0.0500	
1,3,5-Trimethylbenzene	2.7813	2.4447	25.00	21.97	ug/L	-12	20	0.0500	
2-Chlorotoluene	2.6228	2.5019	25.00	23.85	ug/L	-5	20	0.0500	
4-Chlorotoluene	2.3693	2.3480	25.00	24.78	ug/L	-1	20	0.0500	
tert-Butylbenzene	2.4053	2.1884	25.00	22.75	ug/L	-9	20	0.0500	
1,2,4-Trimethylbenzene	2.7239	2.6604	25.00	24.42	ug/L	-2	20	0.0500	
sec-Butylbenzene	3.7428	3.0336	25.00	20.26	ug/L	-19	20	0.0500	
para-Isopropyl Toluene	2.7904	2.5959	25.00	23.26	ug/L	-7	20	0.0500	
1,3-Dichlorobenzene	1.6009	1.5496	25.00	24.20	ug/L	-3	20	0.6000	
1,4-Dichlorobenzene	1.6034	1.5745	25.00	24.55	ug/L	-2	20	0.5000	
n-Butylbenzene	2.4251	2.2835	25.00	23.54	ug/L	-6	20	0.0500	
1,2-Dichlorobenzene	1.5776	1.5650	25.00	24.80	ug/L	-1	20	0.4000	
1,2-Dibromo-3-Chloropropane	0.1147	0.1073	25.00	23.37	ug/L	-7	20	0.0500	
1,2,4-Trichlorobenzene	0.8402	0.8339	25.00	24.81	ug/L	-1	20	0.2000	
Hexachlorobutadiene	0.4231	0.3700	25.00	21.87	ug/L	-13	20	0.0500	
Naphthalene	1.7343	1.6353	25.00	23.57	ug/L	-6	20	0.0500	
1,2,3-Trichlorobenzene	0.7981	0.7554	25.00	23.66	ug/L	-5	20	0.0500	
Dibromofluoromethane	0.5329	0.5534	50.00	51.93	ug/L	4	20	0.0500	
1,2-Dichloroethane-d4	0.2854	0.3255	50.00	57.02	ug/L	14	20	0.0500	
Toluene-d8	1.2315	1.1824	50.00	48.00	ug/L	-4	20	0.0500	
Bromofluorobenzene	0.9333	0.9762	50.00	52.30	ug/L	5	20	0.0500	

ISTD (ICAL hl715)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	462693	461942	-0.16	10.04	10.02	-0.02
1,4-Difluorobenzene	638581	716400	12.19	11.24	11.22	-0.02
Chlorobenzene-d5	497147	659239	32.60	15.73	15.73	0.00
1,4-Dichlorobenzene-d4	270725	343289	26.80	18.59	18.58	-0.01

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/23/15

+=high bias -=low bias c=CCV v=ICV

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA08 IDF : 1.0
Seqnum : 475507613010.1 File : hli10 Time : 18-DEC-2015 16:49
Cal : 475492027002 Caldate : 07-DEC-2015 Caltype : WATER
Standards: S27004 (20000X), S28693 (20000X), S28355 (20000X), S27081 (20000X), S28588 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	0.7639	0.8019	25.00	26.24	ug/L	5	20	0.1000	v- ***
Chloromethane	0.9065	0.9183	25.00	25.32	ug/L	1	20	0.1000	
Vinyl Chloride	0.7332	0.8402	25.00	28.65	ug/L	15	20	0.1000	
Bromomethane	0.2425	0.3968	25.00	33.64	ug/L	**35**	20	0.1000	c+ ***
Chloroethane	0.5128	0.5458	25.00	26.61	ug/L	6	20	0.1000	
Trichlorofluoromethane	0.8062	0.9158	25.00	28.40	ug/L	14	20	0.1000	
Acetone	0.1459	0.1291	25.00	22.13	ug/L	-11	20	0.1000	
Freon 113	0.4687	0.4734	25.00	25.25	ug/L	1	20	0.1000	
1,1-Dichloroethene	0.4731	0.4469	25.00	23.61	ug/L	-6	20	0.1000	
Methylene Chloride	0.5590	0.5939	25.00	26.56	ug/L	6	20	0.1000	
Carbon Disulfide	1.9348	1.8419	25.00	23.80	ug/L	-5	20	0.1000	
MTBE	1.2418	1.2385	25.00	24.93	ug/L	0	20	0.1000	
trans-1,2-Dichloroethene	0.5315	0.5708	25.00	26.85	ug/L	7	20	0.1000	
Vinyl Acetate	1.1931	1.2317	25.00	25.81	ug/L	3	20	0.0500	
1,1-Dichloroethane	1.0832	1.1941	25.00	27.56	ug/L	10	20	0.2000	
2-Butanone	0.2270	0.2025	25.00	22.31	ug/L	-11	20	0.1000	
2,2-Dichloropropane	0.6550	0.8937	25.00	34.11	ug/L	**36**	20	0.0500	c+ ***
cis-1,2-Dichloroethene	0.6245	0.6821	25.00	27.31	ug/L	9	20	0.1000	
Chloroform	0.9488	1.1191	25.00	29.49	ug/L	18	20	0.2000	
Bromochloromethane	0.3080	0.3440	25.00	27.93	ug/L	12	20	0.0500	
1,1,1-Trichloroethane	0.6727	0.7888	25.00	29.32	ug/L	17	20	0.1000	
1,1-Dichloropropene	0.5039	0.5337	25.00	26.48	ug/L	6	20	0.0500	
Carbon Tetrachloride	0.4007	0.4372	25.00	27.28	ug/L	9	20	0.1000	
1,2-Dichloroethane	0.3965	0.4915	25.00	30.99	ug/L	**24**	20	0.1000	c+ ***
Benzene	1.3796	1.5128	25.00	27.41	ug/L	10	20	0.5000	
Trichloroethene	0.3580	0.3957	25.00	27.63	ug/L	11	20	0.2000	
1,2-Dichloropropane	0.3989	0.4649	25.00	29.14	ug/L	17	20	0.1000	
Bromodichloromethane	0.4497	0.5415	25.00	30.10	ug/L	20	20	0.2000	
Dibromomethane	0.2182	0.2333	25.00	26.74	ug/L	7	20	0.0500	
4-Methyl-2-Pentanone	0.3383	0.3015	25.00	22.28	ug/L	-11	20	0.1000	
cis-1,3-Dichloropropene	0.5379	0.6626	25.00	30.80	ug/L	**23**	20	0.2000	c+ ***
Toluene	0.9895	1.0066	25.00	25.43	ug/L	2	20	0.4000	
trans-1,3-Dichloropropene	0.5094	0.5751	25.00	28.22	ug/L	13	20	0.1000	
1,1,2-Trichloroethane	0.1861	0.1729	25.00	23.22	ug/L	-7	20	0.1000	
2-Hexanone	0.2709	0.2304	25.00	21.27	ug/L	-15	20	0.1000	
1,3-Dichloropropane	0.5639	0.5816	25.00	25.78	ug/L	3	20	0.0500	
Tetrachloroethene	0.4276	0.4279	25.00	25.02	ug/L	0	20	0.2000	
Dibromochloromethane	0.4380	0.4431	25.00	25.29	ug/L	1	20	0.1000	
1,2-Dibromoethane	0.3634	0.3453	25.00	23.76	ug/L	-5	20	0.1000	
Chlorobenzene	1.0956	1.1196	25.00	25.55	ug/L	2	20	0.5000	
1,1,1,2-Tetrachloroethane	0.4245	0.4569	25.00	26.91	ug/L	8	20	0.0500	
Ethylbenzene	1.8263	1.9105	25.00	26.15	ug/L	5	20	0.1000	
m,p-Xylenes	0.7337	0.7026	50.00	51.88	ug/L	4	20	0.1000	
o-Xylene	0.6940	0.7553	25.00	27.21	ug/L	9	20	0.3000	
Styrene	1.1683	1.2837	25.00	27.47	ug/L	10	20	0.3000	
Bromoform	0.2702	0.2541	25.00	23.51	ug/L	-6	20	0.1000	
Isopropylbenzene	3.3475	3.4343	25.00	25.65	ug/L	3	20	0.1000	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
1,1,2,2-Tetrachloroethane	0.8165	0.6913	25.00	21.16	ug/L	-15	20	0.3000	
1,2,3-Trichloropropane	0.1971	0.1735	25.00	22.00	ug/L	-12	20	0.0500	
Propylbenzene	4.1189	4.2395	25.00	25.73	ug/L	3	20	0.0500	
Bromobenzene	0.9357	1.0012	25.00	26.75	ug/L	7	20	0.0500	
1,3,5-Trimethylbenzene	2.7813	2.8008	25.00	25.18	ug/L	1	20	0.0500	
2-Chlorotoluene	2.6228	2.7988	25.00	26.68	ug/L	7	20	0.0500	
4-Chlorotoluene	2.3693	2.5013	25.00	26.39	ug/L	6	20	0.0500	
tert-Butylbenzene	2.4053	2.5145	25.00	26.13	ug/L	5	20	0.0500	
1,2,4-Trimethylbenzene	2.7239	2.9312	25.00	26.90	ug/L	8	20	0.0500	
sec-Butylbenzene	3.7428	3.7399	25.00	24.98	ug/L	0	20	0.0500	
para-Isopropyl Toluene	2.7904	3.0751	25.00	27.55	ug/L	10	20	0.0500	
1,3-Dichlorobenzene	1.6009	1.8380	25.00	28.70	ug/L	15	20	0.6000	
1,4-Dichlorobenzene	1.6034	1.7597	25.00	27.44	ug/L	10	20	0.5000	
n-Butylbenzene	2.4251	2.7842	25.00	28.70	ug/L	15	20	0.0500	
1,2-Dichlorobenzene	1.5776	1.6976	25.00	26.90	ug/L	8	20	0.4000	
1,2-Dibromo-3-Chloropropane	0.1147	0.1000	25.00	21.80	ug/L	-13	20	0.0500	
1,2,4-Trichlorobenzene	0.8402	0.9544	25.00	28.40	ug/L	14	20	0.2000	
Hexachlorobutadiene	0.4231	0.4775	25.00	28.22	ug/L	13	20	0.0500	
Naphthalene	1.7343	1.6790	25.00	24.20	ug/L	-3	20	0.0500	
1,2,3-Trichlorobenzene	0.7981	0.8497	25.00	26.62	ug/L	6	20	0.0500	
Dibromofluoromethane	0.5329	0.5276	50.00	49.51	ug/L	-1	20	0.0500	
1,2-Dichloroethane-d4	0.2854	0.3106	50.00	54.41	ug/L	9	20	0.0500	
Toluene-d8	1.2315	1.1819	50.00	47.99	ug/L	-4	20	0.0500	
Bromofluorobenzene	0.9333	0.9044	50.00	48.45	ug/L	-3	20	0.0500	

ISTD (ICAL hl715)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	462693	360943	-21.99	10.04	10.05	0.01
1,4-Difluorobenzene	638581	563472	-11.76	11.24	11.25	0.01
Chlorobenzene-d5	497147	529083	6.42	15.73	15.74	0.01
1,4-Dichlorobenzene-d4	270725	279401	3.20	18.59	18.59	0.00

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/23/15

+=high bias -=low bias c=CCV v=ICV

CURTIS & TOMPKINS SPIKE USER REPORT FOR 272485 MSVOA Water
EPA 8260C

Inst : MSVOA10 Run Name : QC818118 IDF : 1.0
Seqnum : 495523084005.1 File : jlt05 Time : 29-DEC-2015 08:12
Cal : 495473163001 Caldate : 24-NOV-2015 Caltype : WATER
Standards: S28489 (20000X), S28592 (20000X), S28593 (20000X), S28451 (20000X), S28487 (2500X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	1.7706	1.2108	10.00	6.838	ug/L	**-32**	20	0.1000	c- u v- ***
Chloromethane	1.7578	1.9809	10.00	11.27	ug/L	13	20	0.1000	u
Vinyl Chloride	1.4072	1.6581	10.00	11.78	ug/L	18	20	0.1000	u
Bromomethane	0.4040	0.4772	10.00	11.73	ug/L	17	20	0.1000	u
Chloroethane	0.8252	0.8698	10.00	10.54	ug/L	5	20	0.1000	u
Trichlorofluoromethane	1.4316	1.3243	10.00	9.250	ug/L	-7	20	0.1000	u
Acetone	0.5603	0.6043	12.50	13.48	ug/L	8	20	0.1000	u v+ ***
Freon 113	0.6725	0.7222	12.50	13.42	ug/L	7	20	0.1000	u
1,1-Dichloroethene	0.6106	0.7006	12.50	14.34	ug/L	15	20	0.1000	u
Methylene Chloride	0.8074	0.9254	12.50	14.33	ug/L	15	20	0.1000	u
Carbon Disulfide	2.6986	3.2498	12.50	15.05	ug/L	20	20	0.1000	u
MTBE	2.5360	2.5159	12.50	12.40	ug/L	-1	20	0.1000	u
trans-1,2-Dichloroethene	0.6858	0.7487	12.50	13.65	ug/L	9	20	0.1000	u
Vinyl Acetate	2.8060	3.4505	12.50	15.37	ug/L	**23**	20	0.0500	c+ u ***
1,1-Dichloroethane	1.6979	1.8945	12.50	13.95	ug/L	12	20	0.2000	u
2-Butanone	0.7404	0.7770	12.50	13.12	ug/L	5	20	0.1000	u v+ ***
cis-1,2-Dichloroethene	0.7987	0.9288	12.50	14.54	ug/L	16	20	0.1000	u
2,2-Dichloropropane	1.1442	1.4085	12.50	15.39	ug/L	**23**	20	0.0500	c+ u v+ ***
Chloroform	1.4622	1.5816	12.50	13.52	ug/L	8	20	0.2000	u
Bromochloromethane	0.3900	0.4301	12.50	13.79	ug/L	10	20	0.0500	u
1,1,1-Trichloroethane	1.0783	1.2149	12.50	14.08	ug/L	13	20	0.1000	u
1,1-Dichloropropene	0.6957	0.6782	12.50	12.19	ug/L	-3	20	0.0500	u
Carbon Tetrachloride	0.5238	0.5642	12.50	13.46	ug/L	8	20	0.1000	u
1,2-Dichloroethane	0.7792	0.7883	12.50	12.65	ug/L	1	20	0.1000	u
Benzene	1.8008	1.9187	12.50	13.32	ug/L	7	20	0.5000	u
Trichloroethene	0.4322	0.4543	12.50	13.14	ug/L	5	20	0.2000	u
1,2-Dichloropropane	0.5345	0.5944	12.50	13.90	ug/L	11	20	0.1000	u
Bromodichloromethane	0.6731	0.6872	12.50	12.76	ug/L	2	20	0.2000	u
Dibromomethane	0.3426	0.3483	12.50	12.71	ug/L	2	20	0.0500	u
4-Methyl-2-Pentanone	0.8702	0.7453	12.50	10.71	ug/L	-14	20	0.1000	u
cis-1,3-Dichloropropene	0.7965	0.9141	12.50	14.35	ug/L	15	20	0.2000	u
Toluene	1.1878	1.2771	12.50	13.44	ug/L	8	20	0.4000	u
trans-1,3-Dichloropropene	0.9197	0.9786	12.50	13.30	ug/L	6	20	0.1000	u
1,1,2-Trichloroethane	0.2904	0.3049	12.50	13.12	ug/L	5	20	0.1000	u
2-Hexanone	0.7526	0.6891	12.50	11.45	ug/L	-8	20	0.1000	u
1,3-Dichloropropane	0.9674	1.0262	12.50	13.26	ug/L	6	20	0.0500	u
Tetrachloroethene	0.4156	0.4741	12.50	14.26	ug/L	14	20	0.2000	u
Dibromochloromethane	0.5620	0.5740	12.50	12.77	ug/L	2	20	0.1000	u
1,2-Dibromoethane	0.5372	0.5217	12.50	12.14	ug/L	-3	20	0.1000	u
Chlorobenzene	1.1908	1.2833	12.50	13.47	ug/L	8	20	0.5000	u
1,1,1,2-Tetrachloroethane	0.4600	0.4699	12.50	12.77	ug/L	2	20	0.0500	u
Ethylbenzene	2.2280	2.3586	12.50	13.23	ug/L	6	20	0.1000	u
m,p-Xylenes	0.7140	0.7309	25.00	25.59	ug/L	2	20	0.1000	u
o-Xylene	0.7215	0.6921	12.50	11.99	ug/L	-4	20	0.3000	u
Styrene	1.1272	1.0931	12.50	12.12	ug/L	-3	20	0.3000	u
Bromoform	0.3671	0.3509	12.50	11.95	ug/L	-4	20	0.1000	u
Isopropylbenzene	4.7982	5.6642	12.50	14.76	ug/L	18	20	0.1000	u

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
1,1,2,2-Tetrachloroethane	1.7984	2.1057	12.50	14.64	ug/L	17	20	0.3000	u
1,2,3-Trichloropropane	1.7987	1.9427	12.50	13.50	ug/L	8	20	0.0500	u
Propylbenzene	5.5213	6.0951	12.50	13.80	ug/L	10	20	0.0500	u
Bromobenzene	1.3382	1.5033	12.50	14.04	ug/L	12	20	0.0500	?LOD u ***
1,3,5-Trimethylbenzene	2.8705	2.8372	12.50	12.35	ug/L	-1	20	0.0500	u
2-Chlorotoluene	4.0426	4.5307	12.50	14.01	ug/L	12	20	0.0500	u
4-Chlorotoluene	3.5561	3.9463	12.50	13.87	ug/L	11	20	0.0500	u
tert-Butylbenzene	2.7397	2.9792	12.50	13.59	ug/L	9	20	0.0500	u
1,2,4-Trimethylbenzene	2.4209	2.2335	12.50	11.53	ug/L	-8	20	0.0500	u
sec-Butylbenzene	4.0321	4.3449	12.50	13.47	ug/L	8	20	0.0500	u
para-Isopropyl Toluene	2.6708	2.5683	12.50	12.02	ug/L	-4	20	0.0500	u
1,3-Dichlorobenzene	1.9143	2.1700	12.50	14.17	ug/L	13	20	0.6000	u
1,4-Dichlorobenzene	1.8463	2.0138	12.50	13.63	ug/L	9	20	0.5000	u
n-Butylbenzene	2.2244	2.2030	12.50	12.38	ug/L	-1	20	0.0500	u
1,2-Dichlorobenzene	1.8269	1.9832	12.50	13.57	ug/L	9	20	0.4000	u
1,2-Dibromo-3-Chloropropane	0.3189	0.2964	12.50	11.62	ug/L	-7	20	0.0500	u
1,2,4-Trichlorobenzene	0.7089	0.6796	12.50	14.10	ug/L	13	20	0.2000	?LOD u ***
Hexachlorobutadiene	0.4140	0.4294	12.50	12.97	ug/L	4	20	0.0500	u v+ ***
Naphthalene	1.8986	1.7914	12.50	11.79	ug/L	-6	20	0.0500	?LOD rsd u ***
1,2,3-Trichlorobenzene	0.6505	0.5849	12.50	11.24	ug/L	-10	20	0.0500	?LOD rsd u ***
Dibromofluoromethane	0.7155	0.7084	50.00	49.50	ug/L	-1	20	0.0500	u
1,2-Dichloroethane-d4	0.5915	0.5545	50.00	46.87	ug/L	-6	20	0.0500	u
Toluene-d8	1.5121	1.5262	50.00	50.47	ug/L	1	20	0.0500	u
Bromofluorobenzene	1.5362	1.6797	50.00	54.67	ug/L	9	20	0.0500	u

ISTD (ICAL jko16)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	669841	640144	-4.43	11.04	11.03	-0.01
1,4-Difluorobenzene	1136645	1125560	-0.98	12.21	12.19	-0.02
Chlorobenzene-d5	925414	902124	-2.52	16.15	16.13	-0.02
1,4-Dichlorobenzene-d4	382589	295821	-22.68	18.87	18.85	-0.02

Analyst: KKM Date: 12/30/15 Reviewer: LW Date: 12/30/15

+=high bias -=low bias ?LOD=no LOD c=CCV rsd=ICAL %RSD failure u=use v=ICV

Logbooks & Sequences

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 455523093

Date : 12/29/15 Reference : fk417
Sequence : MSVOA06 flt Analyzed : 11/04/15 18:55

#	Type	Sample ID	PFLBZ	RT	14DFB	RT	CLBZD5	RT	DCBZ14D4	RT
		ICAL STD	409051	11.72	694147	13.04	540483	17.77	288644	20.50
		LOWER LIMIT	204526	11.22	347074	12.54	270242	17.27	144322	20.00
		UPPER LIMIT	818102	12.22	1388294	13.54	1080966	18.27	577288	21.00
013	CCV/BS	QC818115	398971	11.71	650318	13.04	597600	17.76	379941	20.50
014	BSD	QC818116	448912	11.72	734574	13.04	684222	17.76	439951	20.50
016	CCV/BS	QC818174	400219	11.71	659518	13.04	634653	17.76	402371	20.50
017	BSD	QC818175	428780	11.72	745305	13.04	696760	17.76	430956	20.50
019	BLANK	QC818117	411409	11.72	649993	13.04	624918	17.76	405315	20.50
020	SAMPLE	272714-001	388874	11.72	624005	13.04	558321	17.76	377237	20.50
021	SAMPLE	272687-004	357048	11.72	601681	13.04	559117	17.76	345907	20.50
022	SAMPLE	272485-001	370625	11.71	628512	13.03	576687	17.76	341220	20.50
023	SAMPLE	272741-014	351738	11.71	587760	13.03	552565	17.76	338139	20.49
024	SAMPLE	272751-005	340808	11.70	592084	13.03	526765	17.76	314287	20.49
025	SAMPLE	272751-001	362548	11.70	629093	13.02	540488	17.75	344444	20.50
026	SAMPLE	272751-002	338453	11.70	570396	13.03	514113	17.76	316313	20.49
027	SAMPLE	272751-003	328181	11.70	535991	13.02	485420	17.75	328019	20.49
028	SAMPLE	272751-004	371965	11.70	615691	13.02	582059	17.76	362224	20.49
029	SAMPLE	272751-006	376880	11.70	605407	13.02	559658	17.75	356678	20.50
030	SAMPLE	272751-007	370464	11.70	604705	13.02	561272	17.76	363732	20.49

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 455523093

Date : 12/29/15 Reference : fkf09
Sequence : MSVOA06 flt Analyzed : 11/15/15 21:59

#	Type	Sample ID	CLBZD5-TIC	RT
		ICAL STD	1694835	17.76
		LOWER LIMIT	847418	17.26
		UPPER LIMIT	3389670	18.26
016	CCV/BS	QC818174	2082168	17.76
024	SAMPLE	272751-005	1762816	17.76
025	SAMPLE	272751-001	1797343	17.75
026	SAMPLE	272751-002	1699123	17.76
027	SAMPLE	272751-003	1614970	17.75
028	SAMPLE	272751-004	1876777	17.75
029	SAMPLE	272751-006	1792044	17.75
030	SAMPLE	272751-007	1798665	17.75

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 475506105

Date : 12/17/15 Reference : hl715
Sequence : MSVOA08 hlh Analyzed : 12/08/15 00:45

#	Type	Sample ID	PFLBZ	RT	14DFB	RT	CLBZD5	RT	DCBZ14D4	RT
		ICAL STD	462693	10.04	638581	11.24	497147	15.73	270725	18.59
		LOWER LIMIT	231347	9.54	319291	10.74	248574	15.23	135363	18.09
		UPPER LIMIT	925386	10.54	1277162	11.74	994294	16.23	541450	19.09
001	IB		491252	10.02	743485	11.22	667058	15.73	352241	18.58
003	CCV		461942	10.02	716400	11.22	659239	15.73	343289	18.58
004	BS	QC816587	453507	10.03	706931	11.22	633454	15.73	316083	18.58
005	BSD	QC816588	418511	10.02	667512	11.22	613067	15.73	312599	18.58
006	IB		424940	10.02	700062	11.22	603781	15.72	303345	18.58
007	BLANK	QC816589	424545	10.02	686019	11.22	617710	15.73	292031	18.58
008	SAMPLE	272479-001	261763	10.03	348860	11.23	269696	15.72	129786 *	18.59
009	SAMPLE	272467-005	429387	10.03	706190	11.23	614097	15.72	318020	18.58
010	SAMPLE	272467-001	431387	10.03	650821	11.23	597111	15.73	324586	18.58
011	SAMPLE	272467-002	427122	10.03	710736	11.23	607898	15.73	320682	18.59
012	SAMPLE	272467-003	422390	10.03	698660	11.22	592101	15.73	323962	18.58
013	SAMPLE	272467-004	442638	10.03	711685	11.23	618372	15.73	330868	18.59
014	SAMPLE	272266-001	452664	10.04	700899	11.24	629212	15.74	347263	18.59
015	SAMPLE	272266-002	440877	10.03	701369	11.23	593041	15.74	327332	18.59
016	SAMPLE	272475-001	439312	10.04	673301	11.24	626578	15.74	333695	18.59
017	SAMPLE	272485-007	435115	10.04	710043	11.24	610756	15.74	343830	18.59
018	SAMPLE	272485-008	458732	10.03	702833	11.23	603783	15.74	338557	18.59
019	SAMPLE	272485-009	423310	10.03	667891	11.23	590285	15.74	323961	18.59
020	SAMPLE	272485-010	447446	10.03	669917	11.23	597704	15.74	330409	18.59
021	SAMPLE	272485-005	330855	10.04	436294	11.23	350270	15.74	190964	18.59
022	SAMPLE	272485-006	442648	10.04	656995	11.24	583971	15.74	318043	18.59
023	SAMPLE	272266-003	453660	10.04	677167	11.23	623636	15.74	332992	18.59
024	IB		441867	10.04	668786	11.24	599802	15.74	328916	18.60
025	IB		340776	10.04	468470	11.24	371445	15.75	172720	18.60
026	LOD	218417-029	417989	10.05	651279	11.24	566126	15.74	308489	18.60
027	LOD	218417-029	355554	10.04	473316	11.24	412470	15.74	224002	18.59

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 475507613

Date : 12/18/15 Reference : hl715
Sequence : MSVOA08 hli Analyzed : 12/08/15 00:45

#	Type	Sample ID	PFLBZ	RT	14DFB	RT	CLBZD5	RT	DCBZ14D4	RT
		ICAL STD	462693	10.04	638581	11.24	497147	15.73	270725	18.59
		LOWER LIMIT	231347	9.54	319291	10.74	248574	15.23	135363	18.09
		UPPER LIMIT	925386	10.54	1277162	11.74	994294	16.23	541450	19.09
001	IB		421771	10.03	699058	11.23	612278	15.74	348987	18.59
004	CCV		419217	10.05	715542	11.25	626668	15.75	331904	18.59
005	CCV		427445	10.04	712929	11.24	638210	15.75	345624	18.59
006	CCV		310209	10.04	430624	11.24	342990	15.74	172921	18.59
010	CCV		360943	10.05	563472	11.25	529083	15.74	279401	18.59
011	BS	QC817288	428006	10.05	677747	11.25	624397	15.74	315538	18.60
012	BSD	QC817289	350985	10.05	536705	11.25	447085	15.74	239977	18.60
013	IB		414841	10.06	645350	11.26	568470	15.75	306994	18.60
014	BLANK	QC817290	425258	10.06	640942	11.26	550616	15.75	300493	18.60
015	SAMPLE	272547-002	451918	10.06	702719	11.26	600178	15.75	326125	18.61
016	SAMPLE	272266-003	466618	10.05	743619	11.25	614889	15.76	350767	18.60
017	SAMPLE	272485-001	447264	10.06	671953	11.25	637871	15.76	338109	18.60
018	SAMPLE	272306-004	470944	10.06	731687	11.26	652590	15.75	351555	18.60
019	SAMPLE	272486-001	463330	10.06	720223	11.26	649974	15.75	355276	18.61
020	SAMPLE	272391-001	468496	10.06	728941	11.26	644338	15.75	362713	18.60
021	SAMPLE	272391-006	460938	10.06	719031	11.26	643394	15.75	360336	18.61
022	SAMPLE	272347-004	497403	10.05	755109	11.25	676140	15.76	371407	18.60
023	MSS	272485-002	482143	10.06	764842	11.26	672875	15.75	366730	18.61
024	SAMPLE	272485-003	474636	10.05	716867	11.25	641034	15.76	361951	18.60
025	SAMPLE	272485-004	461291	10.06	704452	11.26	641419	15.75	345224	18.61
026	SAMPLE	272485-005	474769	10.05	726913	11.25	634868	15.76	361726	18.61
027	SAMPLE	272306-008	483973	10.06	749023	11.26	658325	15.75	349357	18.60
028	MS	QC817299	457273	10.06	695986	11.25	621280	15.76	343407	18.61
029	MSD	QC817300	428959	10.06	717298	11.26	631694	15.75	332254	18.61
030	IB		416663	10.06	598089	11.26	500241	15.75	265458	18.60
031	IB		477110	10.05	702507	11.25	592224	15.76	306676	18.60
032	LOD	218417-029	450615	10.05	742086	11.25	640043	15.75	342340	18.60

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 495523084

Date : 12/29/15 Reference : jko16
Sequence : MSVOA10 jlt Analyzed : 11/24/15 21:49

#	Type	Sample ID	PFLBZ	RT	14DFB	RT	CLBZD5	RT	DCBZ14D4	RT
		ICAL STD	669841	11.04	1136645	12.21	925414	16.15	382589	18.87
		LOWER LIMIT	334921	10.54	568323	11.71	462707	15.65	191295	18.37
		UPPER LIMIT	1339682	11.54	2273290	12.71	1850828	16.65	765178	19.37
005	CCV/BS	QC818118	640144	11.03	1125560	12.19	902124	16.13	295821	18.85
006	BSD	QC818119	689043	11.02	1206628	12.20	958810	16.13	321507	18.85
007	IB		680518	11.02	1202548	12.19	929212	16.13	254386	18.84
008	BLANK	QC818120	678512	11.02	1196119	12.19	950028	16.13	258975	18.84
009	BLANK	QC818120	688583	11.02	1202926	12.19	966502	16.13	267931	18.85
010	SAMPLE	272485-001	805394	11.04	1420578	12.20	1123232	16.13	301509	18.85
011	SAMPLE	272485-004	699381	11.03	1223313	12.20	978345	16.13	279439	18.85
012	SAMPLE	272485-003	650853	11.03	1140149	12.19	896892	16.13	255540	18.85
013	SAMPLE	272485-002	629099	11.02	1100151	12.19	874078	16.13	250863	18.85
014	IB		756271	11.02	1292085	12.19	1041967	16.13	304976	18.85
015	SAMPLE	272687-006	677370	11.02	1170683	12.19	949968	16.13	266990	18.85
016	SAMPLE	272687-003	567225	11.02	989879	12.19	809379	16.13	235255	18.85

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 455443988

Instrument : MSVOA06 Begun : 11/04/15 07:48
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	fk401	X	IB			11/04/15 07:48	1.0	1	
002	fk402	X	IB			11/04/15 08:20	1.0	1	
003	fk403	TUN	BFB			11/04/15 11:47	1.0	2	
004	fk404	TUN	BFB			11/04/15 12:01	1.0	2	
005	fk405	X	IB			11/04/15 12:29	1.0	1	
006	fk406	X	IB			11/04/15 13:01	1.0	1	
007	fk407	X	IB			11/04/15 13:33	1.0	1	
008	fk408	X	IB			11/04/15 14:05	1.0	1	
009	fk409	X	IB			11/04/15 14:37	1.0	1	
010	fk410	IB	CALIB			11/04/15 15:09	1.0	1	
011	fk411	ICAL	.25/.5PPB			11/04/15 15:41	1.0	3 4 5 6 1	
012	fk412	ICAL	.5/1PPB			11/04/15 16:13	1.0	1 3 4 5 6	
013	fk413	ICAL	2PPB			11/04/15 16:45	1.0	3 4 5 6 1	
014	fk414	ICAL	5PPB			11/04/15 17:17	1.0	1 3 4 5 6	
015	fk415	ICAL	10PPB			11/04/15 17:49	1.0	1 3 4 5 6	
016	fk416	ICAL	20PPB			11/04/15 18:22	1.0	1 3 4 5 6	
017	fk417	ICAL	50PPB			11/04/15 18:55	1.0	1 3 4 5 6	
018	fk418	ICAL	75PPB			11/04/15 19:29	1.0	1 3 4 5 6	
019	fk419	ICAL	100PPB			11/04/15 20:01	1.0	1 3 4 5 6	
020	fk420	ICV	GAS			11/04/15 20:35	1.0	7 1	
021	fk421	ICV				11/04/15 21:07	1.0	8 9 10 1	
022	fk422	IB				11/04/15 21:41	1.0	1	
023	fk423	IB				11/04/15 22:14	1.0	1	

Analyst: MCT Date: 11/05/15 Reviewer: LW Date: 11/06/15

Standards used: 1=S28450 2=S27825 3=S27004 4=S28295 5=S28355 6=S27081 7=S28123 8=S28219 9=S28220 10=S28167

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 455523093

Instrument : MSVOA06 Begun : 12/29/15 06:13
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	flt01	X	IB			12/29/15 06:13	1.0	1	
002	flt02	X	IB			12/29/15 06:45	1.0	1	
003	flt03	TUN	BFB			12/29/15 07:25	1.0	2	t
004	flt04	TUN	BFB			12/29/15 07:51	1.0	2	
005	flt05	X	QC818115	Water	230759	12/29/15 08:16	1.0	3 4 5 6 1	cc+
006	flt06	TUN	BFB			12/29/15 08:59	1.0	2	t
007	flt07	TUN	BFB			12/29/15 09:11	1.0	2	
008	flt08	X	QC818115	Water	230759	12/29/15 09:36	1.0	3 4 5 6 1	
009	flt09	TUN	BFB			12/29/15 10:07	1.0	2	
010	flt10	X	QC818115	Water	230759	12/29/15 10:33	1.0	3 4 5 6 1	cc+
011	flt11	TUN	BFB			12/29/15 11:05	1.0	2	
012	flt12	X	QC818115	Water	230759	12/29/15 11:35	1.0	3 4 5 6 1	cc-
013	flt13	CCV/BS	QC818115	Water	230759	12/29/15 12:28	1.0	3 4 5 6 1	
014	flt14	BSD	QC818116	Water	230759	12/29/15 13:32	1.0	3 4 5 6 1	
015	flt15	X	IB			12/29/15 14:03	1.0	1	
016	flt16	CCV/BS	QC818174	Water	230759	12/29/15 14:36	1.0	7 1	
017	flt17	BSD	QC818175	Water	230759	12/29/15 15:08	1.0	7 1	
018	flt18	X	IB			12/29/15 15:40	1.0	1	
019	flt19	BLANK	QC818117	Water	230759	12/29/15 16:12	1.0	1	
020	flt20	SAMPLE	272714-001	Water	230759	12/29/15 16:45	1.0	1	
021	flt21	SAMPLE	272687-004	Water	230759	12/29/15 17:17	1.0	1	pH > 2
022	flt22	SAMPLE	272485-001	Water	230759	12/29/15 17:50	1.0	1	headspace > 1 mL
023	flt23	SAMPLE	272741-014	Water	230759	12/29/15 18:22	33.33	1	
024	flt24	SAMPLE	272751-005	Water	230759	12/29/15 19:03	1.0	1	
025	flt25	SAMPLE	272751-001	Water	230759	12/29/15 20:10	3.333	1	
026	flt26	SAMPLE	272751-002	Water	230759	12/29/15 20:43	2.0	1	
027	flt27	SAMPLE	272751-003	Water	230759	12/29/15 21:16	12.50	1	
028	flt28	SAMPLE	272751-004	Water	230759	12/29/15 21:49	2.0	1	
029	flt29	SAMPLE	272751-006	Water	230759	12/29/15 22:22	10.0	1	
030	flt30	SAMPLE	272751-007	Water	230759	12/29/15 22:55	3.333	1	
031	flt31	X	IB			12/29/15 23:28	1.0	1	
032	flt32	X	IB			12/30/15 00:01	1.0	1	
033	flt33	X	IB			12/30/15 00:34	1.0	1	

MCT 12/29/15 : Adjusted tune before file : flt06,flt09,flt11.

MCT 12/30/15 : Matrix spikes were not performed for this analysis in batch 230759 due to insufficient sample amount.

MCT 12/30/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 33.

Analyst: MCT Date: 12/30/15 Reviewer: LW Date: 12/30/15

Standards used: 1=S28450 2=S27825 3=S28489 4=S28592 5=S28593 6=S28451 7=S27677

Flags used: +=high bias -=low bias cc=CCV CCC failure t=tune failure

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 475492027

Instrument : MSVOA08 Begun : 12/07/15 16:27
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	hl701	TUN	BFB			12/07/15 16:27	1.0	1	
002	hl702	TUN	BFB			12/07/15 16:42	1.0	1	
003	hl703	TUN	BFB			12/07/15 18:12	1.0	1	t
004	hl704	TUN	BFB			12/07/15 18:27	1.0	1	
005	hl705	X	IB			12/07/15 19:03	1.0	2	
006	hl706	X	IB			12/07/15 19:37	1.0	2	
007	hl707	X	IB			12/07/15 20:11	1.0	2	
008	hl708	IB	CALIB			12/07/15 20:46	1.0	2	
009	hl709	ICAL	.25PPB			12/07/15 21:20	1.0	3 4 5 6 2	
010	hl710	ICAL	.5PPB			12/07/15 21:54	1.0	2 3 4 5 6	
011	hl711	ICAL	2PPB			12/07/15 22:28	1.0	3 4 5 6 2	
012	hl712	ICAL	5PPB			12/07/15 23:03	1.0	2 3 4 5 6	
013	hl713	ICAL	10PPB			12/07/15 23:37	1.0	2 3 4 5 6	
014	hl714	ICAL	20PPB			12/08/15 00:11	1.0	2 3 4 5 6	
015	hl715	ICAL	50PPB			12/08/15 00:45	1.0	2 3 4 5 6	
016	hl716	ICAL	75PPB			12/08/15 01:20	1.0	2 3 4 5 6	
017	hl717	ICAL	100PPB			12/08/15 01:54	1.0	2 3 4 5 6	
018	hl718	ICV	GAS			12/08/15 02:28	1.0	2 7	
019	hl719	ICV	MIX			12/08/15 03:02	1.0	2 8 9 10	
020	hl720	X	IB			12/08/15 03:36	1.0	2	

DAR 12/08/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 20.

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

Standards used: 1=S27825 2=S28588 3=S27004 4=S28295 5=S28355 6=S27081 7=S28123 8=S28489 9=S28592 10=S28593

Flags used: t=tune failure

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 475506105

Instrument : MSVOA08 Begun : 12/17/15 11:05
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	hlh01	IB				12/17/15 11:05	1.0	1	?t
002	hlh02	TUN	BFB			12/17/15 11:57	1.0	2	
003	hlh03	CCV				12/17/15 12:35	1.0	3 4 5 6 1	
004	hlh04	BS	QC816587	Water	230360	12/17/15 13:08	1.0	7 8 9 10 1	
005	hlh05	BSD	QC816588	Water	230360	12/17/15 13:42	1.0	7 8 9 10 1	
006	hlh06	IB				12/17/15 14:39	1.0	1	
007	hlh07	BLANK	QC816589	Water	230360	12/17/15 15:12	1.0	1	
008	hlh08	SAMPLE	272479-001	Water	230360	12/17/15 15:46	1.0	1	spk , pH > 2
009	hlh09	SAMPLE	272467-005	Water	230360	12/17/15 16:19	1.0	1	spk
010	hlh10	SAMPLE	272467-001	Water	230360	12/17/15 16:53	1.0	1	spk
011	hlh11	SAMPLE	272467-002	Water	230360	12/17/15 17:27	1.0	1	spk
012	hlh12	SAMPLE	272467-003	Water	230360	12/17/15 18:00	1.0	1	spk
013	hlh13	SAMPLE	272467-004	Water	230360	12/17/15 18:34	1.0	1	spk
014	hlh14	SAMPLE	272266-001	Water	230360	12/17/15 19:08	1.0	1	
015	hlh15	SAMPLE	272266-002	Water	230360	12/17/15 19:42	1.0	1	
016	hlh16	SAMPLE	272475-001	Water	230360	12/17/15 20:16	1.0	1	spk
017	hlh17	SAMPLE	272485-007	Water	230360	12/17/15 20:50	1.0	1	
018	hlh18	SAMPLE	272485-008	Water	230360	12/17/15 21:24	1.0	1	
019	hlh19	SAMPLE	272485-009	Water	230360	12/17/15 21:58	1.0	1	
020	hlh20	SAMPLE	272485-010	Water	230360	12/17/15 22:33	1.0	1	
021	hlh21	SAMPLE	272485-005	Water	230360	12/17/15 23:07	7.143	1	foamer
022	hlh22	SAMPLE	272485-006	Water	230360	12/17/15 23:41	5.0	1	foamer
023	hlh23	SAMPLE	272266-003	Water	230360	12/18/15 00:15	62.50	1	<<t , foamer, headspace > 1 mL, pH > 2
024	hlh24	IB				12/18/15 00:49	1.0	1	<<t
025	hlh25	IB				12/18/15 01:24	1.0	1	<<t
026	hlh26	LOD	218417-029	Water	230360	12/18/15 01:58	1.0	3 4 5 6 1	<<t
027	hlh27	LOD	218417-029	Water	230360	12/18/15 02:32	1.0	3 4 5 6 1	<<t

DAR 12/17/15 : Matrix spikes were not performed for this analysis in batch 230360 due to insufficient sample amount.

LW 12/17/15 : Reviewed for 272479

DAR 12/18/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 27.

DAR 12/18/15 : reprocessed qc for flagging

Analyst: DAR Date: 12/17/15 Reviewer: LW Date: 12/18/15

Standards used: 1=S28588 2=S27825 3=S27004 4=S28693 5=S28355 6=S27081 7=S28489 8=S28592 9=S28593 10=S28123

Flags used: <<t=out of clock ?t=missing tune spk=5% spike rule

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 475507613

Instrument : MSVOA08 Begun : 12/18/15 12:13
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	hli01	IB				12/18/15 12:13	1.0	1	?t
002	hli02	TUN	BFB			12/18/15 12:44	1.0	2	t
003	hli03	TUN	BFB			12/18/15 12:54	1.0	2	
004	hli04	CCV				12/18/15 13:21	1.0	3 4 5 6 1	cc+
005	hli05	CCV		Water		12/18/15 13:55	1.0	7 8 9 10 1	cc+
006	hli06	CCV		Water		12/18/15 14:28	1.0	7 8 9 10 1	cc+
007	hli07	TUN	BFB			12/18/15 15:28	1.0	2	t
008	hli08	TUN	BFB			12/18/15 15:48	1.0	2	t
009	hli09	TUN	BFB			12/18/15 16:20	1.0	2	
010	hli10	CCV				12/18/15 16:49	1.0	3 4 5 6 1	
011	hli11	BS	QC817288	Water	230541	12/18/15 17:22	1.0	7 8 9 10 1	
012	hli12	BSD	QC817289	Water	230541	12/18/15 17:56	1.0	7 8 9 10 1	
013	hli13	IB				12/18/15 18:29	1.0	1	
014	hli14	BLANK	QC817290	Water	230541	12/18/15 19:04	1.0	1	
015	hli15	SAMPLE	272547-002	Water	230541	12/18/15 19:36	1.0	1	
016	hli16	SAMPLE	272266-003	Water	230541	12/18/15 20:11	62.50	1	foamer, headspace > 1 mL, pH > 2
017	hli17	SAMPLE	272485-001	Water	230541	12/18/15 20:45	1.0	1	
018	hli18	SAMPLE	272306-004	Water	230541	12/18/15 21:20	1.0	1	
019	hli19	SAMPLE	272486-001	Water	230541	12/18/15 21:54	1.0	1	
020	hli20	SAMPLE	272391-001	Water	230541	12/18/15 22:28	1.0	1	high NT
021	hli21	SAMPLE	272391-006	Water	230541	12/18/15 23:03	1.0	1	high NT
022	hli22	SAMPLE	272347-004	Water	230541	12/18/15 23:37	5.0	1	headspace > 1 mL
023	hli23	MSS	272485-002	Water	230541	12/19/15 00:11	7.143	1	foamer
024	hli24	SAMPLE	272485-003	Water	230541	12/19/15 00:46	2.0	1	foamer
025	hli25	SAMPLE	272485-004	Water	230541	12/19/15 01:20	5.0	1	foamer
026	hli26	SAMPLE	272485-005	Water	230541	12/19/15 01:54	7.143	1	foamer
027	hli27	SAMPLE	272306-008	Water	230541	12/19/15 02:29	7143	1	
028	hli28	MS	QC817299	Water	230541	12/19/15 03:03	7.143	7 8 9 10 1	
029	hli29	MSD	QC817300	Water	230541	12/19/15 03:37	7.143	7 8 9 10 1	foamer
030	hli30	IB				12/19/15 04:12	1.0	1	
031	hli31	IB				12/19/15 04:46	1.0	1	<<t
032	hli32	LOD	218417-029	Water	230541	12/19/15 05:20	1.0	3 1	<<t

DAR 12/18/15 : adjusted tune after file 6 and 8

DAR 12/21/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 32.

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/21/15

Standards used: 1=S28588 2=S27825 3=S27004 4=S28693 5=S28355 6=S27081 7=S28489 8=S28592 9=S28593 10=S28123

Flags used: +=high bias <<t=out of clock ?t=missing tune cc=CCV CCC failure t=tune failure

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 495473163

Instrument : MSVOA10 Begun : 11/24/15 14:03
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	jko01	TUN	BFB			11/24/15 14:03	1.0	1	t
002	jko02	TUN	BFB			11/24/15 14:15	1.0	1	
003	jko03	TUN	BFB			11/24/15 14:26	1.0	1	
004	jko04	TUN	BFB			11/24/15 15:39	1.0	1	
005	jko05	X	IB			11/24/15 16:05	1.0	2	
006	jko06	X	IB			11/24/15 16:36	1.0	2	
007	jko07	X	IB			11/24/15 17:07	1.0	2	
008	jko08	X	IB			11/24/15 17:38	1.0	2	
009	jko09	IB	CALIB			11/24/15 18:09	1.0	2	
010	jko10	ICAL				11/24/15 18:40	1.0	3 4 5 6 2	
011	jko11	ICAL				11/24/15 19:11	1.0	3 4 5 6 2	
012	jko12	ICAL				11/24/15 19:43	1.0	3 4 5 6 2	
013	jko13	ICAL				11/24/15 20:14	1.0	3 4 5 6 2	
014	jko14	ICAL				11/24/15 20:46	1.0	3 4 5 6 2	
015	jko15	ICAL				11/24/15 21:17	1.0	3 4 5 6 2	
016	jko16	ICAL				11/24/15 21:49	1.0	3 4 5 6 2	
017	jko17	ICAL				11/24/15 22:21	1.0	3 4 5 6 2	
018	jko18	ICAL				11/24/15 22:52	1.0	3 4 5 6 2	
019	jko19	ICV	GASES			11/24/15 23:24	1.0	7 2	
020	jko20	ICV	2CLEVE			11/24/15 23:55	1.0	8 9 2	
021	jko21	ICV				11/25/15 00:27	1.0	10 11 12 2	
022	jko22	X	IB			11/25/15 00:58	1.0	2	
023	jko23	X	IB			11/25/15 01:29	1.0	2	
024	jko24	X	IB			11/25/15 02:01	1.0	2	
025	jko25	X	IB			11/25/15 02:32	1.0	2	

KER 11/30/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 25.

Analyst: KER Date: 11/30/15 Reviewer: LW Date: 11/30/15

Standards used: 1=S27825 2=S28487 3=S27980 4=S28295 5=S28355 6=S27081 7=S28451 8=S18173 9=S27395 10=S28489 11=S28592 12=S28593

Flags used: t=tune failure

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 495474457

Instrument : MSVOA10 Begun : 11/25/15 11:37
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	jkp01	X	IB			11/25/15 11:37	1.0	1	
002	jkp02	TUN	BFB			11/25/15 12:55	1.0	2	
003	jkp03	CCV				11/25/15 13:21	1.0	3 4 5 6 1	cc-
004	jkp04	BS	QC814446	Water	229832	11/25/15 14:04	1.0	7 8 9 10 1	cc-
005	jkp05	BSD	QC814447	Water	229832	11/25/15 14:35	1.0	7 8 9 10 1	cc-
006	jkp06	ICV				11/25/15 18:28	1.0	9 1	
007	jkp07	IB				11/25/15 18:59	1.0	11 1	
008	jkp08	IB				11/25/15 19:30	1.0	11 1	
009	jkp09	BLANK	QC814448	Water	229832	11/25/15 20:01	1.0	1	cc-

KKM 11/30/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs ??? through ???.

KER 11/30/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 9.

Analyst: KER Date: 11/30/15 Reviewer: LW Date: 12/01/15

Standards used: 1=S28487 2=S27825 3=S27980 4=S28295 5=S28355 6=S27081 7=S28489 8=S28592 9=S28593 10=S28451 11=S28214

Flags used: -=low bias cc=CCV CCC failure

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 495523084

Instrument : MSVOA10 Begun : 12/29/15 06:04
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	jlt01	X	IB			12/29/15 06:04	1.0	1	
002	jlt02	X	IB			12/29/15 06:35	1.0	1	
003	jlt03	TUN	BFB			12/29/15 07:19	1.0	2	t
004	jlt04	TUN	BFB			12/29/15 07:47	1.0	2	
005	jlt05	CCV/BS	QC818118	Water	230760	12/29/15 08:12	1.0	3 4 5 6 1	
006	jlt06	BSD	QC818119	Water	230760	12/29/15 08:52	1.0	3 4 5 6 1	
007	jlt07	IB				12/29/15 09:24	1.0	1	
008	jlt08	BLANK	QC818120	Water	230760	12/29/15 09:55	1.0	1	
009	jlt09	BLANK	QC818120	Water	230760	12/29/15 10:50	1.0	1	
010	jlt10	SAMPLE	272485-001	Water	230760	12/29/15 15:53	1.0	1	
011	jlt11	SAMPLE	272485-004	Water	230760	12/29/15 16:23	5.0	1	foamer
012	jlt12	SAMPLE	272485-003	Water	230760	12/29/15 16:54	2.0	1	foamer
013	jlt13	SAMPLE	272485-002	Water	230760	12/29/15 17:25	7.143	1	foamer
014	jlt14	IB				12/29/15 17:56	1.0	1	
015	jlt15	SAMPLE	272687-006	Water	230760	12/29/15 18:27	1.0	1	
016	jlt16	SAMPLE	272687-003	Water	230760	12/29/15 18:58	10.0	1	foamer
017	jlt17	X	IB			12/29/15 19:30	1.0	1	
018	jlt18	X	IB			12/29/15 20:01	1.0	1	

MCT 12/30/15 : Matrix spikes were not performed for this analysis in batch 230760 due to insufficient sample amount.

MCT 12/30/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 18.

Analyst: MCT Date: 12/30/15 Reviewer: LW Date: 12/30/15

Standards used: 1=S28487 2=S27825 3=S28489 4=S28592 5=S28593 6=S28451

Flags used: t=tune failure

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MSVOA WATER Prepsheet

Dilutions prepared & pH of dilutions checked (initials/date): MJ 12/17

For Undiluted samples, pH checked (initials/date): Zie 12/18/15

Batch #: C20360

Prep Date: 12/17

Instrument: 8

	Sample ID	Vial	pH <2	pH if >2	HS?	Dil'n flask ID	RR #	DF	Comments	20% ccv?	hold	due	$Rush
1	272470-1	E		6			2	1x	TBA, 2chem				
2	272466-1	D	✓	2			1		8260C				
3	2	D	✓				1						
4	3	E		7	2ml	4	1	625x					
5	272467-1	C	✓					1x					
6	2	B	✓										
7	3		✓										
8	4		✓										
9	5		✓										
10	272475-1	B	✓										
11	272485-5	B	✓			5		7x	foam 485				
12	6	B	✓			6		5x	foam				
13	7		✓						TB				
14	8		✓										
15	9		✓										
16	10		✓										
17													
18													
19													
20													
21	COD								1ppb nexane				
22									4ppb Ace, VA				

MSVOA WATER Prepsheet

Dilutions prepared & pH of dilutions checked (initials/date): MJ 12/18

For Undiluted samples, pH checked (initials/date): NJ 12/19/15

Batch #: 230541

Prep Date: 12/18

Instrument: 8

	Sample ID	Vial	pH <2	pH if >2	HS?	Dil'n flask ID	RR #	DF	Comments	20% ccv?	hold	due	$Rush
1	272266-3	B		7	1.7ml	5	2	625	FOAM 1.7ml HS double prep				
2	272347-4	F	✓		18		4	5x	in vom fridge				
3	272547-2	A	✓					1x	+B				
4	272485-1	B	✓					1x					
5	2	B	✓			3		7x	foam				
6	2	C	✓			1A			QL-017249				
7	2	C	✓			1A		✓	300				
8	3	B	✓			6		2x	foam				
9	4	B	✓			7		5x	✓				
10	272486-1	B	✓					1x					
11	272485-5	C	✓			11	1	7x	foam				
12	272341-1	F	✓				1	1x					
13	6	D	✓				1	1x					
14	272306-8	D	✓			12	1	7000x					
15	4	D	✓				1	1x					
16													
17													
18													
19													
20													
21													
22													

MSVOA WATER Prepsheet

Dilutions prepared & pH of dilutions checked (initials/date): KEA 12/29

For Undiluted samples, pH checked (initials/date): [illegible] 12/30/15

Batch #: 230759

Prep Date: 12-29-15

Instrument: 6

	Sample ID	Vial	pH <2	pH if >2	HS?	Dil'n flask ID	RR #	DF	Comments	20% ccv?	hold	due	$Rush
IS 1	272687-4	C		8			1	1	CS_2 hit w/ ct			1/4	X
2	714-1	C	✓				1	1	↓			12/31	
3	272741-14	D	✓			5		33x					
4	272485-1	A	✓		5mL		2	1	1=BS fail 13DCB 2=↑surr w/ 13DCB				
5	272751-1	A	✓			1		3x	needs gas				
6	-2	↓	✓			3		2x	↓				
7	-3		✓			7		12.5					
8	-4		✓			9		2					
9	-5		✓					1					
10	-6		✓			10		10					
11	-7	↓	✓			12		3					
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

MSVOA WATER Prepsheet

Dilutions prepared & pH of dilutions checked (initials/date): ML 12/29

For Undiluted samples, pH checked (initials/date): ~~[illegible]~~ 12/30/15

Batch #: 2307 60

Prep Date: 12/29

Instrument: LD

	Sample ID	Vial	pH <2	pH if >2	HS?	Dil'n flask ID	RR #	DF	Comments	20% ccv?	hold	due	$Rush
1	272485-1	C	✓					1x			12/29		
2	2	G	✓			G		7x			↓		
3	3	C	✓			4		2x					
4	4	C	✓			8		5x	Foam				
5	272687-6	C	✓				1	1	MTBE w/ ↑surr			1/4	x
6	-3	C	✓				1	10	Foam; CS_2 hit w/ ct & ↑surr			↓	x
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													

Dilutions for 272485 MSVOA Water
Curtis & Tompkins Laboratories

Type	Sample ID	IDFs
SAMPLE	272485-002	7.143X
SAMPLE	272485-003	2X
SAMPLE	272485-004	5X
SAMPLE	272485-005	7.143X
SAMPLE	272485-006	5X
MS	QC817299	7.143X
MSD	QC817300	7.143X

Case Narrative Addendum: Manual Integrations for 272485 GC/MS VOA (Water)

For CCV/BS QC818115 (MSVOA06 flt13):
Bromomethane: Combined split peak.
Chloromethane: Combined split peak.
Ethanol: Combined split peak.
Freon 12: Combined split peak.
Iodomethane: Combined split peak.
Vinyl Chloride: Combined split peak.

For BSD QC818116 (MSVOA06 flt14):
Bromomethane: Combined split peak for spike.
Chloromethane: Combined split peak for spike.
Ethanol: Combined split peak for spike.
Trichlorofluoromethane: Combined split peak for dup.
Freon 12: Combined split peak for spike.
Iodomethane: Combined split peak for spike.
Vinyl Chloride: Combined split peak for spike & dup.

For BLANK QC818117 (MSVOA06 flt19):
Gasoline C5-C12: Separated from coeluting peak.
Gasoline C6-C10: Separated from coeluting peak.
Gasoline C7-C12: Separated from coeluting peak.

For CCV/BS QC818174 (MSVOA06 flt16):
Gasoline C5-C12: Separated from coeluting peak.
Gasoline C6-C10: Separated from coeluting peak.
Gasoline C7-C12: Separated from coeluting peak.

For Calibration MSVOA06 (455443988001):
Bromomethane: Combined split peak in multiple levels.
Chloroethane: Combined split peak in multiple levels.
Chloromethane: Combined split peak in all levels.
1,1-Dichloroethene: Combined split peak in 5PPB (fk414).
cis-1,2-Dichloroethene: Corrected baseline noise or negative peak in multiple levels.
trans-1,2-Dichloroethene: Corrected baseline noise or negative peak1PPB (fk412).
Ethanol: Combined split peak1PPB (fk412).
Trifluorotoluene: Picked or reassigned peak in multiple levels.
Freon 12: Combined split peak in multiple levels.
Iodomethane: Combined split peak in multiple levels.
Isopropanol: Combined split peak1PPB (fk412).
2-Butanone: Corrected baseline noise or negative peak1PPB (fk412).
Vinyl Chloride: Combined split peak1PPB (fk412).

For ICV GAS (MSVOA06 fk420):
Chloromethane: Combined split peak.

For Calibration MSVOA10 (495473163001):
Chloromethane: Corrected fronting or tailing peak integration in (jko12).
Freon 12: Corrected fronting or tailing peak integration in (jko11).

Laboratory Job Number 272485

ANALYTICAL REPORT

Metals

Matrix: Filtrate

Curtis & Tompkins, Ltd.

Dissolved Arsenic

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Arsenic	Batch#:	230810
Matrix:	Filtrate	Received:	12/16/15
Units:	ug/L	Prepared:	12/30/15
Diln Fac:	1.000	Analyzed:	12/31/15

Field ID	Type	Lab ID	Result	LOQ	DL	Sampled
D1C85W06-121515	SAMPLE	272485-002	6.8	5.0	1.5	12/15/15
D1C85W07-121515	SAMPLE	272485-003	4.6 J	5.0	1.5	12/15/15
D1C85W07-121515X	SAMPLE	272485-004	4.7 J	5.0	1.5	12/15/15
ER-121515	SAMPLE	272485-008	4.0 U	5.0	1.5	12/15/15
SB-121615	SAMPLE	272485-010	4.0 U	5.0	1.5	12/16/15
	BLANK	QC818337	4.0 U	5.0	1.5	

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Dissolved Iron

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Iron	Batch#:	230810
Matrix:	Filtrate	Received:	12/16/15
Units:	ug/L	Prepared:	12/30/15
Diln Fac:	1.000	Analyzed:	12/31/15

Field ID	Type	Lab ID	Result	LOQ	DL	Sampled
D1C85W06-121515	SAMPLE	272485-002	1,300	100	20	12/15/15
D1C85W07-121515	SAMPLE	272485-003	380	100	20	12/15/15
D1C85W07-121515X	SAMPLE	272485-004	250	100	20	12/15/15
ER-121515	SAMPLE	272485-008	80 U	100	20	12/15/15
SB-121615	SAMPLE	272485-010	80 U	100	20	12/16/15
	BLANK	QC818337	80 U	100	20	

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Dissolved Manganese

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Manganese	Batch#:	230810
Matrix:	Filtrate	Received:	12/16/15
Units:	ug/L	Prepared:	12/30/15
Diln Fac:	1.000	Analyzed:	12/31/15

Field ID	Type	Lab ID	Result	LOQ	DL	Sampled
D1C85W06-121515	SAMPLE	272485-002	4,200	5.0	1.0	12/15/15
D1C85W07-121515	SAMPLE	272485-003	1,700	5.0	1.0	12/15/15
D1C85W07-121515X	SAMPLE	272485-004	1,700	5.0	1.0	12/15/15
ER-121515	SAMPLE	272485-008	2.5 U	5.0	1.0	12/15/15
SB-121615	SAMPLE	272485-010	2.5 U	5.0	1.0	12/16/15
	BLANK	QC818337	2.5 U	5.0	1.0	

U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Arsenic

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Arsenic	Batch#:	230810
Field ID:	D1C85W06-121515	Sampled:	12/15/15
MSS Lab ID:	272485-002	Received:	12/16/15
Matrix:	Filtrate	Prepared:	12/30/15
Units:	ug/L	Analyzed:	12/31/15
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC818338		100.0	102.2	102	80-120		
BSD	QC818339		100.0	108.8	109	80-120	6	20
MS	QC818340	6.800	100.0	126.3	120	80-120		
MSD	QC818341		100.0	125.9	119	80-120	0	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Iron

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Iron	Batch#:	230810
Field ID:	D1C85W06-121515	Sampled:	12/15/15
MSS Lab ID:	272485-002	Received:	12/16/15
Matrix:	Filtrate	Prepared:	12/30/15
Units:	ug/L	Analyzed:	12/31/15
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC818338		10,000	10,810	108	80-120		
BSD	QC818339		10,000	10,850	108	80-120	0	20
MS	QC818340	1,281	10,000	10,770	95	80-120		
MSD	QC818341		10,000	10,860	96	80-120	1	20

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Manganese

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Manganese	Batch#:	230810
Field ID:	D1C85W06-121515	Sampled:	12/15/15
MSS Lab ID:	272485-002	Received:	12/16/15
Matrix:	Filtrate	Prepared:	12/30/15
Units:	ug/L	Analyzed:	12/31/15
Diln Fac:	1.000		

Type	Lab ID	MSS Result	Spiked	Result	%REC	Limits	RPD	Lim
BS	QC818338		100.0	105.7	106	80-120		
BSD	QC818339		100.0	107.6	108	80-120	2	20
MS	QC818340	4,184	100.0	4,106	-78 NM	80-120		
MSD	QC818341		100.0	4,124	-60 NM	80-120	0	20

NM= Not Meaningful: Sample concentration > 4X spike concentration
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Arsenic

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Arsenic	Units:	ug/L
Field ID:	D1C85W06-121515	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	230810
MSS Lab ID:	272485-002	Sampled:	12/15/15
Lab ID:	QC818342	Received:	12/16/15
Matrix:	Filtrate	Analyzed:	12/31/15

MSS Result	MSS LOQ	Result	LOQ	% Diff	Lim
6.800	5.000	20.00 U	25.00	NC	10

U= Not Detected at or above DL
NC= Not Calculated
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Iron

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Iron	Units:	ug/L
Field ID:	D1C85W06-121515	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	230810
MSS Lab ID:	272485-002	Sampled:	12/15/15
Lab ID:	QC818342	Received:	12/16/15
Matrix:	Filtrate	Analyzed:	12/31/15

MSS Result	MSS LOQ	Result	LOQ	% Diff	Lim
1,281	100.0	1,440	500.0	12 *	10

*= Value outside of QC limits; see narrative
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Manganese

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Manganese	Units:	ug/L
Field ID:	D1C85W06-121515	Diln Fac:	5.000
Type:	Serial Dilution	Batch#:	230810
MSS Lab ID:	272485-002	Sampled:	12/15/15
Lab ID:	QC818342	Received:	12/16/15
Matrix:	Filtrate	Analyzed:	12/31/15

MSS Result	MSS LOQ	Result	LOQ	% Diff	Lim
4,184	5.000	3,848	25.00	8	10

LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Arsenic

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Arsenic	Units:	ug/L
Field ID:	D1C85W06-121515	Diln Fac:	1.000
Type:	Post Digest Spike	Batch#:	230810
MSS Lab ID:	272485-002	Sampled:	12/15/15
Lab ID:	QC818343	Received:	12/16/15
Matrix:	Filtrate	Analyzed:	12/31/15

MSS Result	Spiked	Result	%REC	Limits
6.800	100.0	103.1	96	75-125

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Iron

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Iron	Units:	ug/L
Field ID:	D1C85W06-121515	Diln Fac:	1.000
Type:	Post Digest Spike	Batch#:	230810
MSS Lab ID:	272485-002	Sampled:	12/15/15
Lab ID:	QC818343	Received:	12/16/15
Matrix:	Filtrate	Analyzed:	12/31/15

MSS Result	Spiked	Result	%REC	Limits
1,281	10,000	12,110	108	75-125

Curtis & Tompkins, Ltd.

Batch QC Report

Dissolved Manganese

Lab #:	272485	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	METHOD
Project#:	N62473-11-D-2215	Analysis:	EPA 6010C
Analyte:	Manganese	Units:	ug/L
Field ID:	D1C85W06-121515	Diln Fac:	1.000
Type:	Post Digest Spike	Batch#:	230810
MSS Lab ID:	272485-002	Sampled:	12/15/15
Lab ID:	QC818343	Received:	12/16/15
Matrix:	Filtrate	Analyzed:	12/31/15

MSS Result	Spiked	Result	%REC	Limits
4,184	100.0	115.6	-4069 NM	75-125

NM= Not Meaningful: Sample concentration > 4X spike concentration

REPORTING SUMMARY FOR 272485 METALS Filtrate
Curtis & Tompkins Laboratories

Lab ID	Inst ID	Analyzed	IDF	AS	FE	MN
272485-002	MET09	12/31/15 09:00	1.0		+	+
272485-002	MET08	12/31/15 11:26	1.0			
272485-002	MET08	12/31/15 14:36	1.0	+		
272485-003	MET09	12/31/15 10:06	1.0		+	+
272485-003	MET08	12/31/15 12:04	1.0			
272485-003	MET08	12/31/15 14:45	1.0	+		
272485-004	MET09	12/31/15 10:13	1.0		+	+
272485-004	MET08	12/31/15 12:11	1.0	+		
272485-008	MET09	12/31/15 10:22	1.0		+	+
272485-008	MET08	12/31/15 12:19	1.0	+		
272485-010	MET09	12/31/15 10:26	1.0		+	+
272485-010	MET08	12/31/15 12:26	1.0	+		
QC818337	MET09	12/31/15 08:46	1.0		+	+
QC818337	MET08	12/31/15 11:13	1.0	+		
QC818338	MET09	12/31/15 08:51	1.0		+	+
QC818338	MET08	12/31/15 11:16	1.0	+		
QC818339	MET09	12/31/15 08:56	1.0		+	+
QC818339	MET08	12/31/15 11:24	1.0	+		
QC818340	MET09	12/31/15 09:07	1.0		+	+
QC818340	MET08	12/31/15 11:29	1.0	+		
QC818341	MET09	12/31/15 09:46	1.0		+	+
QC818341	MET08	12/31/15 11:36	1.0	+		
QC818342	MET09	12/31/15 09:54	5.0		+	
QC818342	MET08	12/31/15 11:42	5.0	+		+
QC818343	MET09	12/31/15 10:02	1.0		+	+
QC818343	MET08	12/31/15 12:01	1.0	+		

ICP Data

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 95525877

Instrument : MET09 Begun : 12/31/15 04:37
Method : EPA 6010C SOP Version : icp metals_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	met09_sn_	ICALBLK				12/31/15 04:37	1.0		
002	met09_sn_	ICAL	L1			12/31/15 04:42	1.0	1	
003	met09_sn_	ICAL	L2			12/31/15 04:47	1.0	2	
004	met09_sn_	ICAL	L3			12/31/15 04:51	1.0	3	
005	met09_sn_	ICAL	L4			12/31/15 04:55	1.0	4	
006	met09_sn_	ICAL	L5			12/31/15 05:02	1.0	5	
007	met09_sn_	ICV				12/31/15 05:09	1.0	6	
008	met09_sn_	XCRI				12/31/15 05:16	1.0	7	
009	met09_sn_	CRI				12/31/15 05:34	1.0	7	
010	met09_sn_	ICB				12/31/15 06:09	1.0		
011	met09_sn_	ICSA				12/31/15 06:14	1.0	8	10:AL=510000
012	met09_sn_	ICSAB				12/31/15 08:29	1.0	9	5:AL=490000
013	met09_sn_	SAMPLE	272786-001	Water	230789	12/31/15 08:37	1.0		1:NA=180000
014	met09_sn_	X	RINSE			12/31/15 08:41	1.0		
015	met09_sn_	BLANK	QC818337	Filtrate	230810	12/31/15 08:46	1.0		
016	met09_sn_	BS	QC818338	Filtrate	230810	12/31/15 08:51	1.0		
017	met09_sn_	BSD	QC818339	Filtrate	230810	12/31/15 08:56	1.0		
018	met09_sn_	MSS	272485-002	Filtrate	230810	12/31/15 09:00	1.0		3:MG=620000
019	met09_sn_	MS	QC818340	Filtrate	230810	12/31/15 09:07	1.0		3:MG=620000
020	met09_sn_	X	RINSE			12/31/15 09:15	1.0		
021	met09_sn_	X	RINSE			12/31/15 09:20	1.0		
022	met09_sn_	X	RINSE			12/31/15 09:25	1.0		
023	met09_sn_	CCV				12/31/15 09:30	1.0	10	
024	met09_sn_	XCCB				12/31/15 09:37	1.0		
025	met09_sn_	CCB				12/31/15 09:41	1.0		
026	met09_sn_	MSD	QC818341	Filtrate	230810	12/31/15 09:46	1.0		3:MG=630000
027	met09_sn_	SER	QC818342	Filtrate	230810	12/31/15 09:54	5.0		3:MG=150000
028	met09_sn_	PDS	QC818343	Filtrate	230810	12/31/15 10:02	1.0	11 12 13	
029	met09_sn_	SAMPLE	272485-003	Filtrate	230810	12/31/15 10:06	1.0		3:MG=500000
030	met09_sn_	SAMPLE	272485-004	Filtrate	230810	12/31/15 10:13	1.0		3:MG=510000
031	met09_sn_	SAMPLE	272485-008	Filtrate	230810	12/31/15 10:22	1.0		
032	met09_sn_	SAMPLE	272485-010	Filtrate	230810	12/31/15 10:26	1.0		
033	met09_sn_	SAMPLE	272741-002	Filtrate	230810	12/31/15 10:32	1.0		1:CA=120000
034	met09_sn_	SAMPLE	272741-003	Filtrate	230810	12/31/15 10:37	1.0		1:CA=130000
035	met09_sn_	SAMPLE	272741-006	Filtrate	230810	12/31/15 10:42	1.0		2:CA=140000
036	met09_sn_	CCV				12/31/15 10:47	1.0	10	
037	met09_sn_	CCB				12/31/15 10:54	1.0		
038	met09_sn_	SAMPLE	272741-007	Filtrate	230810	12/31/15 11:03	1.0		1:NA=150000
039	met09_sn_	SAMPLE	272772-004	Filtrate	230810	12/31/15 11:08	1.0		
040	met09_sn_	X	RINSE			12/31/15 11:16	1.0		
041	met09_sn_	BLANK	QC818251	Soil	230790	12/31/15 11:21	1.0		
042	met09_sn_	SAMPLE	272772-005	Filtrate	230810	12/31/15 11:27	1.0		3:MG=1300000
043	met09_sn_	X	RINSE			12/31/15 11:34	1.0		
044	met09_sn_	BLANK	QC818210	Soil	230782	12/31/15 11:39	1.0		
045	met09_sn_	BS	QC818211	Soil	230782	12/31/15 11:44	10.0		
046	met09_sn_	BSD	QC818212	Soil	230782	12/31/15 11:49	10.0		
047	met09_sn_	MSS	272554-001	Soil	230782	12/31/15 11:53	1.0		4:FE=590000
048	met09_sn_	CCV				12/31/15 12:00	1.0	10	
049	met09_sn_	CCB				12/31/15 12:07	1.0		
050	met09_sn_	MS	QC818213	Soil	230782	12/31/15 12:13	5.0		
051	met09_sn_	MSD	QC818214	Soil	230782	12/31/15 12:20	5.0		
052	met09_sn_	SER	QC818215	Soil	230782	12/31/15 12:28	5.0		

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 95525877

Instrument : MET09 Begun : 12/31/15 04:37
Method : EPA 6010C SOP Version : icp metals_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
053	met09_sn_	PDS	QC818216	Soil	230782	12/31/15 12:36	1.0	12 11 13	
054	met09_sn_	SAMPLE	272554-002	Soil	230782	12/31/15 12:43	1.0		4:FE=630000
055	met09_sn_	SAMPLE	272554-003	Soil	230782	12/31/15 12:51	1.0		4:FE=650000
056	met09_sn_	SAMPLE	272554-004	Soil	230782	12/31/15 12:59	1.0		4:FE=670000
057	met09_sn_	SAMPLE	272554-005	Soil	230782	12/31/15 13:07	1.0		4:FE=630000
058	met09_sn_	SAMPLE	272554-006	Soil	230782	12/31/15 13:15	1.0		4:FE=710000
059	met09_sn_	SAMPLE	272554-007	Soil	230782	12/31/15 13:23	1.0		4:FE=600000
060	met09_sn_	CCV				12/31/15 13:31	1.0	10	
061	met09_sn_	CCB				12/31/15 13:37	1.0		
062	met09_sn_	SAMPLE	272772-005	Filtrate	230810	12/31/15 13:43	100.0		1:NA=100000
063	met09_sn_	SAMPLE	272554-008	Soil	230782	12/31/15 13:48	1.0		4:FE=620000
064	met09_sn_	SAMPLE	272554-009	Soil	230782	12/31/15 13:56	1.0		5:FE=540000
065	met09_sn_	SAMPLE	272554-010	Soil	230782	12/31/15 14:03	1.0		6:FE=580000
066	met09_sn_	SAMPLE	272554-011	Soil	230782	12/31/15 14:10	1.0		4:FE=590000
067	met09_sn_	SAMPLE	272554-012	Soil	230782	12/31/15 14:18	1.0		6:FE=530000
068	met09_sn_	SAMPLE	272554-013	Soil	230782	12/31/15 14:25	1.0		4:FE=600000
069	met09_sn_	SAMPLE	272554-014	Soil	230782	12/31/15 14:33	1.0		5:FE=490000
070	met09_sn_	SAMPLE	272554-015	Soil	230782	12/31/15 14:40	1.0		4:FE=600000
071	met09_sn_	SAMPLE	272554-016	Soil	230782	12/31/15 14:48	1.0		4:FE=550000
072	met09_sn_	CCV				12/31/15 14:56	1.0	10	
073	met09_sn_	CCB				12/31/15 15:03	1.0		
074	met09_sn_	SAMPLE	272554-017	Soil	230782	12/31/15 15:08	1.0		6:FE=560000
075	met09_sn_	SAMPLE	272554-018	Soil	230782	12/31/15 15:16	1.0		6:FE=570000
076	met09_sn_	SER	QC817842	Soil	230686	12/31/15 15:24	5.0		
077	met09_sn_	SAMPLE	272554-019	Soil	230782	12/31/15 15:31	1.0		4:FE=520000
078	met09_sn_	SAMPLE	272554-020	Soil	230782	12/31/15 15:39	1.0		4:FE=580000
079	met09_sn_	SAMPLE	272554-004	Soil	230782	12/31/15 15:47	1.0		4:FE=670000
080	met09_sn_	PDS	QC818227	Soil	230784	12/31/15 15:55	1.0	12	1:FE=700000
081	met09_sn_	SAMPLE	272554-020	Soil	230782	12/31/15 16:02	1.0		

NCD 12/31/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 58.

Standards used: 1=S28440 2=S28702 3=S28703 4=S28704 5=S28707 6=S28706 7=S28441 8=S28694 9=S28695 10=S28705 11=S28386 12=S28385 13=S27470

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 95525877

Date : 12/31/15 Reference : met09_sn_
Sequence : MET09 12/31/15 Analyzed : 12/31/15 04:42

#	Type	Sample ID	Y A
		ICAL STD	4195534
		LOWER LIMIT	1258660
		UPPER LIMIT	5034641
010	ICB		4375591
011	ICSA		3748090
012	ICSAB		3738728
015	BLANK	QC818337	4426072
016	BS	QC818338	4302804
017	BSD	QC818339	4233531
018	MSS	272485-002	3165692
019	MS	QC818340	3269092
023	CCV		4420309
025	CCB		4532832
026	MSD	QC818341	3193939
027	SER	QC818342	3794539
028	PDS	QC818343	4324578
029	SAMPLE	272485-003	3285997
030	SAMPLE	272485-004	3349962
031	SAMPLE	272485-008	4543053
032	SAMPLE	272485-010	4553577
036	CCV		4467313
037	CCB		4476265

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 272485 METALS Filtrate: EPA 6010C

Inst : MET09
Calnum : 95525877001
Units : ug/L

Date : 31-DEC-2015 04:37
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	met09_sn_	95525877002	L1	31-DEC-2015 04:42	S28440
L2	met09_sn_	95525877003	L2	31-DEC-2015 04:47	S28702
L3	met09_sn_	95525877004	L3	31-DEC-2015 04:51	S28703
L4	met09_sn_	95525877005	L4	31-DEC-2015 04:55	S28704
L5	met09_sn_	95525877006	L5	31-DEC-2015 05:02	S28707

Analyte	Ch	L1	L2	L3	L4	L5	Type	a0	a1	a2	Avg	r^2 %RSD	MnR^2	Flg
Arsenic	A	5.3400	4.9340	4.5609	4.5137		LOR0	0.00000	0.22152		4.8372	1.000	0.995	
Manganese	A	941.92	907.36	825.99	786.12		LOR0	0.00000	0.00127		865.35	1.000	0.995	
Iron	R	12.092		11.300	11.297	11.239	LOR0	0.00000	0.08897		11.482	1.000	0.995	

Spiked Amounts / Drifts	Ch	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D
Arsenic	A	5.0000	18	100.00	9	1000.0	1	10000	0		
Manganese	A	5.0000	20	100.00	15	1000.0	5	10000	0		
Iron	R	100.00	8			1000.0	1	10000	1	100000	0

Instrument amount = a0 + response * a1 + response^2 * a2; LOR0=Linear regression forced thru origin, including 0,0 point

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09
Calnum : 95525877001 Cal Date : 31-DEC-2015

ICV 95525877007 (31-DEC-2015) stds: S28706

Analyte	Ch	Spiked	Quant	Units	%D	Max	Flags
Arsenic	A	5000	5097	ug/L	2	10	
Manganese	A	5000	5095	ug/L	2	10	
Iron	R	20000	20370	ug/L	2	10	

CURTIS & TOMPKINS LOW-LEVEL PERFORMANCE VERIFICATION STANDARD FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877009.1 File : met09_sn_ Time : 31-DEC-2015 05:34
Cal : 95525877001 Caldate : 31-DEC-2015
Standards: S28441

Analyte	Ch	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	5.000	6.895	ug/L	**38**	30	cri+ ***
Manganese	A	5.000	6.286	ug/L	**26**	30	!cri+
Iron	R	100.0	106.9	ug/L	7	30	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	4404516	4.98

!=warning +=high bias

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877010.1 File : met09_sn_ Time : 31-DEC-2015 06:09
Cal : 95525877001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	80.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	4375591	4.29

CURTIS & TOMPKINS INTERFERENCE CHECK STANDARD A FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877011.1 File : met09_sn_ Time : 31-DEC-2015 06:14
Cal : 95525877001 Caldate : 31-DEC-2015
Standards: S28694

Analyte	Ch	Quant	IQL	Units	Flags
Arsenic	A	[-3.757]	5.000	ug/L	

Interferent	Ch	Spiked	Quant	Units	%Rec
Chromium	A	20000	18910	ug/L	95
Copper	A	20000	21680	ug/L	108
Manganese	A	20000	18650	ug/L	93
Nickel	A	20000	17350	ug/L	87
Vanadium	A	20000	19740	ug/L	99
Aluminum	R	500000	509600	ug/L	102
Calcium	R	500000	467400	ug/L	93
Iron	R	200000	184200	ug/L	92
Magnesium	R	500000	490500	ug/L	98
Titanium	R	20000	21390	ug/L	107

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	3748090	-10.66

CURTIS & TOMPKINS INTERFERENCE CHECK STANDARD AB FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877012.1 File : met09_sn_ Time : 31-DEC-2015 08:29
Cal : 95525877001 Caldate : 31-DEC-2015
Standards: S28695

Analyte	Ch	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	500.0	499.1	ug/L	0	20	
Manganese	A	500.0	504.0	ug/L	1	20	
Iron	R	200000	176500	ug/L	-12		

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	3738728	-10.89

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877023.2 File : met09_sn_ Time : 31-DEC-2015 09:30
Cal : 95525877001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	4.8372	4.4916	5000	4975	ug/L	-1	10	
Manganese	A	865.35	774.89	5000	4926	ug/L	-1	10	
Iron	R	11.482	11.123	20000	19790	ug/L	-1	10	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	4420309	5.36

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877025.1 File : met09_sn_ Time : 31-DEC-2015 09:41
Cal : 95525877001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	80.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	4532832	8.04

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877036.1 File : met09_sn_ Time : 31-DEC-2015 10:47
Cal : 95525877001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	4.8372	4.4270	5000	4903	ug/L	-2	10	
Manganese	A	865.35	778.79	5000	4951	ug/L	-1	10	
Iron	R	11.482	11.185	20000	19900	ug/L	0	10	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	4467313	6.48

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET09 IDF : 1.0
Seqnum : 95525877037.1 File : met09_sn_ Time : 31-DEC-2015 10:54
Cal : 95525877001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	80.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	4195534	4476265	6.69

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 85526142

Instrument : MET08 Begun : 12/31/15 09:02
Method : EPA 6010C SOP Version : icp metals_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	met08_sn_6010	ICALBLK				12/31/15 09:02	1.0		
002	met08_sn_6010	ICAL	L1			12/31/15 09:05	1.0	1	
003	met08_sn_6010	ICAL	L2			12/31/15 09:08	1.0	2	
004	met08_sn_6010	ICAL	L3			12/31/15 09:10	1.0	3	
005	met08_sn_6010	ICAL	L4			12/31/15 09:14	1.0	4	
006	met08_sn_6010	ICAL	L5			12/31/15 09:16	1.0	5	
007	met08_sn_6010	ICV				12/31/15 09:18	1.0	6	
008	met08_sn_6010	CRI				12/31/15 09:19	1.0	7	
009	met08_sn_6010	ICB				12/31/15 09:23	1.0		
010	met08_sn_6010	ICSA				12/31/15 09:26	1.0	8	10:AL=490000
011	met08_sn_6010	ICSAB				12/31/15 09:53	1.0	9	
012	met08_sn_6010	BLANK	QC818251	Soil	230790	12/31/15 09:56	1.0		
013	met08_sn_6010	BS	QC818252	Soil	230790	12/31/15 09:59	10.0		
014	met08_sn_6010	BSD	QC818253	Soil	230790	12/31/15 10:01	10.0		
015	met08_sn_6010	MSS	272554-041	Soil	230790	12/31/15 10:04	1.0		5:FE=730000
016	met08_sn_6010	MS	QC818254	Soil	230790	12/31/15 10:06	5.0		
017	met08_sn_6010	MSD	QC818255	Soil	230790	12/31/15 10:09	5.0		
018	met08_sn_6010	SER	QC818256	Soil	230790	12/31/15 10:12	5.0		
019	met08_sn_6010	PDS	QC818257	Soil	230790	12/31/15 10:15	1.0	10 11 12	
020	met08_sn_6010	SAMPLE	272554-042	Soil	230790	12/31/15 10:17	1.0		5:FE=700000
021	met08_sn_6010	SAMPLE	272554-043	Soil	230790	12/31/15 10:19	1.0		5:FE=630000
022	met08_sn_6010	CCV				12/31/15 10:21	1.0	13	
023	met08_sn_6010	CCB				12/31/15 10:23	1.0		
024	met08_sn_6010	SAMPLE	272554-044	Soil	230790	12/31/15 10:26	1.0		6:FE=720000
025	met08_sn_6010	SAMPLE	272554-045	Soil	230790	12/31/15 10:28	1.0		6:AL=600000
026	met08_sn_6010	SAMPLE	272554-046	Soil	230790	12/31/15 10:31	1.0		6:FE=960000
027	met08_sn_6010	SAMPLE	272554-047	Soil	230790	12/31/15 10:33	1.0		6:FE=940000
028	met08_sn_6010	SAMPLE	272554-048	Soil	230790	12/31/15 10:35	1.0		6:AL=710000
029	met08_sn_6010	SAMPLE	272554-049	Soil	230790	12/31/15 10:37	1.0		5:FE=790000
030	met08_sn_6010	SAMPLE	272747-001	Soil	230790	12/31/15 10:39	1.0		6:FE=620000
031	met08_sn_6010	SAMPLE	272748-001	Soil	230790	12/31/15 10:41	1.0		6:CA=770000
032	met08_sn_6010	SAMPLE	272554-042	Soil	230790	12/31/15 10:43	1.0		5:FE=670000
033	met08_sn_6010	SAMPLE	272554-043	Soil	230790	12/31/15 10:45	1.0		5:FE=650000
034	met08_sn_6010	CCV				12/31/15 10:47	1.0	13	
035	met08_sn_6010	CCB				12/31/15 10:49	1.0		
036	met08_sn_6010	SAMPLE	272554-044	Soil	230790	12/31/15 10:53	1.0		6:FE=670000
037	met08_sn_6010	SAMPLE	272554-046	Soil	230790	12/31/15 10:55	1.0		6:FE=910000
038	met08_sn_6010	SAMPLE	272554-047	Soil	230790	12/31/15 10:57	1.0		6:FE=920000
039	met08_sn_6010	SAMPLE	272554-049	Soil	230790	12/31/15 10:59	1.0		5:FE=850000
040	met08_sn_6010	SAMPLE	272747-001	Soil	230790	12/31/15 11:01	1.0		
041	met08_sn_6010	SAMPLE	272748-001	Soil	230790	12/31/15 11:05	1.0		6:CA=830000
042	met08_sn_6010	SAMPLE	272747-001	Soil	230790	12/31/15 11:07	1.0		6:FE=610000
043	met08_sn_6010	X	RINSE			12/31/15 11:09	1.0		
044	met08_sn_6010	BLANK	QC818337	Filtrate	230810	12/31/15 11:13	1.0		
045	met08_sn_6010	BS	QC818338	Filtrate	230810	12/31/15 11:16	1.0		
046	met08_sn_6010	CCV				12/31/15 11:18	1.0	13	
047	met08_sn_6010	CCB				12/31/15 11:20	1.0		
048	met08_sn_6010	BSD	QC818339	Filtrate	230810	12/31/15 11:24	1.0		
049	met08_sn_6010	MSS	272485-002	Filtrate	230810	12/31/15 11:26	1.0		4:MG=580000
050	met08_sn_6010	MS	QC818340	Filtrate	230810	12/31/15 11:29	1.0		4:MG=560000
051	met08_sn_6010	X	RINSE			12/31/15 11:32	1.0		
052	met08_sn_6010	MSD	QC818341	Filtrate	230810	12/31/15 11:36	1.0		4:MG=570000

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 85526142

Instrument : MET08 Begun : 12/31/15 09:02
Method : EPA 6010C SOP Version : icp metals_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
053	met08_sn_6010	X	RINSE			12/31/15 11:39	1.0		
054	met08_sn_6010	SER	QC818342	Filtrate	230810	12/31/15 11:42	5.0		3:NA=810000
055	met08_sn_6010	X	RINSE			12/31/15 11:46	1.0		
056	met08_sn_6010	X	RINSE			12/31/15 11:50	1.0		
057	met08_sn_6010	XPDS	QC818257	Soil	230790	12/31/15 11:53	1.0	10 11 12	
058	met08_sn_6010	CCV				12/31/15 11:55	1.0	13	
059	met08_sn_6010	CCB				12/31/15 11:57	1.0		
060	met08_sn_6010	PDS	QC818343	Filtrate	230810	12/31/15 12:01	1.0	10 11 12	
061	met08_sn_6010	SAMPLE	272485-003	Filtrate	230810	12/31/15 12:04	1.0		3:MG=520000
062	met08_sn_6010	X	RINSE			12/31/15 12:08	1.0		
063	met08_sn_6010	SAMPLE	272485-004	Filtrate	230810	12/31/15 12:11	1.0		3:MG=510000
064	met08_sn_6010	X	RINSE			12/31/15 12:15	1.0		
065	met08_sn_6010	SAMPLE	272485-008	Filtrate	230810	12/31/15 12:19	1.0		
066	met08_sn_6010	X	RINSE			12/31/15 12:22	1.0		
067	met08_sn_6010	SAMPLE	272485-010	Filtrate	230810	12/31/15 12:26	1.0		
068	met08_sn_6010	X	RINSE			12/31/15 12:29	1.0		
069	met08_sn_6010	BLANK	QC818221	Soil	230784	12/31/15 12:32	1.0		1:K=430000
070	met08_sn_6010	CCV				12/31/15 12:36	1.0	13	
071	met08_sn_6010	CCB				12/31/15 12:39	1.0		
072	met08_sn_6010	BLANK	QC818221	Soil	230784	12/31/15 12:42	1.0		
073	met08_sn_6010	BS	QC818222	Soil	230784	12/31/15 12:45	10.0		
074	met08_sn_6010	BSD	QC818223	Soil	230784	12/31/15 12:48	10.0		
075	met08_sn_6010	MSS	272554-021	Soil	230784	12/31/15 12:50	1.0		5:FE=860000
076	met08_sn_6010	MS	QC818224	Soil	230784	12/31/15 12:52	5.0		
077	met08_sn_6010	MSD	QC818225	Soil	230784	12/31/15 12:54	5.0		
078	met08_sn_6010	SER	QC818226	Soil	230784	12/31/15 12:56	5.0		
079	met08_sn_6010	PDS	QC818227	Soil	230784	12/31/15 12:59	1.0	10 11 12	1:FE=870000
080	met08_sn_6010	SAMPLE	272554-022	Soil	230784	12/31/15 13:01	1.0		4:FE=580000
081	met08_sn_6010	SAMPLE	272554-023	Soil	230784	12/31/15 13:03	1.0		4:FE=550000
082	met08_sn_6010	CCV				12/31/15 13:06	1.0	13	
083	met08_sn_6010	CCB				12/31/15 13:08	1.0		
084	met08_sn_6010	SAMPLE	272554-024	Soil	230784	12/31/15 13:11	1.0		4:FE=550000
085	met08_sn_6010	SAMPLE	272554-025	Soil	230784	12/31/15 13:13	1.0		3:FE=510000
086	met08_sn_6010	SAMPLE	272554-026	Soil	230784	12/31/15 13:15	1.0		4:FE=580000
087	met08_sn_6010	SAMPLE	272554-027	Soil	230784	12/31/15 13:17	1.0		4:FE=550000
088	met08_sn_6010	SAMPLE	272554-028	Soil	230784	12/31/15 13:19	1.0		3:FE=560000
089	met08_sn_6010	SAMPLE	272554-029	Soil	230784	12/31/15 13:22	1.0		4:FE=510000
090	met08_sn_6010	SAMPLE	272554-030	Soil	230784	12/31/15 13:24	1.0		4:FE=590000
091	met08_sn_6010	SAMPLE	272554-031	Soil	230784	12/31/15 13:26	1.0		4:FE=530000
092	met08_sn_6010	SAMPLE	272554-032	Soil	230784	12/31/15 13:28	1.0		4:FE=620000
093	met08_sn_6010	SAMPLE	272554-033	Soil	230784	12/31/15 13:30	1.0		3:FE=700000
094	met08_sn_6010	CCV				12/31/15 13:32	1.0	13	
095	met08_sn_6010	CCB				12/31/15 13:34	1.0		
096	met08_sn_6010	SAMPLE	272554-022	Soil	230784	12/31/15 13:37	1.0		4:FE=590000
097	met08_sn_6010	SAMPLE	272554-025	Soil	230784	12/31/15 13:40	1.0		3:FE=470000
098	met08_sn_6010	SAMPLE	272554-029	Soil	230784	12/31/15 13:42	1.0		4:FE=500000
099	met08_sn_6010	SAMPLE	272554-028	Soil	230784	12/31/15 13:44	1.0		3:FE=490000
100	met08_sn_6010	SAMPLE	272554-027	Soil	230784	12/31/15 13:46	1.0		4:FE=570000
101	met08_sn_6010	SAMPLE	272554-026	Soil	230784	12/31/15 13:48	1.0		4:FE=570000
102	met08_sn_6010	SAMPLE	272554-032	Soil	230784	12/31/15 13:50	1.0		4:FE=630000
103	met08_sn_6010	SAMPLE	272554-031	Soil	230784	12/31/15 13:52	1.0		4:FE=520000
104	met08_sn_6010	SAMPLE	272554-034	Soil	230784	12/31/15 13:55	1.0		4:FE=790000

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 85526142

Instrument : MET08 Begun : 12/31/15 09:02
Method : EPA 6010C SOP Version : icp metals_rv17

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
105	met08_sn_6010	SAMPLE	272554-024	Soil	230784	12/31/15 13:57	1.0		4:FE=540000
106	met08_sn_6010	CCV				12/31/15 13:59	1.0	13	
107	met08_sn_6010	CCB				12/31/15 14:01	1.0		
108	met08_sn_6010	X	RINSE			12/31/15 14:04	1.0		
109	met08_sn_6010	SAMPLE	272554-034	Soil	230784	12/31/15 14:08	1.0		4:FE=850000
110	met08_sn_6010	SAMPLE	272554-035	Soil	230784	12/31/15 14:10	1.0		4:FE=760000
111	met08_sn_6010	SAMPLE	272554-036	Soil	230784	12/31/15 14:12	1.0		5:FE=700000
112	met08_sn_6010	SAMPLE	272554-037	Soil	230784	12/31/15 14:14	1.0		4:FE=700000
113	met08_sn_6010	SAMPLE	272554-038	Soil	230784	12/31/15 14:16	1.0		4:FE=650000
114	met08_sn_6010	SAMPLE	272554-037	Soil	230784	12/31/15 14:18	1.0		4:FE=690000
115	met08_sn_6010	SAMPLE	272554-036	Soil	230784	12/31/15 14:20	1.0		5:FE=770000
116	met08_sn_6010	SAMPLE	272554-035	Soil	230784	12/31/15 14:23	1.0		
117	met08_sn_6010	SAMPLE	272554-039	Soil	230784	12/31/15 14:26	1.0		5:FE=720000
118	met08_sn_6010	CCV				12/31/15 14:28	1.0	13	
119	met08_sn_6010	CCB				12/31/15 14:30	1.0		
120	met08_sn_6010	SAMPLE	272554-040	Soil	230784	12/31/15 14:33	1.0		5:FE=740000
121	met08_sn_6010	MSS	272485-002	Filtrate	230810	12/31/15 14:36	1.0		4:MG=580000
122	met08_sn_6010	X	RINSE			12/31/15 14:39	1.0		
123	met08_sn_6010	X	RINSE			12/31/15 14:42	1.0		
124	met08_sn_6010	SAMPLE	272485-003	Filtrate	230810	12/31/15 14:45	1.0		3:MG=510000
125	met08_sn_6010	X	RINSE			12/31/15 14:50	1.0		
126	met08_sn_6010	X	RINSE			12/31/15 14:53	1.0		
127	met08_sn_6010	SAMPLE	272554-040	Soil	230784	12/31/15 14:56	1.0		5:FE=770000
128	met08_sn_6010	MSS	272554-021	Soil	230784	12/31/15 14:59	1.0		5:FE=900000
129	met08_sn_6010	CCV				12/31/15 15:01	1.0	13	
130	met08_sn_6010	CCB				12/31/15 15:03	1.0		
131	met08_sn_6010	BLANK	QC818428	Water	230833	12/31/15 15:17	1.0		
132	met08_sn_6010	BS	QC818429	Water	230833	12/31/15 15:20	1.0		
133	met08_sn_6010	BSD	QC818430	Water	230833	12/31/15 15:23	1.0		
134	met08_sn_6010	MSS	272734-001	Water	230833	12/31/15 15:25	1.0		1:NA=900000
135	met08_sn_6010	MS	QC818431	Water	230833	12/31/15 15:28	1.0		
136	met08_sn_6010	MSD	QC818432	Water	230833	12/31/15 15:31	1.0		
137	met08_sn_6010	SAMPLE	272824-001	Water	230833	12/31/15 15:34	1.0		3:NA=380000
138	met08_sn_6010	SAMPLE	272734-002	Water	230833	12/31/15 15:37	1.0		1:NA=610000
139	met08_sn_6010	SAMPLE	272614-001	Water	230632	12/31/15 15:41	1.0		1:MG=120000
140	met08_sn_6010	SAMPLE	272734-003	Water	230833	12/31/15 15:43	1.0		1:NA=620000
141	met08_sn_6010	CCV				12/31/15 15:47	1.0	13	
142	met08_sn_6010	CCB				12/31/15 15:49	1.0		
143	met08_sn_6010	SAMPLE	272741-013	Water	230833	12/31/15 15:53	1.0		2:NA=230000
144	met08_sn_6010	SAMPLE	272741-014	Water	230833	12/31/15 15:56	1.0		1:NA=190000
145	met08_sn_6010	SAMPLE	272821-001	Water	230833	12/31/15 15:59	1.0		2:NA=110000
146	met08_sn_6010	SAMPLE	272821-002	Water	230833	12/31/15 16:02	1.0		1:NA=120000
147	met08_sn_6010	SAMPLE	272821-003	Water	230833	12/31/15 16:04	1.0		1:NA=140000

NCD 12/31/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 130.

Standards used: 1=S28440 2=S28702 3=S28703 4=S28704 5=S28707 6=S28706 7=S28441 8=S28694 9=S28695 10=S28385 11=S28386 12=S27470 13=S28705

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 85526142

Date : 12/31/15 Reference : met08_sn_6010
Sequence : MET08 12/31/15 Analyzed : 12/31/15 09:05

#	Type	Sample ID	Y A
		ICAL STD	16945350
		LOWER LIMIT	5083605
		UPPER LIMIT	20334420
009	ICB		16814137
010	ICSA		14610497
011	ICSAB		14416512
034	CCV		16058163
035	CCB		16580931
044	BLANK	QC818337	16778783
045	BS	QC818338	16386894
046	CCV		15989879
047	CCB		16199500
048	BSD	QC818339	15875775
049	MSS	272485-002	12614638
050	MS	QC818340	12651956
052	MSD	QC818341	13069196
054	SER	QC818342	15293779
058	CCV		16922317
059	CCB		17389041
060	PDS	QC818343	16924671
061	SAMPLE	272485-003	10587166
063	SAMPLE	272485-004	13410605
065	SAMPLE	272485-008	17418997
067	SAMPLE	272485-010	16826528
070	CCV		16129789
071	CCB		16552555
118	CCV		16381666
119	CCB		17153972
121	MSS	272485-002	12742840
124	SAMPLE	272485-003	12943091
129	CCV		16288288
130	CCB		16529517

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 272485 METALS Filtrate: EPA 6010C

Inst : MET08
Calnum : 85526142001
Units : ug/L

Date : 31-DEC-2015 09:02
X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	met08_sn_6010	85526142002	L1	31-DEC-2015 09:05	S28440
L2	met08_sn_6010	85526142003	L2	31-DEC-2015 09:08	S28702
L3	met08_sn_6010	85526142004	L3	31-DEC-2015 09:10	S28703
L4	met08_sn_6010	85526142005	L4	31-DEC-2015 09:14	S28704
L5	met08_sn_6010	85526142006	L5	31-DEC-2015 09:16	S28707

Analyte	Ch	L1	L2	L3	L4	L5	Type	a0	a1	a2	Avg	r^2 %RSD	MnR^2	Flg
Arsenic	A	15.160	16.629	16.058	16.594		LOR0	0.00000	0.06028		16.110	1.000	0.995	
Manganese	A	1423.9	1443.9	1434.6	1389.4		LOR0	0.00000	7.20E-4		1423.0	1.000	0.995	
Iron	R	6.0450		5.4190	4.8118	5.5175	LOR0	0.00000	0.18147		5.4483	1.000	0.995	

Spiked Amounts / Drifts	Ch	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D
Arsenic	A	5.0000	-9	100.00	0	1000.0	-3	10000	0		
Manganese	A	5.0000	2	100.00	4	1000.0	3	10000	0		
Iron	R	100.00	10			1000.0	-2	10000	-13	100000	0

NCD 12/31/15 : ICV out for Fe, Mg,K,Na

Instrument amount = a0 + response * a1 + response^2 * a2; LOR0=Linear regression forced thru origin, including 0,0 point

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08
Calnum : 85526142001 Cal Date : 31-DEC-2015

ICV 85526142007 (31-DEC-2015) stds: S28706

Analyte	Ch	Spiked	Quant	Units	%D	Max	Flags
Arsenic	A	5000	5089	ug/L	2	10	
Manganese	A	5000	4917	ug/L	-2	10	
Iron	R	20000	17740	ug/L	**-11**	10	v- ***

-=low bias v=ICV

CURTIS & TOMPKINS LOW-LEVEL PERFORMANCE VERIFICATION STANDARD FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142008.1 File : met08_sn_6010 Time : 31-DEC-2015 09:19
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28441

Analyte	Ch	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	5.000	5.530	ug/L	11	30	
Manganese	A	5.000	5.397	ug/L	8	30	
Iron	R	100.0	115.9	ug/L	16	30	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16562397	-2.26

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142009.1 File : met08_sn_6010 Time : 31-DEC-2015 09:23
Cal : 85526142001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	50.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16814137	-0.77

CURTIS & TOMPKINS INTERFERENCE CHECK STANDARD A FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142010.1 File : met08_sn_6010 Time : 31-DEC-2015 09:26
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28694

Analyte	Ch	Quant	IQL	Units	Flags
Arsenic	A	[-3.263]	5.000	ug/L	

Interferent	Ch	Spiked	Quant	Units	%Rec
Chromium	A	20000	19500	ug/L	97
Copper	A	20000	20800	ug/L	104
Manganese	A	20000	18790	ug/L	94
Nickel	A	20000	18410	ug/L	92
Vanadium	A	20000	20120	ug/L	101
Aluminum	R	500000	492500	ug/L	98
Calcium	R	500000	460300	ug/L	92
Iron	R	200000	181700	ug/L	91
Magnesium	R	500000	489300	ug/L	98
Titanium	R	20000	22390	ug/L	112

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	14610497	-13.78

CURTIS & TOMPKINS INTERFERENCE CHECK STANDARD AB FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142011.1 File : met08_sn_6010 Time : 31-DEC-2015 09:53
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28695

Analyte	Ch	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	500.0	554.9	ug/L	11	20	
Manganese	A	500.0	488.4	ug/L	-2	20	
Iron	R	200000	2692	ug/L	-99		

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	14416512	-14.92

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142034.1 File : met08_sn_6010 Time : 31-DEC-2015 10:47
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	16.110	17.311	5000	5218	ug/L	4	10	
Manganese	A	1423.0	1402.9	5000	5047	ug/L	1	10	
Iron	R	5.4483	5.1874	20000	18830	ug/L	-6	10	v- ***

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16058163	-5.24

-=low bias v=ICV

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142035.1 File : met08_sn_6010 Time : 31-DEC-2015 10:49
Cal : 85526142001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	50.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16580931	-2.15

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142046.1 File : met08_sn_6010 Time : 31-DEC-2015 11:18
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	16.110	17.483	5000	5269	ug/L	5	10	
Manganese	A	1423.0	1415.5	5000	5092	ug/L	2	10	
Iron	R	5.4483	5.1374	20000	18650	ug/L	-7	10	r v- ***

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	15989879	-5.64

-=low bias r=RSD out v=ICV

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142047.1 File : met08_sn_6010 Time : 31-DEC-2015 11:20
Cal : 85526142001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	50.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16199500	-4.40

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142058.1 File : met08_sn_6010 Time : 31-DEC-2015 11:55
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	16.110	17.958	5000	5412	ug/L	8	10	
Manganese	A	1423.0	1438.1	5000	5174	ug/L	3	10	
Iron	R	5.4483	5.5249	20000	20050	ug/L	0	10	v- ***

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16922317	-0.14

-=low bias v=ICV

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142059.1 File : met08_sn_6010 Time : 31-DEC-2015 11:57
Cal : 85526142001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	50.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	17389041	2.62

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142070.1 File : met08_sn_6010 Time : 31-DEC-2015 12:36
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	16.110	17.895	5000	5394	ug/L	8	10	
Manganese	A	1423.0	1479.3	5000	5322	ug/L	6	10	
Iron	R	5.4483	5.4276	20000	19700	ug/L	-2	10	v- ***

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16129789	-4.81

-=low bias v=ICV

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142071.1 File : met08_sn_6010 Time : 31-DEC-2015 12:39
Cal : 85526142001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	50.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16552555	-2.32

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142118.1 File : met08_sn_6010 Time : 31-DEC-2015 14:28
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	16.110	17.909	5000	5398	ug/L	8	10	
Manganese	A	1423.0	1444.7	5000	5197	ug/L	4	10	
Iron	R	5.4483	5.5604	20000	20180	ug/L	1	10	v- ***

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16381666	-3.33

-=low bias v=ICV

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142119.1 File : met08_sn_6010 Time : 31-DEC-2015 14:30
Cal : 85526142001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	50.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	17153972	1.23

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142129.1 File : met08_sn_6010 Time : 31-DEC-2015 15:01
Cal : 85526142001 Caldate : 31-DEC-2015
Standards: S28705

Analyte	Ch	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Flags
Arsenic	A	16.110	17.968	5000	5416	ug/L	8	10	
Manganese	A	1423.0	1468.8	5000	5284	ug/L	6	10	
Iron	R	5.4483	5.7033	20000	20700	ug/L	3	10	v- ***

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16288288	-3.88

-=low bias v=ICV

CURTIS & TOMPKINS INSTRUMENT BLANK FOR 272485 METALS Filtrate
EPA 6010C

Inst : MET08 IDF : 1.0
Seqnum : 85526142130.1 File : met08_sn_6010 Time : 31-DEC-2015 15:03
Cal : 85526142001 Caldate : 31-DEC-2015

Analyte	Ch	Quant	IQL	LOD	Units	Flags
Arsenic	A	ND	5.000	4.000	ug/L	
Manganese	A	ND	5.000	2.500	ug/L	
Iron	R	ND	100.0	50.00	ug/L	

ISTD (ICAL 002)	Ch	ICAL Abund	Abund	%Drift
Yttrium	A	16945350	16529517	-2.45

SAMPLE PREPARATION SUMMARY

Batch # : 230810 Analysis : ICP
Started By : RFC Prep Date : 30-DEC-2015 13:40 Finished By : RFC
Method : METHOD Units : mL
Spike #1 ID : S28385 Spike #2 ID : S28386 Spike #3 ID : S28732

Sample	Stype	Matrix	Initial	Final	Clean DF	Prep DF	pH	Sp 1 Vol	Sp 2 Vol	Sp 3 Vol	Clean Method	Analysis	Comments
272485-002		Filtrate	50	50	1	1.0						6010	
272485-003		Filtrate	50	50	1	1.0						6010	
272485-004		Filtrate	50	50	1	1.0						6010	
272485-008		Filtrate	50	50	1	1.0						6010	
272485-010		Filtrate	50	50	1	1.0						6010	
272741-002		Filtrate	50	50	1	1.0						6010	
272741-003		Filtrate	50	50	1	1.0						6010	
272741-006		Filtrate	50	50	1	1.0						6010	
272741-007		Filtrate	50	50	1	1.0						6010	
272772-004		Filtrate	50	50	1	1.0						6010	
272772-005		Filtrate	50	50	1	1.0						6010	
QC818337	BLANK	Filtrate	50	50	1	1.0							
QC818338	BS	Filtrate	50	50	1	1.0		.5	.5	.5			
QC818339	BSD	Filtrate	50	50	1	1.0		.5	.5	.5			
QC818340	MS	Filtrate	50	50	1	1.0		.5	.5	.5			
QC818341	MSD	Filtrate	50	50	1	1.0		.5	.5	.5			
QC818342	SER	Filtrate	50	50	1	1.0							
QC818343	PDS	Filtrate	50	50	1	1.0							

Analyst: NCD Date: 12/31/15 Reviewer: PRW Date: 12/31/15

Water Digestion for ICP Curtis & Tompkins, Ltd.

LIMS Batch #: 230810
Digested by: RFC
Date Digested: 12/30/15

Digestion Method
☐ EPA 3010a for ICP
☐ EPA 200.7
☑ FILTRATE

BK3746
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Lvl.	Sample #	Container ID	Volume Sample(mL)	Final Volume (mL)	Filtered? (y/n)	ID ✓	Comments
	BLANK 12/16/15		☒ 50 ☐	☒ 50 ☐	N	✓	QC817025 QC818337
	BS		☒ 50 ☐	☒ 50 ☐		✓	-338
	BSD		☒ 50 ☐	☒ 50 ☐		✓	-339
	MS		☒ 50 ☐	☒ 50 ☐		✓	-340
5	MSD		☒ 50 ☐	☒ 50 ☐		✓	-341
III	272485-002	J	☒ 50 ☐	☒ 50 ☐		✓	MSS
	-003	D	☒ 50 ☐	☒ 50 ☐		✓	
	-004		☒ 50 ☐	☒ 50 ☐		✓	
	-008		☒ 50 ☐	☒ 50 ☐		✓	
10	-010		☒ 50 ☐	☒ 50 ☐		✓	
II	272741-002	G	☒ 50 ☐	☒ 50 ☐		✓	
	-003		☒ 50 ☐	☒ 50 ☐		✓	
	-006		☒ 50 ☐	☒ 50 ☐		✓	
	-007		☒ 50 ☐	☒ 50 ☐		✓	
15	272772-004		☒ 50 ☐	☒ 50 ☐		✓	
	-005		☒ 50 ☐	☒ 50 ☐		✓	
			☐ 50 ☐	☐ 50 ☐			
			☐ 50 ☐	☐ 50 ☐			
			☐ 50 ☐	☐ 50 ☐			
20			☐ 50 ☐	☐ 50 ☐			
			☐ 50 ☐	☐ 50 ☐			
			☐ 50 ☐	☐ 50 ☐			
			☐ 50 ☐	☐ 50 ☐			
			☐ 50 ☐	☐ 50 ☐			
			☐ 50 ☐	☐ 50 ☐			

	Reagent ID or LIMS #	Initials / Date
Digestion tubes, lot #	ACCUFLOW	RFC 12/30/15
0.50 mL of spike solution (Std1) was added to all spikes	S28385	
0.50 mL of spike solution (Std2) was added to all spikes	S28386	
0.50 mL of spike solution (Std3) was added to all spikes	~~S27170~~ S28732	
Digestion Temperature (°C), Block and Probe Location		
Digestion begun at (time)		
☑ Conc. HNO3 or ☐ 1:1 HNO3	JTB117003	
☑ Conc. HCl or ☐ 1:1 HCl	FS4115080	
digestion ended at (time)		
☐ filtered thru' Whatman # 541		
Relinquished to ICP group	ICP	

12/30/15
Prep Chemist / Date

Continued from page 0.
Continued on page _____.

Reviewed Online / See LIMS

10
PROJECT LAB FILTERS

Notebook No. BK3725 9
Continued From Page

SAMPLE	CONT. ID	TIME/DATE	FILTER LOT #	BATCH #	VOL (mL)	pH<2	INT
272438-004	D		PALL T416831	230400	250 mL	YES	RFC
-006		11:00 12/15/15					
BLANK QC817025		16:35 12/16/15	PALL T416831	230468	250 mL	YES	RFC
272466-002	I						
272485-002	J						
-003	D						
-004	D						
-008	D						
-010	D	17:30 12/16/15					
BLANK QC817816		16:15 12/17/15	PALL T416831	230508	250 mL	YES	RFC
272526-001	A						
-002							
-003							
-004							
-005		17:00 12/17/15					
BLANK QC817306		18:15 12/18/15		230544	250 mL		
272563-001	A				100		
-002					125		
-003					150		
-004					100		
-005					75		
-006					100		
-007					100		
-008					75		
-009		19:30 12/18/15			100		
BLANK QC819497		15:20 12/21/15		230593	250 mL	YES	RFC
272584-001	B						
-002		15:45 12/21/15					
272626-001	F	22:30 12/21/15			150 mL	≤2	✓✓
272602-001		13:30-13:45 12/22/15			250 mL		RFC

Continued on Page

Read and Understood By

Signed Date Signed Date

Dilutions for 272485 METALS Filtrate
Curtis & Tompkins Laboratories

Type	Sample ID	IDFs
SER	QC818342	5X

Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 272486
ANALYTICAL REPORT
Volatile Organics by GC/MS

Versar, Inc. 100 Hartsfield Centre Parkway Atlanta, GA 30354	Project : N62473-11-D-2215 Location : MINS BGMP Level : IV Contract # : N62473-11-D-2215

Sample ID	Lab ID
D1C85W04-121615	272486-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: Mikelle Chong Date: 12/31/2015

Mikelle Chong
Project Manager
mikelle.chong@ctberk.com

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
VOLATILE ORGANICS BY GC/MS (EPA 8260C)

Laboratory number:	**272486**
Client:	**Versar, Inc.**
Project:	**N62473-11-D-2215**
Location:	**MINS BGMP**
Request Date:	**12/16/15**
Samples Received:	**12/16/15**

This data package contains sample and QC results for one water sample, requested for the above referenced project on 12/16/15. See attached cooler receipt form for any sample receipt problems or discrepancies.

All qualified data are compliant with appropriate corrective actions specified in Standard Operating Procedures. The Standard Operating Procedures are available upon request.

Manual integration documentation may be found in the "Case Narrative Addendum: Manual Integrations" sections.

Volatile Organics by GC/MS (EPA 8260C):
Low response was observed for Freon 12 in the ICV analyzed 12/08/15 02:28; this analyte was not detected at or above the RL in the associated samples, and affected data was qualified with "b".

High responses were observed for a number of analytes in the CCV analyzed 12/18/15 16:49; these analytes were not detected at or above the RL in the associated samples, and affected data was qualified with "b".

High recoveries were observed for a number of analytes in the BS/BSD for batch 230541; the associated RPDs were within limits, and these analytes were not detected at or above the RL in the associated sample.

High recoveries were observed for bromodichloromethane in the MS/MSD of D1C85W06-121515 (lab # 272485-002); the associated RPD was within limits, and this analyte was not detected at or above the RL in the associated sample.

No other analytical problems were encountered.

Chain of Custody

CHAIN OF CUSTODY

Chain of Custody # _____

Curtis & Tompkins Laboratories
ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
In Business Since 1878

2323 Fifth Street
Berkeley, CA 94710

Phone (510) 486-0900
Fax (510) 486-0532

C&T LOGIN # 272486

Project No: N6273-11-D-2215
Project Name: MIN'S BG, MP
Project P. O. No: ATL14-001-01-004-CTR
EDD Format: Report Level ☐ II ☐ III ☑ IV
Turnaround Time: ☐ RUSH _____ ☑ Standard

Sampler: M. Manelli
Report To: T. Chunay, H. Wollenburg
Company: JMW ERG
Telephone: 404-443-2777
Email:

Lab No.	Sample ID.	SAMPLING Date Collected	SAMPLING Time Collected	MATRIX Water	MATRIX Solid	MATRIX	MATRIX	# of Containers	CHEMICAL PRESERVATIVE HCl	H2SO4	HNO3	NaOH	None	ANALYTICAL REQUEST: VOCs 8260
	DVC85W04-121615	12-16-15	1004	X				3	X					X

Notes:

SAMPLE RECEIPT
☑ Intact
☑ Cold
☑ On Ice
☐ Ambient

RELINQUISHED BY:
[signature] DATE: 12/16/15 TIME: 1219
DATE: TIME:
DATE: TIME:

RECEIVED BY:
[signature] DATE: 12/16/15 TIME: 1219
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 272480 Date Received 12/16/15 Number of coolers 1
Client JMWI ERRG Project MINS BGMP

Date Opened 12/16 By (print) CJN (sign) [signature]
Date Logged in ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) ____ YES (NO)
   Shipping info ____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many ____ Name ____ Date ____
2B. Were custody seals intact upon arrival? ____ YES NO (N/A)
3. Were custody papers dry and intact when received? ____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? ____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) ____ (YES) NO
6. Indicate the packing in cooler: (if other, describe) ____

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) 4.3°

☐ Temperature blank(s) included? ☐ Thermometer# ____ ☒ IR Gun# A

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? ____ YES (NO)
   If YES, what time were they transferred to freezer? ____
9. Did all bottles arrive unbroken/unopened? ____ (YES) NO
10. Are there any missing / extra samples? ____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? ____ (YES) NO
12. Are sample labels present, in good condition and complete? ____ (YES) NO
13. Do the sample labels agree with custody papers? ____ (YES) NO
14. Was sufficient amount of sample sent for tests requested? ____ (YES) NO
15. Are the samples appropriately preserved? ____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? ____ YES NO (N/A)
17. Did you document your preservative check? (pH strip lot# ____) YES NO (N/A)
18. Did you change the hold time in LIMS for unpreserved VOAs? ____ YES NO (N/A)
19. Did you change the hold time in LIMS for preserved terracores? ____ YES NO (N/A)
20. Are bubbles > 6mm absent in VOA samples? ____ (YES) NO N/A
21. Was the client contacted concerning this sample delivery? ____ YES (NO)
   If YES, Who was called? ____ By ____ Date: ____

COMMENTS

Rev 12, 12/01/15

Results & QC Summary

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W04-121615	Batch#:	230541
Lab ID:	272486-001	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
Freon 12	0.4 U	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.7	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.4 J	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W04-121615	Batch#:	230541
Lab ID:	272486-001	Sampled:	12/16/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Analyte	Result	LOQ	DL
2-Chlorotoluene	0.2 U	0.5	0.1
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	100	85-115
1,2-Dichloroethane-d4	108	70-120
Toluene-d8	92	85-120
Bromofluorobenzene	98	75-120

J= Estimated value
U= Not Detected at or above DL
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Type: BS Lab ID: QC817288

Analyte	Spiked	Result	%REC	Limits
Freon 12	10.00	8.708 b	87	30-155
Chloromethane	10.00	11.19	112	40-125
Vinyl Chloride	10.00	12.40	124	50-145
Bromomethane	10.00	18.23 b	182 *	30-145
Chloroethane	10.00	11.30	113	60-135
Trichlorofluoromethane	10.00	11.86	119	60-145
Acetone	12.50	14.66	117	40-140
Freon 113	12.50	13.36	107	61-138
1,1-Dichloroethene	12.50	14.83	119	70-130
Methylene Chloride	12.50	15.28	122	55-140
Carbon Disulfide	12.50	16.08	129	35-160
MTBE	12.50	14.46	116	65-125
trans-1,2-Dichloroethene	12.50	13.99	112	60-140
Vinyl Acetate	12.50	14.33	115	60-194
1,1-Dichloroethane	12.50	14.75	118	70-135
2-Butanone	12.50	13.58	109	30-150
cis-1,2-Dichloroethene	12.50	15.44	123	70-125
2,2-Dichloropropane	12.50	17.77 b	142 *	70-135
Chloroform	12.50	15.54	124	65-135
Bromochloromethane	12.50	13.92	111	65-130
1,1,1-Trichloroethane	12.50	16.48	132 *	65-130
1,1-Dichloropropene	12.50	13.42	107	75-130
Carbon Tetrachloride	12.50	15.20	122	65-140
1,2-Dichloroethane	12.50	15.87 b	127	70-130
Benzene	12.50	14.70	118	80-120
Trichloroethene	12.50	14.52	116	70-125
1,2-Dichloropropane	12.50	14.97	120	75-125
Bromodichloromethane	12.50	15.39	123 *	75-120
Dibromomethane	12.50	13.99	112	75-125
4-Methyl-2-Pentanone	12.50	12.52	100	60-135
cis-1,3-Dichloropropene	12.50	16.18 b	129	70-130
Toluene	12.50	13.27	106	75-120
trans-1,3-Dichloropropene	12.50	13.96	112	55-140
1,1,2-Trichloroethane	12.50	12.43	99	75-125
2-Hexanone	12.50	11.58	93	55-130
1,3-Dichloropropane	12.50	13.42	107	75-125
Tetrachloroethene	12.50	13.49	108	45-150
Dibromochloromethane	12.50	12.61	101	60-135
1,2-Dibromoethane	12.50	11.62	93	80-120
Chlorobenzene	12.50	13.97	112	80-120
1,1,1,2-Tetrachloroethane	12.50	12.81	102	80-130
Ethylbenzene	12.50	13.83	111	75-125
m,p-Xylenes	25.00	28.62	114	75-130
o-Xylene	12.50	13.87	111	80-120
Styrene	12.50	14.42	115	65-135
Bromoform	12.50	12.44	99	70-130
Isopropylbenzene	12.50	14.30	114	75-125
1,1,2,2-Tetrachloroethane	12.50	12.43	99	65-130
1,2,3-Trichloropropane	12.50	12.07	97	75-125
Propylbenzene	12.50	14.08	113	70-130

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits
Bromobenzene	12.50	14.56	116	75-125
1,3,5-Trimethylbenzene	12.50	14.45	116	75-130
2-Chlorotoluene	12.50	14.29	114	75-125
4-Chlorotoluene	12.50	14.67	117	75-130
tert-Butylbenzene	12.50	14.44	116	70-130
1,2,4-Trimethylbenzene	12.50	14.70	118	75-130
sec-Butylbenzene	12.50	13.66	109	70-125
para-Isopropyl Toluene	12.50	15.08	121	75-130
1,3-Dichlorobenzene	12.50	15.90	127 *	75-125
1,4-Dichlorobenzene	12.50	15.08	121	75-125
n-Butylbenzene	12.50	15.19	122	70-135
1,2-Dichlorobenzene	12.50	14.49	116	70-120
1,2-Dibromo-3-Chloropropane	12.50	11.88	95	50-130
1,2,4-Trichlorobenzene	12.50	14.56	117	65-135
Hexachlorobutadiene	12.50	15.13	121	50-140
Naphthalene	12.50	11.87	95	55-140
1,2,3-Trichlorobenzene	12.50	13.82	111	55-140

Surrogate	%REC	Limits
Dibromofluoromethane	105	85-115
1,2-Dichloroethane-d4	114	70-120
Toluene-d8	95	85-120
Bromofluorobenzene	106	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Type: BSD Lab ID: QC817289

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Freon 12	10.00	8.625 b	86	30-155	1	30
Chloromethane	10.00	10.76	108	40-125	4	30
Vinyl Chloride	10.00	12.01	120	50-145	3	30
Bromomethane	10.00	15.39 b	154 *	30-145	17	30
Chloroethane	10.00	11.46	115	60-135	1	30
Trichlorofluoromethane	10.00	11.41	114	60-145	4	30
Acetone	12.50	11.95	96	40-140	20	30
Freon 113	12.50	13.47	108	61-138	1	30
1,1-Dichloroethene	12.50	14.20	114	70-130	4	30
Methylene Chloride	12.50	13.79	110	55-140	10	30
Carbon Disulfide	12.50	15.24	122	35-160	5	30
MTBE	12.50	13.00	104	65-125	11	30
trans-1,2-Dichloroethene	12.50	13.22	106	60-140	6	30
Vinyl Acetate	12.50	14.03	112	60-194	2	30
1,1-Dichloroethane	12.50	13.84	111	70-135	6	30
2-Butanone	12.50	12.93	103	30-150	5	30
cis-1,2-Dichloroethene	12.50	13.91	111	70-125	10	30
2,2-Dichloropropane	12.50	16.59 b	133	70-135	7	30
Chloroform	12.50	13.73	110	65-135	12	30
Bromochloromethane	12.50	13.50	108	65-130	3	30
1,1,1-Trichloroethane	12.50	15.14	121	65-130	8	30
1,1-Dichloropropene	12.50	12.77	102	75-130	5	30
Carbon Tetrachloride	12.50	14.92	119	65-140	2	30
1,2-Dichloroethane	12.50	15.28 b	122	70-130	4	30
Benzene	12.50	14.04	112	80-120	5	30
Trichloroethene	12.50	13.94	112	70-125	4	30
1,2-Dichloropropane	12.50	13.17	105	75-125	13	30
Bromodichloromethane	12.50	14.09	113	75-120	9	30
Dibromomethane	12.50	13.95	112	75-125	0	30
4-Methyl-2-Pentanone	12.50	12.37	99	60-135	1	30
cis-1,3-Dichloropropene	12.50	15.40 b	123	70-130	5	30
Toluene	12.50	14.44	115	75-120	8	30
trans-1,3-Dichloropropene	12.50	15.06	121	55-140	8	30
1,1,2-Trichloroethane	12.50	13.37	107	75-125	7	30
2-Hexanone	12.50	12.54	100	55-130	8	30
1,3-Dichloropropane	12.50	14.28	114	75-125	6	30
Tetrachloroethene	12.50	14.77	118	45-150	9	30
Dibromochloromethane	12.50	13.43	107	60-135	6	30
1,2-Dibromoethane	12.50	13.20	106	80-120	13	30
Chlorobenzene	12.50	14.65	117	80-120	5	30
1,1,1,2-Tetrachloroethane	12.50	12.83	103	80-130	0	30
Ethylbenzene	12.50	14.56	116	75-125	5	30
m,p-Xylenes	25.00	30.18	121	75-130	5	30
o-Xylene	12.50	14.49	116	80-120	4	30
Styrene	12.50	15.00	120	65-135	4	30
Bromoform	12.50	13.57	109	70-130	9	30
Isopropylbenzene	12.50	14.22	114	75-125	1	30
1,1,2,2-Tetrachloroethane	12.50	12.77	102	65-130	3	30
1,2,3-Trichloropropane	12.50	12.92	103	75-125	7	30
Propylbenzene	12.50	13.50	108	70-130	4	30

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Matrix:	Water	Batch#:	230541
Units:	ug/L	Analyzed:	12/18/15
Diln Fac:	1.000		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Bromobenzene	12.50	13.30	106	75-125	9	30
1,3,5-Trimethylbenzene	12.50	14.54	116	75-130	1	30
2-Chlorotoluene	12.50	14.49	116	75-125	1	30
4-Chlorotoluene	12.50	14.42	115	75-130	2	30
tert-Butylbenzene	12.50	14.09	113	70-130	2	30
1,2,4-Trimethylbenzene	12.50	14.30	114	75-130	3	30
sec-Butylbenzene	12.50	14.55	116	70-125	6	30
para-Isopropyl Toluene	12.50	14.95	120	75-130	1	30
1,3-Dichlorobenzene	12.50	15.02	120	75-125	6	30
1,4-Dichlorobenzene	12.50	14.87	119	75-125	1	30
n-Butylbenzene	12.50	15.18	121	70-135	0	30
1,2-Dichlorobenzene	12.50	14.37	115	70-120	1	30
1,2-Dibromo-3-Chloropropane	12.50	12.14	97	50-130	2	30
1,2,4-Trichlorobenzene	12.50	14.27	114	65-135	2	30
Hexachlorobutadiene	12.50	16.11	129	50-140	6	30
Naphthalene	12.50	11.88	95	55-140	0	30
1,2,3-Trichlorobenzene	12.50	13.61	109	55-140	2	30

Surrogate	%REC	Limits
Dibromofluoromethane	91	85-115
1,2-Dichloroethane-d4	106	70-120
Toluene-d8	101	85-120
Bromofluorobenzene	97	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC817290	Batch#:	230541
Matrix:	Water	Analyzed:	12/18/15
Units:	ug/L		

Analyte	Result	LOQ	DL
Freon 12	0.4 U b	1.0	0.1
Chloromethane	0.4 U	1.0	0.3
Vinyl Chloride	0.2 U	0.5	0.1
Bromomethane	0.4 U	1.0	0.2
Chloroethane	0.4 U	1.0	0.3
Trichlorofluoromethane	0.4 U	1.0	0.2
Acetone	4.0 U	10	3.3
Freon 113	0.2 U	2.0	0.1
1,1-Dichloroethene	0.2 U	0.5	0.2
Methylene Chloride	0.2 U	10	0.2
Carbon Disulfide	0.2 U	0.5	0.1
MTBE	0.2 U	0.5	0.1
trans-1,2-Dichloroethene	0.2 U	0.5	0.2
Vinyl Acetate	2.0 U	10	1.1
1,1-Dichloroethane	0.2 U	0.5	0.2
2-Butanone	2.0 U	10	0.5
cis-1,2-Dichloroethene	0.2 U	0.5	0.1
2,2-Dichloropropane	0.4 U	0.5	0.1
Chloroform	0.2 U	0.5	0.1
Bromochloromethane	0.2 U	0.5	0.1
1,1,1-Trichloroethane	0.2 U	0.5	0.1
1,1-Dichloropropene	0.2 U	0.5	0.1
Carbon Tetrachloride	0.2 U	0.5	0.1
1,2-Dichloroethane	0.2 U	0.5	0.1
Benzene	0.2 U	0.5	0.1
Trichloroethene	0.2 U	0.5	0.1
1,2-Dichloropropane	0.2 U	0.5	0.1
Bromodichloromethane	0.2 U	0.5	0.1
Dibromomethane	0.2 U	0.5	0.1
4-Methyl-2-Pentanone	2.0 U	10	0.7
cis-1,3-Dichloropropene	0.2 U	0.5	0.1
Toluene	0.2 U	0.5	0.1
trans-1,3-Dichloropropene	0.2 U	0.5	0.1
1,1,2-Trichloroethane	0.2 U	0.5	0.2
2-Hexanone	2.0 U	10	0.5
1,3-Dichloropropane	0.2 U	0.5	0.1
Tetrachloroethene	0.2 U	0.5	0.1
Dibromochloromethane	0.2 U	0.5	0.1
1,2-Dibromoethane	0.2 U	0.5	0.1
Chlorobenzene	0.2 U	0.5	0.1
1,1,1,2-Tetrachloroethane	0.2 U	0.5	0.1
Ethylbenzene	0.2 U	0.5	0.1
m,p-Xylenes	0.4 U	0.5	0.1
o-Xylene	0.2 U	0.5	0.1
Styrene	0.2 U	0.5	0.1
Bromoform	0.2 U	1.0	0.1
Isopropylbenzene	0.2 U	0.5	0.1
1,1,2,2-Tetrachloroethane	0.2 U	0.5	0.1
1,2,3-Trichloropropane	0.2 U	0.5	0.2
Propylbenzene	0.2 U	0.5	0.1
Bromobenzene	0.2 U	0.5	0.1
1,3,5-Trimethylbenzene	0.2 U	0.5	0.1

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC817290	Batch#:	230541
Matrix:	Water	Analyzed:	12/18/15
Units:	ug/L		

Analyte	Result	LOQ	DL
2-Chlorotoluene	0.2 U	0.5	0.1
4-Chlorotoluene	0.2 U	0.5	0.1
tert-Butylbenzene	0.2 U	0.5	0.1
1,2,4-Trimethylbenzene	0.2 U	0.5	0.1
sec-Butylbenzene	0.2 U	0.5	0.1
para-Isopropyl Toluene	0.2 U	0.5	0.1
1,3-Dichlorobenzene	0.2 U	0.5	0.1
1,4-Dichlorobenzene	0.2 U	0.5	0.1
n-Butylbenzene	0.2 U	0.5	0.1
1,2-Dichlorobenzene	0.2 U	0.5	0.1
1,2-Dibromo-3-Chloropropane	1.0 U	2.0	0.3
1,2,4-Trichlorobenzene	0.2 U	0.5	0.1
Hexachlorobutadiene	0.2 U	2.0	0.1
Naphthalene	0.4 U	2.0	0.1
1,2,3-Trichlorobenzene	0.2 U	0.5	0.1

Surrogate	%REC	Limits
Dibromofluoromethane	93	85-115
1,2-Dichloroethane-d4	109	70-120
Toluene-d8	98	85-120
Bromofluorobenzene	98	75-120

U= Not Detected at or above DL
b= See narrative
DL= Detection Limit
LOQ= Limit of Quantitation

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Type: MS Lab ID: QC817299

Analyte	MSS Result	Spiked	Result	%REC	Limits
Freon 12	<0.7143	142.9	97.38 b	68	30-155
Chloromethane	<1.946	142.9	125.0	87	40-125
Vinyl Chloride	20.31	142.9	166.2	102	50-145
Bromomethane	<1.307	142.9	131.1 b	92	30-145
Chloroethane	<1.910	142.9	154.3	108	60-135
Trichlorofluoromethane	<1.629	142.9	157.1	110	60-145
Acetone	<23.57	178.6	160.9	90	40-140
Freon 113	<0.9357	178.6	179.1	100	61-138
1,1-Dichloroethene	<1.085	178.6	204.9	115	70-130
Methylene Chloride	<1.255	178.6	222.2	124	55-140
Carbon Disulfide	<0.7143	178.6	216.1	121	35-160
MTBE	<0.7991	178.6	209.3	117	65-125
trans-1,2-Dichloroethene	4.930	178.6	201.2	110	60-140
Vinyl Acetate	<8.180	178.6	203.1	114	60-194
1,1-Dichloroethane	<1.134	178.6	204.5	115	70-135
2-Butanone	<3.571	178.6	183.0	102	30-150
cis-1,2-Dichloroethene	3.573	178.6	217.7	120	70-125
2,2-Dichloropropane	<1.029	178.6	206.3 b	116	70-135
Chloroform	<0.7143	178.6	212.2	119	65-135
Bromochloromethane	<0.9803	178.6	205.2	115	65-130
1,1,1-Trichloroethane	<0.9008	178.6	222.4	125	65-130
1,1-Dichloropropene	<0.9278	178.6	185.2	104	75-130
Carbon Tetrachloride	<0.8792	178.6	219.3	123	65-140
1,2-Dichloroethane	<0.7648	178.6	232.4 b	130	70-130
Benzene	1.069	178.6	214.0	119	80-120
Trichloroethene	<0.7143	178.6	204.1	114	70-125
1,2-Dichloropropane	<0.9795	178.6	215.0	120	75-125
Bromodichloromethane	<0.8658	178.6	219.5	123 *	75-120
Dibromomethane	<1.046	178.6	220.7	124	75-125
4-Methyl-2-Pentanone	<4.671	178.6	184.9	104	60-135
cis-1,3-Dichloropropene	<0.7533	178.6	232.3 b	130	70-130
Toluene	0.9143	178.6	193.6	108	75-120
trans-1,3-Dichloropropene	<0.9945	178.6	203.9	114	55-140
1,1,2-Trichloroethane	<1.100	178.6	199.8	112	75-125
2-Hexanone	<3.571	178.6	192.1	108	55-130
1,3-Dichloropropane	<1.063	178.6	210.0	118	75-125
Tetrachloroethene	<0.7143	178.6	200.3	112	45-150
Dibromochloromethane	<1.043	178.6	199.6	112	60-135
1,2-Dibromoethane	<0.9582	178.6	195.5	109	80-120
Chlorobenzene	23.98	178.6	233.1	117	80-120
1,1,1,2-Tetrachloroethane	<0.7467	178.6	196.5	110	80-130
Ethylbenzene	<0.7143	178.6	193.8	109	75-125
m,p-Xylenes	<1.038	357.1	395.9	111	75-130
o-Xylene	2.191	178.6	198.5	110	80-120
Styrene	<0.7143	178.6	187.0	105	65-135
Bromoform	<1.032	178.6	213.5	120	70-130
Isopropylbenzene	0.9057	178.6	189.8	106	75-125
1,1,2,2-Tetrachloroethane	<0.8547	178.6	191.0	107	65-130

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Analyte	MSS Result	Spiked	Result	%REC	Limits
1,2,3-Trichloropropane	<1.100	178.6	177.1	99	75-125
Propylbenzene	<0.7143	178.6	178.5	100	70-130
Bromobenzene	<0.7712	178.6	199.8	112	75-125
1,3,5-Trimethylbenzene	0.7921	178.6	188.1	105	75-130
2-Chlorotoluene	<0.7143	178.6	192.8	108	75-125
4-Chlorotoluene	<0.7143	178.6	185.3	104	75-130
tert-Butylbenzene	<0.7143	178.6	188.6	106	70-130
1,2,4-Trimethylbenzene	4.289	178.6	189.0	103	75-130
sec-Butylbenzene	0.8721	178.6	178.5	99	70-125
para-Isopropyl Toluene	<0.7143	178.6	183.6	103	75-130
1,3-Dichlorobenzene	7.642	178.6	214.2	116	75-125
1,4-Dichlorobenzene	33.59	178.6	246.2	119	75-125
n-Butylbenzene	<0.7143	178.6	184.4	103	70-135
1,2-Dichlorobenzene	8.360	178.6	209.1	112	70-120
1,2-Dibromo-3-Chloropropane	<1.786	178.6	186.7	105	50-130
1,2,4-Trichlorobenzene	<0.9468	178.6	208.8	117	65-135
Hexachlorobutadiene	<0.9955	178.6	196.2	110	50-140
Naphthalene	2.387	178.6	197.8	109	55-140
1,2,3-Trichlorobenzene	<0.9969	178.6	209.6	117	55-140

Surrogate	%REC	Limits
Dibromofluoromethane	100	85-115
1,2-Dichloroethane-d4	114	70-120
Toluene-d8	99	85-120
Bromofluorobenzene	99	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Type: MSD Lab ID: QC817300

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Freon 12	142.9	96.45 b	68	30-155	1	30
Chloromethane	142.9	126.1	88	40-125	1	30
Vinyl Chloride	142.9	169.4	104	50-145	2	30
Bromomethane	142.9	167.4 b	117	30-145	24	30
Chloroethane	142.9	153.7	108	60-135	0	30
Trichlorofluoromethane	142.9	163.0	114	60-145	4	30
Acetone	178.6	194.6	109	40-140	19	30
Freon 113	178.6	186.5	104	61-138	4	30
1,1-Dichloroethene	178.6	211.2	118	70-130	3	30
Methylene Chloride	178.6	229.0	128	55-140	3	30
Carbon Disulfide	178.6	227.0	127	35-160	5	30
MTBE	178.6	221.1	124	65-125	5	30
trans-1,2-Dichloroethene	178.6	203.4	111	60-140	1	30
Vinyl Acetate	178.6	226.1	127	60-194	11	30
1,1-Dichloroethane	178.6	213.0	119	70-135	4	30
2-Butanone	178.6	199.7	112	30-150	9	30
cis-1,2-Dichloroethene	178.6	221.9	122	70-125	2	30
2,2-Dichloropropane	178.6	206.3 b	116	70-135	0	30
Chloroform	178.6	221.8	124	65-135	4	30
Bromochloromethane	178.6	213.1	119	65-130	4	30
1,1,1-Trichloroethane	178.6	220.9	124	65-130	1	30
1,1-Dichloropropene	178.6	170.5	95	75-130	8	30
Carbon Tetrachloride	178.6	202.6	113	65-140	8	30
1,2-Dichloroethane	178.6	227.4 b	127	70-130	2	30
Benzene	178.6	205.6	115	80-120	4	30
Trichloroethene	178.6	194.4	109	70-125	5	30
1,2-Dichloropropane	178.6	208.1	117	75-125	3	30
Bromodichloromethane	178.6	218.6	122 *	75-120	0	30
Dibromomethane	178.6	205.5	115	75-125	7	30
4-Methyl-2-Pentanone	178.6	195.1	109	60-135	5	30
cis-1,3-Dichloropropene	178.6	216.6 b	121	70-130	7	30
Toluene	178.6	193.3	108	75-120	0	30
trans-1,3-Dichloropropene	178.6	194.9	109	55-140	5	30
1,1,2-Trichloroethane	178.6	196.1	110	75-125	2	30
2-Hexanone	178.6	185.8	104	55-130	3	30
1,3-Dichloropropane	178.6	197.0	110	75-125	6	30
Tetrachloroethene	178.6	191.0	107	45-150	5	30
Dibromochloromethane	178.6	195.0	109	60-135	2	30
1,2-Dibromoethane	178.6	189.3	106	80-120	3	30
Chlorobenzene	178.6	220.2	110	80-120	6	30
1,1,1,2-Tetrachloroethane	178.6	184.7	103	80-130	6	30
Ethylbenzene	178.6	191.3	107	75-125	1	30
m,p-Xylenes	357.1	381.8	107	75-130	4	30
o-Xylene	178.6	193.3	107	80-120	3	30
Styrene	178.6	179.3	100	65-135	4	30
Bromoform	178.6	211.3	118	70-130	1	30
Isopropylbenzene	178.6	187.3	104	75-125	1	30
1,1,2,2-Tetrachloroethane	178.6	196.4	110	65-130	3	30

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Curtis & Tompkins, Ltd.

Batch QC Report

Purgeable Organics by GC/MS

Lab #:	272486	Location:	MINS BGMP
Client:	Versar, Inc.	Prep:	EPA 5030C
Project#:	N62473-11-D-2215	Analysis:	EPA 8260C
Field ID:	D1C85W06-121515	Batch#:	230541
MSS Lab ID:	272485-002	Sampled:	12/15/15
Matrix:	Water	Received:	12/16/15
Units:	ug/L	Analyzed:	12/19/15
Diln Fac:	7.143		

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
1,2,3-Trichloropropane	178.6	185.0	104	75-125	4	30
Propylbenzene	178.6	175.9	98	70-130	1	30
Bromobenzene	178.6	203.3	114	75-125	2	30
1,3,5-Trimethylbenzene	178.6	186.8	104	75-130	1	30
2-Chlorotoluene	178.6	190.6	107	75-125	1	30
4-Chlorotoluene	178.6	198.4	111	75-130	7	30
tert-Butylbenzene	178.6	193.0	108	70-130	2	30
1,2,4-Trimethylbenzene	178.6	190.9	104	75-130	1	30
sec-Butylbenzene	178.6	183.6	102	70-125	3	30
para-Isopropyl Toluene	178.6	176.9	99	75-130	4	30
1,3-Dichlorobenzene	178.6	211.8	114	75-125	1	30
1,4-Dichlorobenzene	178.6	247.2	120	75-125	0	30
n-Butylbenzene	178.6	179.6	101	70-135	3	30
1,2-Dichlorobenzene	178.6	219.7	118	70-120	5	30
1,2-Dibromo-3-Chloropropane	178.6	198.0	111	50-130	6	30
1,2,4-Trichlorobenzene	178.6	218.2	122	65-135	4	30
Hexachlorobutadiene	178.6	204.8	115	50-140	4	30
Naphthalene	178.6	202.1	112	55-140	2	30
1,2,3-Trichlorobenzene	178.6	223.9	125	55-140	7	30

Surrogate	%REC	Limits
Dibromofluoromethane	104	85-115
1,2-Dichloroethane-d4	111	70-120
Toluene-d8	94	85-120
Bromofluorobenzene	98	75-120

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

CURTIS & TOMPKINS BFB TUNE FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 Run Name : BFB IDF : 1.0
Seqnum : 475492027004 File : hl704 Time : 07-DEC-2015 18:27

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	4082	23.41	
75	30% - 60% of mass 95	8174	46.89	
95		17434	100.00	
96	5% - 9% of mass 95	1305	7.49	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	14010	80.36	
175	5% - 9% of mass 174	1090	7.78	
176	> 95% and < 101% of mass 174	13520	96.50	
177	5% - 9% of mass 176	1005	7.43	

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

CURTIS & TOMPKINS BFB TUNE FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 Run Name : BFB IDF : 1.0
Seqnum : 475507613009 File : hli09 Time : 18-DEC-2015 16:20

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	2419	23.69	
75	30% - 60% of mass 95	4730	46.33	
95		10210	100.00	
96	5% - 9% of mass 95	748	7.33	
173	< 2% of mass 174	61	0.68	
174	> 50% and < 100% of mass 95	8937	87.53	
175	5% - 9% of mass 174	724	8.10	
176	> 95% and < 101% of mass 174	8648	96.77	
177	5% - 9% of mass 176	596	6.89	

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/21/15

CURTIS & TOMPKINS INITIAL CALIBRATION FOR 272486 MSVOA Water: EPA 8260C

Inst : MSVOA08 Name : 826GOX8
Calnum : 475492027002 Date : 07-DEC-2015 21:20 Type : WATER
Units : ug/L X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	hl709	475492027009	.25PPB	07-DEC-2015 21:20	S27004 (2000000X), S28295 (2000000X), S28355 (2000000X), S27081 (1000000X), S28588 (5000X)
L2	hl710	475492027010	.5PPB	07-DEC-2015 21:54	S28588 (5000X), S27004 (1000000X), S28295 (1000000X), S28355 (1000000X), S27081 (500000X)
L3	hl711	475492027011	2PPB	07-DEC-2015 22:28	S27004 (500000X), S28295 (250000X), S28355 (250000X), S27081 (250000X), S28588 (5000X)
L4	hl712	475492027012	5PPB	07-DEC-2015 23:03	S28588 (5000X), S27004 (200000X), S28295 (100000X), S28355 (100000X), S27081 (100000X)
L5	hl713	475492027013	10PPB	07-DEC-2015 23:37	S28588 (5000X), S27004 (100000X), S28295 (50000X), S28355 (50000X), S27081 (50000X)
L6	hl714	475492027014	20PPB	08-DEC-2015 00:11	S28588 (5000X), S27004 (50000X), S28295 (25000X), S28355 (25000X), S27081 (25000X)
L7	hl715	475492027015	50PPB	08-DEC-2015 00:45	S28588 (5000X), S27004 (20000X), S28295 (10000X), S28355 (10000X), S27081 (10000X)
L8	hl716	475492027016	75PPB	08-DEC-2015 01:20	S28588 (5000X), S27004 (13330X), S28295 (6667X), S28355 (6667X), S27081 (6667X)
L9	hl717	475492027017	100PPB	08-DEC-2015 01:54	S28588 (5000X), S27004 (10000X), S28295 (5000X), S28355 (5000X), S27081 (5000X)

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Freon 12		0.8463	0.7872	0.8185	0.6879	0.7983	0.7105	0.7196	0.7432	AVRG		1.30899		0.7639	7	15	0.100	0.99	
Chloromethane	1.0329	1.0245	0.9871	0.8970	0.9121	0.8893	0.7923	0.8286	0.7951	AVRG		1.10309		0.9065	10	15	0.100	0.99	
Vinyl Chloride	0.7914	0.7334	0.7547	0.7622	0.7268	0.7489	0.6745	0.6767	0.7305	AVRG		1.36385		0.7332	5	15	0.100	0.99	
Bromomethane	0.2025	0.2101	0.2102	0.2098	0.2320	0.2707	0.3619			QUAD	0.37279	4.09742	-0.07493	0.2425	1.000	15	0.100	0.99	
Chloroethane		0.5521	0.5253	0.5088	0.5473	0.5212	0.4692	0.4870	0.4919	AVRG		1.94998		0.5128	6	15	0.100	0.99	
Trichlorofluoromethane		0.8477	0.8109	0.8770	0.7787	0.8254	0.7267	0.7969	0.7862	AVRG		1.24041		0.8062	6	15	0.100	0.99	
Acetone			0.1541	0.1370	0.1380	0.1431	0.1655	0.1508	0.1327	AVRG		6.85468		0.1459	8	15	0.100	0.99	
Freon 113		0.5170	0.4853	0.4824	0.4856	0.4603	0.4509	0.4425	0.4260	AVRG		2.13339		0.4687	6	15	0.100	0.99	
1,1-Dichloroethene		0.5275	0.4995	0.4686	0.4841	0.4786	0.4533	0.4391	0.4345	AVRG		2.11350		0.4731	7	15	0.100	0.99	
Methylene Chloride		0.5935	0.5816	0.5583	0.5710	0.5964	0.4978	0.5343	0.5393	AVRG		1.78880		0.5590	6	15	0.100	0.99	
Carbon Disulfide		2.2028	2.0174	1.9554	1.9369	2.0007	1.8058	1.7809	1.7783	AVRG		0.51685		1.9348	8	15	0.100	0.99	
MTBE		1.2425	1.3178	1.2409	1.2680	1.3404	1.0735	1.2030	1.2482	AVRG		0.80529		1.2418	7	15	0.100	0.99	
trans-1,2-Dichloroethene		0.5316	0.5689	0.5333	0.5440	0.5790	0.4895	0.4928	0.5127	AVRG		1.88158		0.5315	6	15	0.100	0.99	
Vinyl Acetate			1.2288	1.1736	1.2428	1.2530	1.0424	1.2518	1.1592	AVRG		0.83817		1.1931	6	15	0.05	0.99	
1,1-Dichloroethane		1.2239	1.1315	1.1061	1.1245	1.1364	0.9571	0.9740	1.0116	AVRG		0.92323		1.0832	9	15	0.200	0.99	
2-Butanone			0.2119	0.2337	0.2181	0.2304	0.2461	0.2388	0.2096	AVRG		4.40617		0.2270	6	15	0.100	0.99	
2,2-Dichloropropane		0.7684	0.7187	0.6971	0.6508	0.6550	0.5842	0.5815	0.5843	AVRG		1.52677		0.6550	11	15	0.05	0.99	
cis-1,2-Dichloroethene		0.6669	0.6677	0.6267	0.6423	0.6523	0.5564	0.5838	0.5998	AVRG		1.60131		0.6245	7	15	0.100	0.99	
Chloroform		1.0351	1.0004	0.9735	0.9740	0.9756	0.8485	0.8563	0.9271	AVRG		1.05397		0.9488	7	15	0.200	0.99	
Bromochloromethane		0.2851	0.3133	0.3309	0.3277	0.3301	0.2744	0.2992	0.3030	AVRG		3.24708		0.3080	7	15	0.05	0.99	
1,1,1-Trichloroethane		0.7653	0.7142	0.6680	0.6882	0.6813	0.6161	0.6230	0.6257	AVRG		1.48649		0.6727	8	15	0.100	0.99	
1,1-Dichloropropene		0.6445	0.5054	0.4747	0.5088	0.4739	0.5342	0.4648	0.4252	AVRG		1.98440		0.5039	13	15	0.05	0.99	
Carbon Tetrachloride		0.4875	0.3841	0.3819	0.3987	0.3807	0.4293	0.3789	0.3647	AVRG		2.49547		0.4007	10	15	0.100	0.99	
1,2-Dichloroethane		0.4528	0.3840	0.3835	0.4127	0.3918	0.3782	0.3948	0.3743	AVRG		2.52198		0.3965	6	15	0.100	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Benzene		1.7246	1.3482	1.3610	1.4222	1.3665	1.3419	1.3136	1.1586	AVRG		0.72486		1.3796	12	15	0.500	0.99	
Trichloroethene		0.4648	0.3320	0.3430	0.3705	0.3431	0.3662	0.3275	0.3170	AVRG		2.79327		0.3580	13	15	0.200	0.99	
1,2-Dichloropropane		0.4121	0.4105	0.4147	0.4190	0.3871	0.3955	0.3837	0.3689	AVRG		2.50666		0.3989	4	15	0.100	0.99	
Bromodichloromethane		0.4645	0.4339	0.4331	0.4781	0.4528	0.4507	0.4431	0.4413	AVRG		2.22365		0.4497	3	15	0.200	0.99	
Dibromomethane		0.2276	0.2109	0.2113	0.2295	0.2204	0.2189	0.2239	0.2027	AVRG		4.58392		0.2182	4	15	0.05	0.99	
4-Methyl-2-Pentanone			0.3203	0.3174	0.3452	0.3234	0.3833	0.3725	0.3063	AVRG		2.95582		0.3383	9	15	0.100	0.99	
cis-1,3-Dichloropropene		0.5803	0.5419	0.5379	0.5528	0.5364	0.5138	0.5294	0.5106	AVRG		1.85911		0.5379	4	15	0.200	0.99	
Toluene		1.2651	0.9463	0.9255	0.9602	1.0083	1.0713	0.9062	0.8330	AVRG		1.01063		0.9895	13	15	0.400	0.99	
trans-1,3-Dichloropropene		0.5595	0.4607	0.4734	0.5136	0.5356	0.5515	0.5138	0.4675	AVRG		1.96293		0.5094	8	15	0.100	0.99	
1,1,2-Trichloroethane		0.2323	0.1704	0.1734	0.1830	0.1862	0.1985	0.1828	0.1623	AVRG		5.37287		0.1861	12	15	0.100	0.99	
2-Hexanone			0.2483	0.2449	0.2626	0.2800	0.3291	0.2945	0.2367	AVRG		3.69202		0.2709	12	15	0.100	0.99	
1,3-Dichloropropane		0.6480	0.5322	0.5295	0.5555	0.5872	0.5805	0.5707	0.5079	AVRG		1.77323		0.5639	8	15	0.05	0.99	
Tetrachloroethene	0.4705	0.5443	0.3926	0.3535	0.3938	0.3988	0.4845	0.3824		AVRG		2.33891		0.4276	15	15	0.200	0.99	
Dibromochloromethane		0.4942	0.4065	0.3982	0.4358	0.4564	0.4788	0.4360	0.3982	AVRG		2.28307		0.4380	8	15	0.100	0.99	
1,2-Dibromoethane		0.4052	0.3438	0.3288	0.3595	0.3706	0.4061	0.3669	0.3264	AVRG		2.75163		0.3634	8	15	0.100	0.99	
Chlorobenzene		1.4205	1.0348	1.0094	1.0914	1.0966	1.1587	1.0063	0.9475	AVRG		0.91270		1.0956	13	15	0.500	0.99	
1,1,1,2-Tetrachloroethane		0.5561	0.3915	0.3814	0.4191	0.4392	0.4350	0.3990	0.3747	AVRG		2.35572		0.4245	14	15	0.05	0.99	
Ethylbenzene		2.3986	1.7541	1.6787	1.7950	1.8397	1.9882	1.6476	1.5082	AVRG		0.54757		1.8263	15	15	0.100	0.99	
m,p-Xylenes	0.8053	0.9713	0.6525	0.6498	0.6333	0.6660	0.7580			QUAD	-0.2872	1.62499	-0.00399	0.7337	1.000	15	0.100	0.99	
o-Xylene		0.8605	0.6664	0.6313	0.7103	0.7049	0.7639	0.6260	0.5889	AVRG		1.44088		0.6940	13	15	0.300	0.99	
Styrene		1.3857	1.0806	1.0425	1.1902	1.2216	1.3099	1.1256	0.9900	AVRG		0.85597		1.1683	12	15	0.300	0.99	
Bromoform		0.3002	0.2389	0.2340	0.2661	0.2802	0.3139	0.2815	0.2468	AVRG		3.70108		0.2702	11	15	0.100	0.99	
Isopropylbenzene		4.3930	3.2787	3.0984	3.1900	3.1583	3.7040	3.0754	2.8823	AVRG		0.29873		3.3475	14	15	0.100	0.99	
1,1,2,2-Tetrachloroethane		0.9771	0.7654	0.7285	0.7981	0.8012	0.8735	0.8592	0.7292	AVRG		1.22468		0.8165	10	15	0.300	0.99	
1,2,3-Trichloropropane		0.2662	0.1931	0.1769	0.1799	0.1859	0.1984	0.2055	0.1712	AVRG		5.07245		0.1971	15	15	0.05	0.99	
Propylbenzene		5.3566	3.9617	3.6951	3.9037	3.7498	4.5071	3.6583		AVRG		0.24278		4.1189	15	15	0.05	0.99	
Bromobenzene		1.1297	0.9152	0.8740	0.9342	0.9170	0.9655	0.9042	0.8455	AVRG		1.06875		0.9357	9	15	0.05	0.99	
1,3,5-Trimethylbenzene		3.5943	2.7164	2.4690	2.6779	2.4569	3.0477	2.5067		AVRG		0.35955		2.7813	15	15	0.05	0.99	
2-Chlorotoluene		3.4665	2.6255	2.4170	2.5710	2.4285	2.8708	2.4720	2.1312	AVRG		0.38127		2.6228	15	15	0.05	0.99	
4-Chlorotoluene		3.1275	2.4437	2.2350	2.2467	2.2572	2.4186	2.2275	1.9979	AVRG		0.42207		2.3693	14	15	0.05	0.99	
tert-Butylbenzene		3.2340	2.2879	2.1452	2.2967	2.2380	2.6268	2.3084	2.1052	AVRG		0.41575		2.4053	15	15	0.05	0.99	
1,2,4-Trimethylbenzene		3.6607	2.6266	2.3856	2.6427	2.5809	2.9269	2.5866	2.3812	AVRG		0.36712		2.7239	15	15	0.05	0.99	
sec-Butylbenzene		4.8879	3.6645	3.3083	3.4641	3.3897	4.0259	3.4593		AVRG		0.26718		3.7428	15	15	0.05	0.99	
para-Isopropyl Toluene		3.6720	2.7726	2.5864	2.6640	2.5833	3.0582	2.6893	2.2977	AVRG		0.35837		2.7904	15	15	0.05	0.99	
1,3-Dichlorobenzene		1.9813	1.5792	1.4476	1.5652	1.5323	1.7001	1.5924	1.4091	AVRG		0.62465		1.6009	11	15	0.600	0.99	
1,4-Dichlorobenzene		2.0079	1.6066	1.4927	1.5293	1.5219	1.6812	1.5616	1.4261	AVRG		0.62367		1.6034	11	15	0.500	0.99	
n-Butylbenzene	2.5589	3.2389	2.2644	2.1436	2.2877	2.1656	2.7796	2.2771	2.1103	AVRG		0.41235		2.4251	15	15	0.05	0.99	
1,2-Dichlorobenzene		2.0203	1.5286	1.4124	1.5560	1.5049	1.6322	1.5333	1.4334	AVRG		0.63387		1.5776	12	15	0.400	0.99	
1,2-Dibromo-3-Chloropropane		0.1192	0.1017	0.1015	0.1084	0.1074	0.1385	0.1332	0.1079	AVRG		8.71555		0.1147	12	15	0.050	0.99	
1,2,4-Trichlorobenzene		0.9213	0.7560	0.7433	0.7849	0.8087	0.9522	0.9102	0.8449	AVRG		1.19021		0.8402	9	15	0.200	0.99	
Hexachlorobutadiene		0.4376	0.4059	0.3871	0.3999	0.3801	0.5310	0.4474	0.3954	AVRG		2.36374		0.4231	12	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Naphthalene		1.5778	1.4047	1.4653	1.6930	1.7459	2.0930	2.1143	1.7804	AVRG		0.57660		1.7343	15	15	0.05	0.99	
1,2,3-Trichlorobenzene		0.8088	0.7226	0.7204	0.7639	0.7787	0.9205	0.8775	0.7921	AVRG		1.25304		0.7981	9	15	0.05	0.99	
Dibromofluoromethane	0.5747	0.4427	0.5739	0.5738	0.5664	0.5578	0.4352	0.5159	0.5555	AVRG		1.87659		0.5329	11	15	0.05	0.99	
1,2-Dichloroethane-d4	0.3064	0.2554	0.2963	0.3131	0.3050	0.2905	0.2472	0.2880	0.2669	AVRG		3.50352		0.2854	8	15	0.05	0.99	
Toluene-d8	1.2336	1.3003	1.1810	1.1604	1.1998	1.2719	1.3767	1.1853	1.1749	AVRG		0.81199		1.2315	6	15	0.05	0.99	
Bromofluorobenzene	0.9273	0.9061	0.9349	0.9347	0.9080	0.9599	0.9194	0.9428	0.9667	AVRG		1.07145		0.9333	2	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Freon 12			1.0000	11	2.0000	3	5.0000	7	10.000	-10	20.000	4	50.000	-7	75.000	-6	100.00	-3
Chloromethane	0.5000	14	1.0000	13	2.0000	9	5.0000	-1	10.000	1	20.000	-2	50.000	-13	75.000	-9	100.00	-12
Vinyl Chloride	0.5000	8	1.0000	0	2.0000	3	5.0000	4	10.000	-1	20.000	2	50.000	-8	75.000	-8	100.00	0
Bromomethane	0.5000	**57**	1.0000	**23**	2.0000	4	5.0000	-8	10.000	-5	20.000	2	50.000	0				
Chloroethane			1.0000	8	2.0000	2	5.0000	-1	10.000	7	20.000	2	50.000	-9	75.000	-5	100.00	-4
Trichlorofluoromethane			1.0000	5	2.0000	1	5.0000	9	10.000	-3	20.000	2	50.000	-10	75.000	-1	100.00	-2
Acetone					2.0000	6	5.0000	-6	10.000	-5	20.000	-2	50.000	13	75.000	3	100.00	-9
Freon 113			0.5000	10	2.0000	4	5.0000	3	10.000	4	20.000	-2	50.000	-4	75.000	-6	100.00	-9
1,1-Dichloroethene			0.5000	11	2.0000	6	5.0000	-1	10.000	2	20.000	1	50.000	-4	75.000	-7	100.00	-8
Methylene Chloride			0.5000	6	2.0000	4	5.0000	0	10.000	2	20.000	7	50.000	-11	75.000	-4	100.00	-4
Carbon Disulfide			0.5000	14	2.0000	4	5.0000	1	10.000	0	20.000	3	50.000	-7	75.000	-8	100.00	-8
MTBE			0.5000	0	2.0000	6	5.0000	0	10.000	2	20.000	8	50.000	-14	75.000	-3	100.00	1
trans-1,2-Dichloroethene			0.5000	0	2.0000	7	5.0000	0	10.000	2	20.000	9	50.000	-8	75.000	-7	100.00	-4
Vinyl Acetate					2.0000	3	5.0000	-2	10.000	4	20.000	5	50.000	-13	75.000	5	100.00	-3
1,1-Dichloroethane			0.5000	13	2.0000	4	5.0000	2	10.000	4	20.000	5	50.000	-12	75.000	-10	100.00	-7
2-Butanone					2.0000	-7	5.0000	3	10.000	-4	20.000	2	50.000	8	75.000	5	100.00	-8
2,2-Dichloropropane			0.5000	17	2.0000	10	5.0000	6	10.000	-1	20.000	0	50.000	-11	75.000	-11	100.00	-11
cis-1,2-Dichloroethene			0.5000	7	2.0000	7	5.0000	0	10.000	3	20.000	4	50.000	-11	75.000	-7	100.00	-4
Chloroform			0.5000	9	2.0000	5	5.0000	3	10.000	3	20.000	3	50.000	-11	75.000	-10	100.00	-2
Bromochloromethane			0.5000	-7	2.0000	2	5.0000	7	10.000	6	20.000	7	50.000	-11	75.000	-3	100.00	-2
1,1,1-Trichloroethane			0.5000	14	2.0000	6	5.0000	-1	10.000	2	20.000	1	50.000	-8	75.000	-7	100.00	-7
1,1-Dichloropropene			0.5000	**28**	2.0000	0	5.0000	-6	10.000	1	20.000	-6	50.000	6	75.000	-8	100.00	-16
Carbon Tetrachloride			0.5000	**22**	2.0000	-4	5.0000	-5	10.000	-1	20.000	-5	50.000	7	75.000	-5	100.00	-9
1,2-Dichloroethane			0.5000	14	2.0000	-3	5.0000	-3	10.000	4	20.000	-1	50.000	-5	75.000	0	100.00	-6
Benzene			0.5000	**25**	2.0000	-2	5.0000	-1	10.000	3	20.000	-1	50.000	-3	75.000	-5	100.00	-16
Trichloroethene			0.5000	**30**	2.0000	-7	5.0000	-4	10.000	3	20.000	-4	50.000	2	75.000	-9	100.00	-11
1,2-Dichloropropane			0.5000	3	2.0000	3	5.0000	4	10.000	5	20.000	-3	50.000	-1	75.000	-4	100.00	-8
Bromodichloromethane			0.5000	3	2.0000	-4	5.0000	-4	10.000	6	20.000	1	50.000	0	75.000	-1	100.00	-2
Dibromomethane			0.5000	4	2.0000	-3	5.0000	-3	10.000	5	20.000	1	50.000	0	75.000	3	100.00	-7
4-Methyl-2-Pentanone					2.0000	-5	5.0000	-6	10.000	2	20.000	-4	50.000	13	75.000	10	100.00	-9
cis-1,3-Dichloropropene			0.5000	8	2.0000	1	5.0000	0	10.000	3	20.000	0	50.000	-4	75.000	-2	100.00	-5
Toluene			0.5000	**28**	2.0000	-4	5.0000	-6	10.000	-3	20.000	2	50.000	8	75.000	-8	100.00	-16
trans-1,3-Dichloropropene			0.5000	10	2.0000	-10	5.0000	-7	10.000	1	20.000	5	50.000	8	75.000	1	100.00	-8
1,1,2-Trichloroethane			0.5000	**25**	2.0000	-8	5.0000	-7	10.000	-2	20.000	0	50.000	7	75.000	-2	100.00	-13
2-Hexanone					2.0000	-8	5.0000	-10	10.000	-3	20.000	3	50.000	**22**	75.000	9	100.00	-13
1,3-Dichloropropane			0.5000	15	2.0000	-6	5.0000	-6	10.000	-1	20.000	4	50.000	3	75.000	1	100.00	-10
Tetrachloroethene	0.2500	10	0.5000	**27**	2.0000	-8	5.0000	-17	10.000	-8	20.000	-7	50.000	13	75.000	-11		
Dibromochloromethane			0.5000	13	2.0000	-7	5.0000	-9	10.000	-1	20.000	4	50.000	9	75.000	0	100.00	-9
1,2-Dibromoethane			0.5000	12	2.0000	-5	5.0000	-10	10.000	-1	20.000	2	50.000	12	75.000	1	100.00	-10
Chlorobenzene			0.5000	**30**	2.0000	-6	5.0000	-8	10.000	0	20.000	0	50.000	6	75.000	-8	100.00	-14
1,1,1,2-Tetrachloroethane			0.5000	**31**	2.0000	-8	5.0000	-10	10.000	-1	20.000	3	50.000	2	75.000	-6	100.00	-12
Ethylbenzene			0.5000	**31**	2.0000	-4	5.0000	-8	10.000	-2	20.000	1	50.000	9	75.000	-10	100.00	-17

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
m,p-Xylenes	0.5000	**-27**	1.0000	**29**	4.0000	-2	10.000	1	20.000	-2	40.000	0	100.00	0				
o-Xylene			0.5000	**24**	2.0000	-4	5.0000	-9	10.000	2	20.000	2	50.000	10	75.000	-10	100.00	-15
Styrene			0.5000	19	2.0000	-8	5.0000	-11	10.000	2	20.000	5	50.000	12	75.000	-4	100.00	-15
Bromoform			0.5000	11	2.0000	-12	5.0000	-13	10.000	-2	20.000	4	50.000	16	75.000	4	100.00	-9
Isopropylbenzene			0.5000	**31**	2.0000	-2	5.0000	-7	10.000	-5	20.000	-6	50.000	11	75.000	-8	100.00	-14
1,1,2,2-Tetrachloroethane			0.5000	20	2.0000	-6	5.0000	-11	10.000	-2	20.000	-2	50.000	7	75.000	5	100.00	-11
1,2,3-Trichloropropane			0.5000	**35**	2.0000	-2	5.0000	-10	10.000	-9	20.000	-6	50.000	1	75.000	4	100.00	-13
Propylbenzene			0.5000	**30**	2.0000	-4	5.0000	-10	10.000	-5	20.000	-9	50.000	9	75.000	-11		
Bromobenzene			0.5000	**21**	2.0000	-2	5.0000	-7	10.000	0	20.000	-2	50.000	3	75.000	-3	100.00	-10
1,3,5-Trimethylbenzene			0.5000	**29**	2.0000	-2	5.0000	-11	10.000	-4	20.000	-12	50.000	10	75.000	-10		
2-Chlorotoluene			0.5000	**32**	2.0000	0	5.0000	-8	10.000	-2	20.000	-7	50.000	9	75.000	-6	100.00	-19
4-Chlorotoluene			0.5000	**32**	2.0000	3	5.0000	-6	10.000	-5	20.000	-5	50.000	2	75.000	-6	100.00	-16
tert-Butylbenzene			0.5000	**34**	2.0000	-5	5.0000	-11	10.000	-5	20.000	-7	50.000	9	75.000	-4	100.00	-12
1,2,4-Trimethylbenzene			0.5000	**34**	2.0000	-4	5.0000	-12	10.000	-3	20.000	-5	50.000	7	75.000	-5	100.00	-13
sec-Butylbenzene			0.5000	**31**	2.0000	-2	5.0000	-12	10.000	-7	20.000	-9	50.000	8	75.000	-8		
para-Isopropyl Toluene			0.5000	**32**	2.0000	-1	5.0000	-7	10.000	-5	20.000	-7	50.000	10	75.000	-4	100.00	-18
1,3-Dichlorobenzene			0.5000	**24**	2.0000	-1	5.0000	-10	10.000	-2	20.000	-4	50.000	6	75.000	-1	100.00	-12
1,4-Dichlorobenzene			0.5000	**25**	2.0000	0	5.0000	-7	10.000	-5	20.000	-5	50.000	5	75.000	-3	100.00	-11
n-Butylbenzene	0.2500	6	0.5000	**34**	2.0000	-7	5.0000	-12	10.000	-6	20.000	-11	50.000	15	75.000	-6	100.00	-13
1,2-Dichlorobenzene			0.5000	**28**	2.0000	-3	5.0000	-10	10.000	-1	20.000	-5	50.000	3	75.000	-3	100.00	-9
1,2-Dibromo-3-Chloropropane			0.5000	4	2.0000	-11	5.0000	-12	10.000	-5	20.000	-6	50.000	**21**	75.000	16	100.00	-6
1,2,4-Trichlorobenzene			0.5000	10	2.0000	-10	5.0000	-12	10.000	-7	20.000	-4	50.000	13	75.000	8	100.00	1
Hexachlorobutadiene			0.5000	3	2.0000	-4	5.0000	-8	10.000	-5	20.000	-10	50.000	**26**	75.000	6	100.00	-7
Naphthalene			0.5000	-9	2.0000	-19	5.0000	-16	10.000	-2	20.000	1	50.000	**21**	75.000	**22**	100.00	3
1,2,3-Trichlorobenzene			0.5000	1	2.0000	-9	5.0000	-10	10.000	-4	20.000	-2	50.000	15	75.000	10	100.00	-1
Dibromofluoromethane	50.000	8	50.000	-17	50.000	8	50.000	8	50.000	6	50.000	5	50.000	-18	50.000	-3	50.000	4
1,2-Dichloroethane-d4	50.000	7	50.000	-11	50.000	4	50.000	10	50.000	7	50.000	2	50.000	-13	50.000	1	50.000	-6
Toluene-d8	50.000	0	50.000	6	50.000	-4	50.000	-6	50.000	-3	50.000	3	50.000	12	50.000	-4	50.000	-5
Bromofluorobenzene	50.000	-1	50.000	-3	50.000	0	50.000	0	50.000	-3	50.000	3	50.000	-1	50.000	1	50.000	4

DAR 12/08/15 [Iodomethane]: icv -35%

DAR 12/08/15 : For >LR samples consult "by average" for calculating dilution factors

DAR 12/08/15 [Tetrachloroethene]: only calibrated to 75 ppb

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; QUAD=Quadratic regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 Name : 826GOX8
Calnum : 475492027002 Cal Date : 07-DEC-2015 Type : WATER

ICV 475492027018 (hl718 08-DEC-2015) stds: S28588 (5000X), S28123 (10000X)
ICV 475492027019 (hl719 08-DEC-2015) stds: S28588 (5000X), S28489 (10000X), S28592 (10000X), S28593 (10000X)

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
Freon 12	475492027018	20.00	14.63	ug/L	**-27**	20	v- ***
Chloromethane	475492027018	20.00	17.32	ug/L	-13	20	
Vinyl Chloride	475492027018	20.00	17.99	ug/L	-10	20	
Bromomethane	475492027018	20.00	16.66	ug/L	-17	20	
Chloroethane	475492027018	20.00	18.12	ug/L	-9	20	
Trichlorofluoromethane	475492027018	20.00	18.45	ug/L	-8	20	
Acetone	475492027019	25.00	26.50	ug/L	6	20	
Freon 113	475492027019	25.00	22.24	ug/L	-11	20	
1,1-Dichloroethene	475492027019	25.00	25.34	ug/L	1	20	
Methylene Chloride	475492027019	25.00	26.28	ug/L	5	20	
Carbon Disulfide	475492027019	25.00	25.92	ug/L	4	20	
MTBE	475492027019	25.00	24.44	ug/L	-2	20	
trans-1,2-Dichloroethene	475492027019	25.00	24.46	ug/L	-2	20	
Vinyl Acetate	475492027019	25.00	24.18	ug/L	-3	20	
1,1-Dichloroethane	475492027019	25.00	24.32	ug/L	-3	20	
2-Butanone	475492027019	25.00	24.86	ug/L	-1	20	
2,2-Dichloropropane	475492027019	25.00	21.86	ug/L	-13	20	
cis-1,2-Dichloroethene	475492027019	25.00	25.31	ug/L	1	20	
Chloroform	475492027019	25.00	25.88	ug/L	4	20	
Bromochloromethane	475492027019	25.00	25.05	ug/L	0	20	
1,1,1-Trichloroethane	475492027019	25.00	25.27	ug/L	1	20	
1,1-Dichloropropene	475492027019	25.00	21.45	ug/L	-14	20	
Carbon Tetrachloride	475492027019	25.00	25.22	ug/L	1	20	
1,2-Dichloroethane	475492027019	25.00	25.54	ug/L	2	20	
Benzene	475492027019	25.00	24.46	ug/L	-2	20	
Trichloroethene	475492027019	25.00	24.60	ug/L	-2	20	
1,2-Dichloropropane	475492027019	25.00	23.97	ug/L	-4	20	
Bromodichloromethane	475492027019	25.00	24.67	ug/L	-1	20	
Dibromomethane	475492027019	25.00	25.33	ug/L	1	20	
4-Methyl-2-Pentanone	475492027019	25.00	23.54	ug/L	-6	20	
cis-1,3-Dichloropropene	475492027019	25.00	26.48	ug/L	6	20	
Toluene	475492027019	25.00	21.95	ug/L	-12	20	
trans-1,3-Dichloropropene	475492027019	25.00	22.84	ug/L	-9	20	
1,1,2-Trichloroethane	475492027019	25.00	22.51	ug/L	-10	20	
2-Hexanone	475492027019	25.00	23.26	ug/L	-7	20	
1,3-Dichloropropane	475492027019	25.00	23.57	ug/L	-6	20	
Tetrachloroethene	475492027019	25.00	21.49	ug/L	-14	20	
Dibromochloromethane	475492027019	25.00	22.66	ug/L	-9	20	
1,2-Dibromoethane	475492027019	25.00	22.87	ug/L	-9	20	
Chlorobenzene	475492027019	25.00	23.32	ug/L	-7	20	
1,1,1,2-Tetrachloroethane	475492027019	25.00	21.78	ug/L	-13	20	
Ethylbenzene	475492027019	25.00	21.84	ug/L	-13	20	
m,p-Xylenes	475492027019	50.00	46.46	ug/L	-7	20	
o-Xylene	475492027019	25.00	22.61	ug/L	-10	20	
Styrene	475492027019	25.00	23.00	ug/L	-8	20	
Bromoform	475492027019	25.00	23.01	ug/L	-8	20	
Isopropylbenzene	475492027019	25.00	22.03	ug/L	-12	20	

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
1,1,2,2-Tetrachloroethane	475492027019	25.00	23.37	ug/L	-7	20	
1,2,3-Trichloropropane	475492027019	25.00	23.74	ug/L	-5	20	
Propylbenzene	475492027019	25.00	21.78	ug/L	-13	20	
Bromobenzene	475492027019	25.00	23.32	ug/L	-7	20	
1,3,5-Trimethylbenzene	475492027019	25.00	22.63	ug/L	-9	20	
2-Chlorotoluene	475492027019	25.00	22.35	ug/L	-11	20	
4-Chlorotoluene	475492027019	25.00	22.91	ug/L	-8	20	
tert-Butylbenzene	475492027019	25.00	23.33	ug/L	-7	20	
1,2,4-Trimethylbenzene	475492027019	25.00	22.39	ug/L	-10	20	
sec-Butylbenzene	475492027019	25.00	22.47	ug/L	-10	20	
para-Isopropyl Toluene	475492027019	25.00	22.89	ug/L	-8	20	
1,3-Dichlorobenzene	475492027019	25.00	24.13	ug/L	-3	20	
1,4-Dichlorobenzene	475492027019	25.00	24.12	ug/L	-4	20	
n-Butylbenzene	475492027019	25.00	21.24	ug/L	-15	20	
1,2-Dichlorobenzene	475492027019	25.00	24.08	ug/L	-4	20	
1,2-Dibromo-3-Chloropropane	475492027019	25.00	22.49	ug/L	-10	20	
1,2,4-Trichlorobenzene	475492027019	25.00	23.98	ug/L	-4	20	
Hexachlorobutadiene	475492027019	25.00	23.05	ug/L	-8	20	
Naphthalene	475492027019	25.00	22.06	ug/L	-12	20	
1,2,3-Trichlorobenzene	475492027019	25.00	24.38	ug/L	-2	20	

475492027018: Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15
475492027019: Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

-=low bias v=ICV

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 IDF : 1.0
Seqnum : 475507613010.1 File : hli10 Time : 18-DEC-2015 16:49
Cal : 475492027002 Caldate : 07-DEC-2015 Caltype : WATER
Standards: S27004 (20000X), S28693 (20000X), S28355 (20000X), S27081 (20000X), S28588 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	0.7639	0.8019	25.00	26.24	ug/L	5	20	0.1000	v- ***
Chloromethane	0.9065	0.9183	25.00	25.32	ug/L	1	20	0.1000	
Vinyl Chloride	0.7332	0.8402	25.00	28.65	ug/L	15	20	0.1000	
Bromomethane	0.2425	0.3968	25.00	33.64	ug/L	**35**	20	0.1000	c+ ***
Chloroethane	0.5128	0.5458	25.00	26.61	ug/L	6	20	0.1000	
Trichlorofluoromethane	0.8062	0.9158	25.00	28.40	ug/L	14	20	0.1000	
Acetone	0.1459	0.1291	25.00	22.13	ug/L	-11	20	0.1000	
Freon 113	0.4687	0.4734	25.00	25.25	ug/L	1	20	0.1000	
1,1-Dichloroethene	0.4731	0.4469	25.00	23.61	ug/L	-6	20	0.1000	
Methylene Chloride	0.5590	0.5939	25.00	26.56	ug/L	6	20	0.1000	
Carbon Disulfide	1.9348	1.8419	25.00	23.80	ug/L	-5	20	0.1000	
MTBE	1.2418	1.2385	25.00	24.93	ug/L	0	20	0.1000	
trans-1,2-Dichloroethene	0.5315	0.5708	25.00	26.85	ug/L	7	20	0.1000	
Vinyl Acetate	1.1931	1.2317	25.00	25.81	ug/L	3	20	0.0500	
1,1-Dichloroethane	1.0832	1.1941	25.00	27.56	ug/L	10	20	0.2000	
2-Butanone	0.2270	0.2025	25.00	22.31	ug/L	-11	20	0.1000	
2,2-Dichloropropane	0.6550	0.8937	25.00	34.11	ug/L	**36**	20	0.0500	c+ ***
cis-1,2-Dichloroethene	0.6245	0.6821	25.00	27.31	ug/L	9	20	0.1000	
Chloroform	0.9488	1.1191	25.00	29.49	ug/L	18	20	0.2000	
Bromochloromethane	0.3080	0.3440	25.00	27.93	ug/L	12	20	0.0500	
1,1,1-Trichloroethane	0.6727	0.7888	25.00	29.32	ug/L	17	20	0.1000	
1,1-Dichloropropene	0.5039	0.5337	25.00	26.48	ug/L	6	20	0.0500	
Carbon Tetrachloride	0.4007	0.4372	25.00	27.28	ug/L	9	20	0.1000	
1,2-Dichloroethane	0.3965	0.4915	25.00	30.99	ug/L	**24**	20	0.1000	c+ ***
Benzene	1.3796	1.5128	25.00	27.41	ug/L	10	20	0.5000	
Trichloroethene	0.3580	0.3957	25.00	27.63	ug/L	11	20	0.2000	
1,2-Dichloropropane	0.3989	0.4649	25.00	29.14	ug/L	17	20	0.1000	
Bromodichloromethane	0.4497	0.5415	25.00	30.10	ug/L	20	20	0.2000	
Dibromomethane	0.2182	0.2333	25.00	26.74	ug/L	7	20	0.0500	
4-Methyl-2-Pentanone	0.3383	0.3015	25.00	22.28	ug/L	-11	20	0.1000	
cis-1,3-Dichloropropene	0.5379	0.6626	25.00	30.80	ug/L	**23**	20	0.2000	c+ ***
Toluene	0.9895	1.0066	25.00	25.43	ug/L	2	20	0.4000	
trans-1,3-Dichloropropene	0.5094	0.5751	25.00	28.22	ug/L	13	20	0.1000	
1,1,2-Trichloroethane	0.1861	0.1729	25.00	23.22	ug/L	-7	20	0.1000	
2-Hexanone	0.2709	0.2304	25.00	21.27	ug/L	-15	20	0.1000	
1,3-Dichloropropane	0.5639	0.5816	25.00	25.78	ug/L	3	20	0.0500	
Tetrachloroethene	0.4276	0.4279	25.00	25.02	ug/L	0	20	0.2000	
Dibromochloromethane	0.4380	0.4431	25.00	25.29	ug/L	1	20	0.1000	
1,2-Dibromoethane	0.3634	0.3453	25.00	23.76	ug/L	-5	20	0.1000	
Chlorobenzene	1.0956	1.1196	25.00	25.55	ug/L	2	20	0.5000	
1,1,1,2-Tetrachloroethane	0.4245	0.4569	25.00	26.91	ug/L	8	20	0.0500	
Ethylbenzene	1.8263	1.9105	25.00	26.15	ug/L	5	20	0.1000	
m,p-Xylenes	0.7337	0.7026	50.00	51.88	ug/L	4	20	0.1000	
o-Xylene	0.6940	0.7553	25.00	27.21	ug/L	9	20	0.3000	
Styrene	1.1683	1.2837	25.00	27.47	ug/L	10	20	0.3000	
Bromoform	0.2702	0.2541	25.00	23.51	ug/L	-6	20	0.1000	
Isopropylbenzene	3.3475	3.4343	25.00	25.65	ug/L	3	20	0.1000	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
1,1,2,2-Tetrachloroethane	0.8165	0.6913	25.00	21.16	ug/L	-15	20	0.3000	
1,2,3-Trichloropropane	0.1971	0.1735	25.00	22.00	ug/L	-12	20	0.0500	
Propylbenzene	4.1189	4.2395	25.00	25.73	ug/L	3	20	0.0500	
Bromobenzene	0.9357	1.0012	25.00	26.75	ug/L	7	20	0.0500	
1,3,5-Trimethylbenzene	2.7813	2.8008	25.00	25.18	ug/L	1	20	0.0500	
2-Chlorotoluene	2.6228	2.7988	25.00	26.68	ug/L	7	20	0.0500	
4-Chlorotoluene	2.3693	2.5013	25.00	26.39	ug/L	6	20	0.0500	
tert-Butylbenzene	2.4053	2.5145	25.00	26.13	ug/L	5	20	0.0500	
1,2,4-Trimethylbenzene	2.7239	2.9312	25.00	26.90	ug/L	8	20	0.0500	
sec-Butylbenzene	3.7428	3.7399	25.00	24.98	ug/L	0	20	0.0500	
para-Isopropyl Toluene	2.7904	3.0751	25.00	27.55	ug/L	10	20	0.0500	
1,3-Dichlorobenzene	1.6009	1.8380	25.00	28.70	ug/L	15	20	0.6000	
1,4-Dichlorobenzene	1.6034	1.7597	25.00	27.44	ug/L	10	20	0.5000	
n-Butylbenzene	2.4251	2.7842	25.00	28.70	ug/L	15	20	0.0500	
1,2-Dichlorobenzene	1.5776	1.6976	25.00	26.90	ug/L	8	20	0.4000	
1,2-Dibromo-3-Chloropropane	0.1147	0.1000	25.00	21.80	ug/L	-13	20	0.0500	
1,2,4-Trichlorobenzene	0.8402	0.9544	25.00	28.40	ug/L	14	20	0.2000	
Hexachlorobutadiene	0.4231	0.4775	25.00	28.22	ug/L	13	20	0.0500	
Naphthalene	1.7343	1.6790	25.00	24.20	ug/L	-3	20	0.0500	
1,2,3-Trichlorobenzene	0.7981	0.8497	25.00	26.62	ug/L	6	20	0.0500	
Dibromofluoromethane	0.5329	0.5276	50.00	49.51	ug/L	-1	20	0.0500	
1,2-Dichloroethane-d4	0.2854	0.3106	50.00	54.41	ug/L	9	20	0.0500	
Toluene-d8	1.2315	1.1819	50.00	47.99	ug/L	-4	20	0.0500	
Bromofluorobenzene	0.9333	0.9044	50.00	48.45	ug/L	-3	20	0.0500	

ISTD (ICAL hl715)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	462693	360943	-21.99	10.04	10.05	0.01
1,4-Difluorobenzene	638581	563472	-11.76	11.24	11.25	0.01
Chlorobenzene-d5	497147	529083	6.42	15.73	15.74	0.01
1,4-Dichlorobenzene-d4	270725	279401	3.20	18.59	18.59	0.00

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/23/15

+=high bias -=low bias c=CCV v=ICV

CURTIS & TOMPKINS INTERNAL STANDARD SUMMARY FOR SEQUENCE 475507613

Date : 12/18/15 Reference : hl715
Sequence : MSVOA08 hli Analyzed : 12/08/15 00:45

#	Type	Sample ID	PFLBZ	RT	14DFB	RT	CLBZD5	RT	DCBZ14D4	RT
		ICAL STD	462693	10.04	638581	11.24	497147	15.73	270725	18.59
		LOWER LIMIT	231347	9.54	319291	10.74	248574	15.23	135363	18.09
		UPPER LIMIT	925386	10.54	1277162	11.74	994294	16.23	541450	19.09
001	IB		421771	10.03	699058	11.23	612278	15.74	348987	18.59
004	CCV		419217	10.05	715542	11.25	626668	15.75	331904	18.59
005	CCV		427445	10.04	712929	11.24	638210	15.75	345624	18.59
006	CCV		310209	10.04	430624	11.24	342990	15.74	172921	18.59
010	CCV		360943	10.05	563472	11.25	529083	15.74	279401	18.59
011	BS	QC817288	428006	10.05	677747	11.25	624397	15.74	315538	18.60
012	BSD	QC817289	350985	10.05	536705	11.25	447085	15.74	239977	18.60
013	IB		414841	10.06	645350	11.26	568470	15.75	306994	18.60
014	BLANK	QC817290	425258	10.06	640942	11.26	550616	15.75	300493	18.60
015	SAMPLE	272547-002	451918	10.06	702719	11.26	600178	15.75	326125	18.61
016	SAMPLE	272266-003	466618	10.05	743619	11.25	614889	15.76	350767	18.60
017	SAMPLE	272485-001	447264	10.06	671953	11.25	637871	15.76	338109	18.60
018	SAMPLE	272306-004	470944	10.06	731687	11.26	652590	15.75	351555	18.60
019	SAMPLE	272486-001	463330	10.06	720223	11.26	649974	15.75	355276	18.61
020	SAMPLE	272391-001	468496	10.06	728941	11.26	644338	15.75	362713	18.60
021	SAMPLE	272391-006	460938	10.06	719031	11.26	643394	15.75	360336	18.61
022	SAMPLE	272347-004	497403	10.05	755109	11.25	676140	15.76	371407	18.60
023	MSS	272485-002	482143	10.06	764842	11.26	672875	15.75	366730	18.61
024	SAMPLE	272485-003	474636	10.05	716867	11.25	641034	15.76	361951	18.60
025	SAMPLE	272485-004	461291	10.06	704452	11.26	641419	15.75	345224	18.61
026	SAMPLE	272485-005	474769	10.05	726913	11.25	634868	15.76	361726	18.61
027	SAMPLE	272306-008	483973	10.06	749023	11.26	658325	15.75	349357	18.60
028	MS	QC817299	457273	10.06	695986	11.25	621280	15.76	343407	18.61
029	MSD	QC817300	428959	10.06	717298	11.26	631694	15.75	332254	18.61
030	IB		416663	10.06	598089	11.26	500241	15.75	265458	18.60
031	IB		477110	10.05	702507	11.25	592224	15.76	306676	18.60
032	LOD	218417-029	450615	10.05	742086	11.25	640043	15.75	342340	18.60

CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 475492027

Instrument : MSVOA08 Begun : 12/07/15 16:27
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	hl701	TUN	BFB			12/07/15 16:27	1.0	1	
002	hl702	TUN	BFB			12/07/15 16:42	1.0	1	
003	hl703	TUN	BFB			12/07/15 18:12	1.0	1	t
004	hl704	TUN	BFB			12/07/15 18:27	1.0	1	
005	hl705	X	IB			12/07/15 19:03	1.0	2	
006	hl706	X	IB			12/07/15 19:37	1.0	2	
007	hl707	X	IB			12/07/15 20:11	1.0	2	
008	hl708	IB	CALIB			12/07/15 20:46	1.0	2	
009	hl709	ICAL	.25PPB			12/07/15 21:20	1.0	3 4 5 6 2	
010	hl710	ICAL	.5PPB			12/07/15 21:54	1.0	2 3 4 5 6	
011	hl711	ICAL	2PPB			12/07/15 22:28	1.0	3 4 5 6 2	
012	hl712	ICAL	5PPB			12/07/15 23:03	1.0	2 3 4 5 6	
013	hl713	ICAL	10PPB			12/07/15 23:37	1.0	2 3 4 5 6	
014	hl714	ICAL	20PPB			12/08/15 00:11	1.0	2 3 4 5 6	
015	hl715	ICAL	50PPB			12/08/15 00:45	1.0	2 3 4 5 6	
016	hl716	ICAL	75PPB			12/08/15 01:20	1.0	2 3 4 5 6	
017	hl717	ICAL	100PPB			12/08/15 01:54	1.0	2 3 4 5 6	
018	hl718	ICV	GAS			12/08/15 02:28	1.0	2 7	
019	hl719	ICV	MIX			12/08/15 03:02	1.0	2 8 9 10	
020	hl720	X	IB			12/08/15 03:36	1.0	2	

DAR 12/08/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 20.

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

Standards used: 1=S27825 2=S28588 3=S27004 4=S28295 5=S28355 6=S27081 7=S28123 8=S28489 9=S28592 10=S28593

Flags used: t=tune failure

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CURTIS & TOMPKINS SEQUENCE SUMMARY FOR 475507613

Instrument : MSVOA08 Begun : 12/18/15 12:13
Method : EPA 8260C SOP Version : TVH_8260B_rv1

#	File	Type	Sample ID	Matrix	Batch	Analyzed	IDF	Stds Used	
001	hli01	IB				12/18/15 12:13	1.0	1	?t
002	hli02	TUN	BFB			12/18/15 12:44	1.0	2	t
003	hli03	TUN	BFB			12/18/15 12:54	1.0	2	
004	hli04	CCV				12/18/15 13:21	1.0	3 4 5 6 1	cc+
005	hli05	CCV		Water		12/18/15 13:55	1.0	7 8 9 10 1	cc+
006	hli06	CCV		Water		12/18/15 14:28	1.0	7 8 9 10 1	cc+
007	hli07	TUN	BFB			12/18/15 15:28	1.0	2	t
008	hli08	TUN	BFB			12/18/15 15:48	1.0	2	t
009	hli09	TUN	BFB			12/18/15 16:20	1.0	2	
010	hli10	CCV				12/18/15 16:49	1.0	3 4 5 6 1	
011	hli11	BS	QC817288	Water	230541	12/18/15 17:22	1.0	7 8 9 10 1	
012	hli12	BSD	QC817289	Water	230541	12/18/15 17:56	1.0	7 8 9 10 1	
013	hli13	IB				12/18/15 18:29	1.0	1	
014	hli14	BLANK	QC817290	Water	230541	12/18/15 19:04	1.0	1	
015	hli15	SAMPLE	272547-002	Water	230541	12/18/15 19:36	1.0	1	
016	hli16	SAMPLE	272266-003	Water	230541	12/18/15 20:11	62.50	1	foamer, headspace > 1 mL, pH > 2
017	hli17	SAMPLE	272485-001	Water	230541	12/18/15 20:45	1.0	1	
018	hli18	SAMPLE	272306-004	Water	230541	12/18/15 21:20	1.0	1	
019	hli19	SAMPLE	272486-001	Water	230541	12/18/15 21:54	1.0	1	
020	hli20	SAMPLE	272391-001	Water	230541	12/18/15 22:28	1.0	1	high NT
021	hli21	SAMPLE	272391-006	Water	230541	12/18/15 23:03	1.0	1	high NT
022	hli22	SAMPLE	272347-004	Water	230541	12/18/15 23:37	5.0	1	headspace > 1 mL
023	hli23	MSS	272485-002	Water	230541	12/19/15 00:11	7.143	1	foamer
024	hli24	SAMPLE	272485-003	Water	230541	12/19/15 00:46	2.0	1	foamer
025	hli25	SAMPLE	272485-004	Water	230541	12/19/15 01:20	5.0	1	foamer
026	hli26	SAMPLE	272485-005	Water	230541	12/19/15 01:54	7.143	1	foamer
027	hli27	SAMPLE	272306-008	Water	230541	12/19/15 02:29	7143	1	
028	hli28	MS	QC817299	Water	230541	12/19/15 03:03	7.143	7 8 9 10 1	
029	hli29	MSD	QC817300	Water	230541	12/19/15 03:37	7.143	7 8 9 10 1	foamer
030	hli30	IB				12/19/15 04:12	1.0	1	
031	hli31	IB				12/19/15 04:46	1.0	1	<<t
032	hli32	LOD	218417-029	Water	230541	12/19/15 05:20	1.0	3 1	<<t

DAR 12/18/15 : adjusted tune after file 6 and 8

DAR 12/21/15 : I verified that the vials loaded on the instrument matched the sequence data entry, for runs 1 through 32.

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/21/15

Standards used: 1=S28588 2=S27825 3=S27004 4=S28693 5=S28355 6=S27081 7=S28489 8=S28592 9=S28593 10=S28123

Flags used: +=high bias <<t=out of clock ?t=missing tune cc=CCV CCC failure t=tune failure

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MSVOA WATER Prepsheet

Dilutions prepared & pH of dilutions checked (initials/date): MJ 12/18

For Undiluted samples, pH checked (initials/date): NJ 12/19/15

Batch #: 230541

Prep Date: 12/18

Instrument: 8

	Sample ID	Vial	pH <2	pH if >2	HS?	Dil'n flask ID	RR #	DF	Comments	20% ccv?	hold	due	$Rush
1	272266-3	B		7	1.7ml	5	2	625	FOAM 1.7ml HS double prep				
2	272347-4	F	✓		18		4	5x	in von frise				
3	272547-2	A	✓					1x	+B				
4	272485-1	B	✓					1x					
5	2	B	✓			3		7x	foam				
6	2	C	✓			1A		↓	↓ QL-017249				
7	2	C	✓			1A		✓	✓ 300				
8	3	B	✓			6		2x	foam				
9	4	B	✓			7		5x	✓				
10	272486-1	B	✓					1x					
11	272485-5	C	✓			11	1	7x	foam				
12	272341-1	F	✓				1	1x					
13	6	D	✓				1	1x					
14	272306-8	D	✓			12	1	7000x					
15	4	D	✓				1	1x					
16													
17													
18													
19													
20													
21													
22													

Dilutions for 272486 MSVOA Water
Curtis & Tompkins Laboratories

Type	Sample ID	IDFs
MS	QC817299	7.143X
MSD	QC817300	7.143X

Sample Raw Data

CURTIS & TOMPKINS SAMPLE USER REPORT FOR EPA 8260C

Inst	: MSVOA08	Lab ID	: 272486-001	Client ID	: D1C85W04-121615
Seqnum	: 475507613019	Matrix	: Water	Acct	: JMW (TLB)
File	: hli19	Batch	: 230541	Time	: 18-DEC-2015 21:54
Cal	: 475492027002	Caldate	: 07-DEC-2015	Caltype	: WATER
IDF	: 1.0	Raw Units	: ug/L	Units	: ug/L

Analyte	Raw	Result	RTS	RL	Blank	Flags
Freon 12	0	ND		1.0		u v-
Chloromethane	0.03030	ND		1.0		u
Vinyl Chloride	0.6975	0.7		0.5		u
Bromomethane	0	ND		1.0		c+ u
Chloroethane	0	ND		1.0		u
Trichlorofluoromethane	0	ND		1.0		u
Acetone	0.9935	ND		10		u
Freon 113	0	ND		2.0		u
1,1-Dichloroethene	0	ND		0.5		u
Methylene Chloride	0	ND		10		u
Carbon Disulfide	0.08880	ND		0.5		u
MTBE	0	ND		0.5		u
trans-1,2-Dichloroethene	0.1154	ND		0.5		u
Vinyl Acetate	0	ND		10		u
1,1-Dichloroethane	0	ND		0.5		u
2-Butanone	0	ND		10		u
cis-1,2-Dichloroethene	0.3668	0.4 J		0.5		u
2,2-Dichloropropane	0	ND		0.5		c+ u
Chloroform	0	ND		0.5		u
Bromochloromethane	0	ND		0.5		u
1,1,1-Trichloroethane	0	ND		0.5		u
1,1-Dichloropropene	4.764	4.8	-0.264	0.5		u x
Carbon Tetrachloride	6.816	6.8	-0.215	0.5		u x
1,2-Dichloroethane	3.356	3.4	0.474	0.5		c+ u x
Benzene	0	ND		0.5		u
Trichloroethene	3.563	3.6	-0.392	0.5		u x
1,2-Dichloropropane	0	ND		0.5		u
Bromodichloromethane	0	ND		0.5		u
Dibromomethane	0	ND		0.5		u
4-Methyl-2-Pentanone	0.9729	1.0 J	0.189	10		u x
cis-1,3-Dichloropropene	0	ND		0.5		c+ u
Toluene	0	ND		0.5		u
trans-1,3-Dichloropropene	0	ND		0.5		u
1,1,2-Trichloroethane	0	ND		0.5		u
2-Hexanone	0	ND		10		u
1,3-Dichloropropane	0	ND		0.5		u
Tetrachloroethene	0	ND		0.5		u
Dibromochloromethane	0	ND		0.5		u
1,2-Dibromoethane	0	ND		0.5		u
Chlorobenzene	0	ND		0.5		u
1,1,1,2-Tetrachloroethane	0	ND		0.5		u
Ethylbenzene	0.04890	ND		0.5		u
m,p-Xylenes	0	ND		0.5		u
o-Xylene	0	ND		0.5		u
Styrene	0	ND		0.5		u
Bromoform	0	ND		1.0		u
Isopropylbenzene	0	ND		0.5		u
1,1,2,2-Tetrachloroethane	0	ND		0.5		u
1,2,3-Trichloropropane	0	ND		0.5		u

Analyte	Raw	Result	RTS	RL	Blank	Flags
Propylbenzene	0.03970	ND		0.5		u
Bromobenzene	0	ND		0.5		u
1,3,5-Trimethylbenzene	0	ND		0.5		u
2-Chlorotoluene	0.06230	ND		0.5		u
4-Chlorotoluene	0	ND		0.5		u
tert-Butylbenzene	0	ND		0.5		u
1,2,4-Trimethylbenzene	0	ND		0.5		u
sec-Butylbenzene	0	ND		0.5		u
para-Isopropyl Toluene	0	ND		0.5		u
1,3-Dichlorobenzene	0.08960	ND		0.5		u
1,4-Dichlorobenzene	0.08950	ND		0.5		u
n-Butylbenzene	0.05140	ND		0.5		u
1,2-Dichlorobenzene	0.09090	ND		0.5		u
1,2-Dibromo-3-Chloropropane	0	ND		2.0		u
1,2,4-Trichlorobenzene	0	ND		0.5		u
Hexachlorobutadiene	0	ND		2.0		u
Naphthalene	0.1622	0.2 J		2.0		l u x
1,2,3-Trichlorobenzene	0	ND		0.5		u

Surrogate	Raw	Spiked	Result	%Rec	Limits	Flags
Dibromofluoromethane	49.97	50.00	49.97	100	85-115	u
1,2-Dichloroethane-d4	54.18	50.00	54.18	108	70-120	u
Toluene-d8	46.04	50.00	46.04	92	85-120	u
Bromofluorobenzene	49.05	50.00	49.05	98	75-120	u

ISTD (ICAL hl715)	ICAL Area	SAMPLE Area	%Drift	ICAL RT	SAMPLE RT	Drift
Pentafluorobenzene	462693	463330	0.14	10.04	10.06	0.02
1,4-Difluorobenzene	638581	720223	12.78	11.24	11.26	0.02
Chlorobenzene-d5	497147	649974	30.74	15.73	15.75	0.02
1,4-Dichlorobenzene-d4	270725	355276	31.23	18.59	18.61	0.02

DAR 12/21/15 [Naphthalene]: No secondary ion(s) present; spectrum does not confirm.

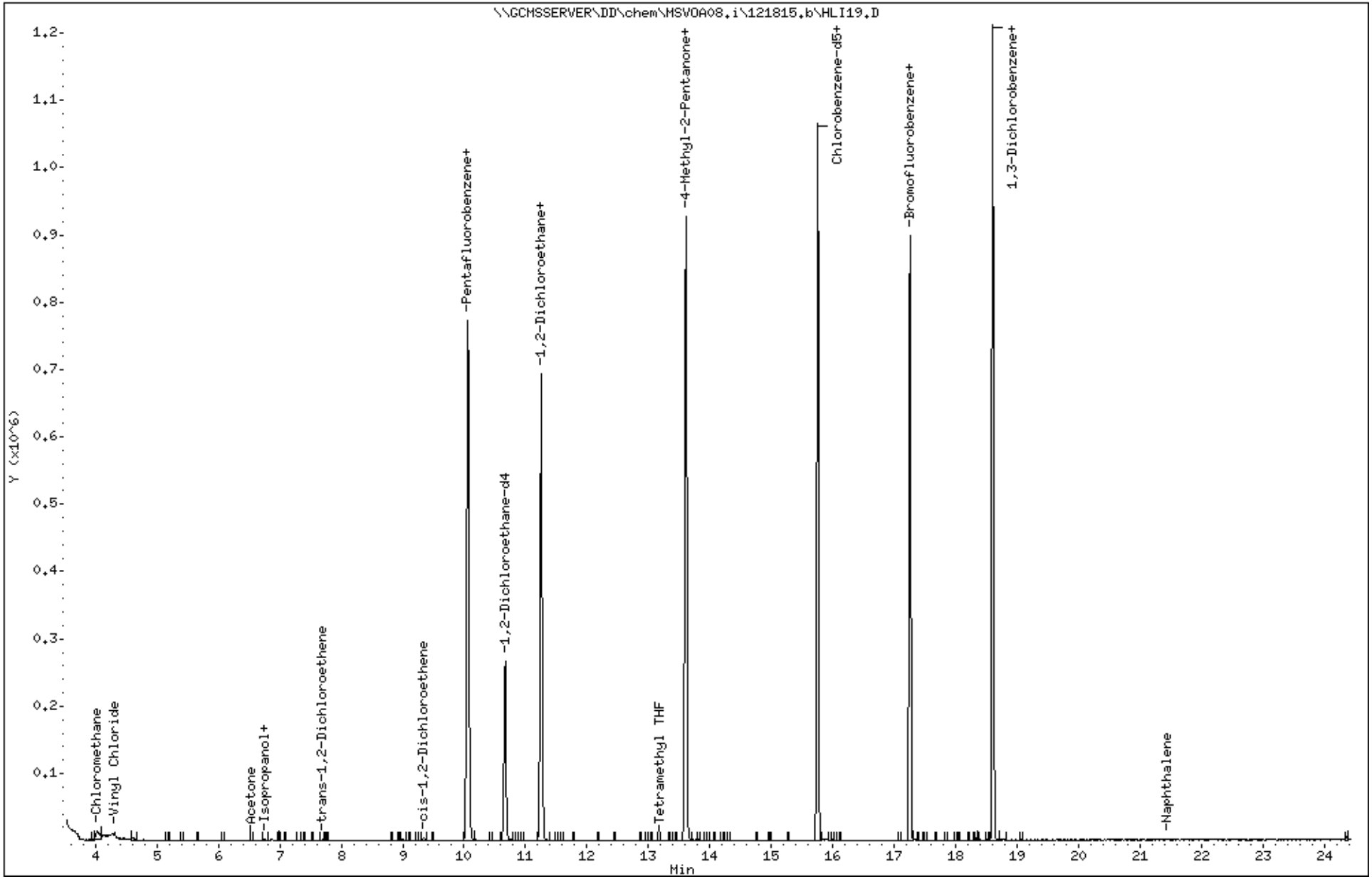
LW 12/29/15 [Vinyl Chloride]: SO2 interference with secondary ion

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/29/15

+=high bias -=low bias c=CCV l=false positive flag altered u=use v=ICV x=false positive

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D
Date : 18-DEC-2015 21:54
Client ID: DYNA P&T
Sample Info: S,272391-001
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D
Report Date: 18-Dec-2015 22:32

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 18-DEC-2015 21:54 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : S,272391-001
Misc Info : 230541,1/1
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\826GOX8.m
Meth Date : 08-Dec-2015 14:20 Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 24
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
2 Chloromethane	50	4.137	4.103	(0.411)	254	0.03034	0.0303(a)
3 Vinyl Chloride	62	4.314	4.310	(0.429)	4739	0.69754	0.6975
10 Acetone	43	6.626	6.598	(0.659)	1343	0.99353	0.9935
11 Isopropanol	45	6.763	6.726	(0.672)	1677	6.25009	6.2500
13 Carbon Disulfide	76	6.872	6.854	(0.683)	1591	0.08878	0.0887(a)
17 trans-1,2-Dichloroethene	96	7.688	7.673	(0.764)	568	0.11537	0.1153(a)
25 cis-1,2-Dichloroethene	96	9.350	9.330	(0.930)	2122	0.36683	0.3668(a)
* 29 Pentafluorobenzene	168	10.059	10.040	(1.000)	463330	50.0000	
30 Dibromofluoromethane	113	10.068	10.050	(1.001)	246748	49.9694	49.9693
32 Carbon Tetrachloride	117	10.059	10.267	(0.893)	39346	6.81645	6.8164
33 1,1-Dichloropropene	75	10.049	10.306	(0.893)	34581	4.76399	4.7639
34 1,2-Dichloroethane-d4	65	10.668	10.651	(0.948)	222754	54.1793	54.1793
37 1,2-Dichloroethane	62	11.249	10.770	(0.999)	19166	3.35579	3.3557
* 38 1,4-Difluorobenzene	114	11.258	11.233	(1.000)	720223	50.0000	
39 Trichloroethene	95	11.258	11.648	(1.000)	18371	3.56256	3.5625
45 Tetramethyl THF	43	13.186	13.166	(1.171)	1022	0.08208	0.0820(a)

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D
Report Date: 18-Dec-2015 22:32

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
47 4-Methyl-2-Pentanone	43	13.609	13.413	(1.209)	4741	0.97287	0.9728
48 Toluene-d8	98	13.609	13.591	(0.864)	737108	46.0419	46.0419
* 58 Chlorobenzene-d5	117	15.753	15.741	(1.000)	649974	50.0000	
60 Ethylbenzene	91	15.753	15.839	(1.000)	1160	0.04890	0.0488(a)
67 Bromofluorobenzene	95	17.258	17.240	(0.928)	325258	49.0460	49.0459
70 Propylbenzene	91	17.258	17.457	(0.928)	1160	0.03967	0.0396(a)
72 2-Chlorotoluene	91	17.258	17.634	(0.928)	1160	0.06229	0.0622(a)
79 1,3-Dichlorobenzene	146	18.635	18.512	(1.002)	1019	0.08961	0.0896(a)
* 80 1,4-Dichlorobenzene-d4	152	18.606	18.591	(1.000)	355276	50.0000	
81 1,4-Dichlorobenzene	146	18.635	18.621	(1.002)	1019	0.08946	0.0894(a)
82 n-Butylbenzene	91	18.606	18.897	(1.000)	885	0.05141	0.0514(a)
83 1,2-Dichlorobenzene	146	18.635	19.065	(1.002)	1019	0.09093	0.0909(a)
87 Naphthalene	128	21.458	21.432	(1.153)	1998	0.16220	0.1621(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

[Vinyl Chloride; 0.7; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

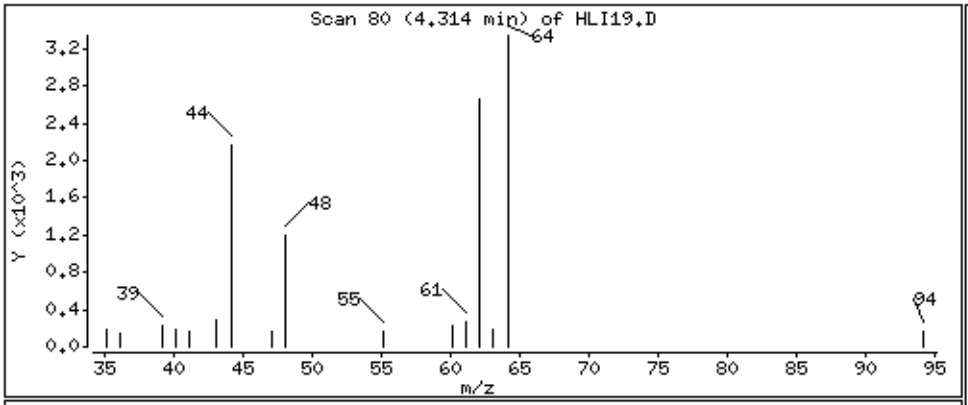
Client ID: DYNA P&T | Instrument: MSVOA08.i

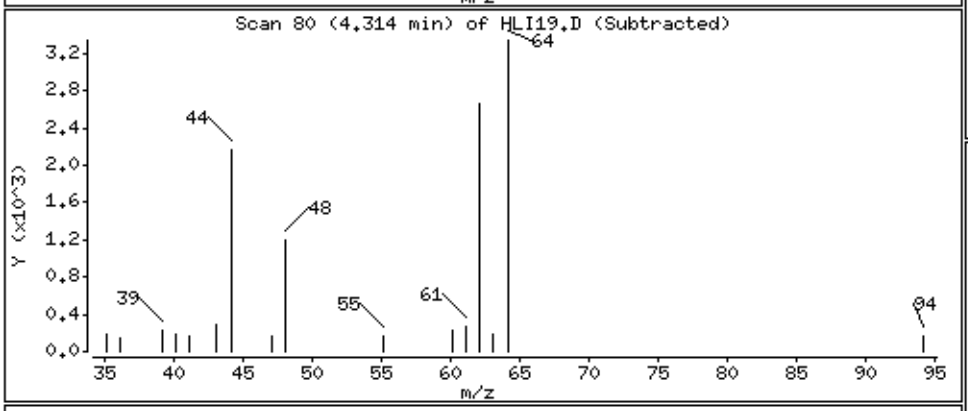
Sample Info: S,272391-001

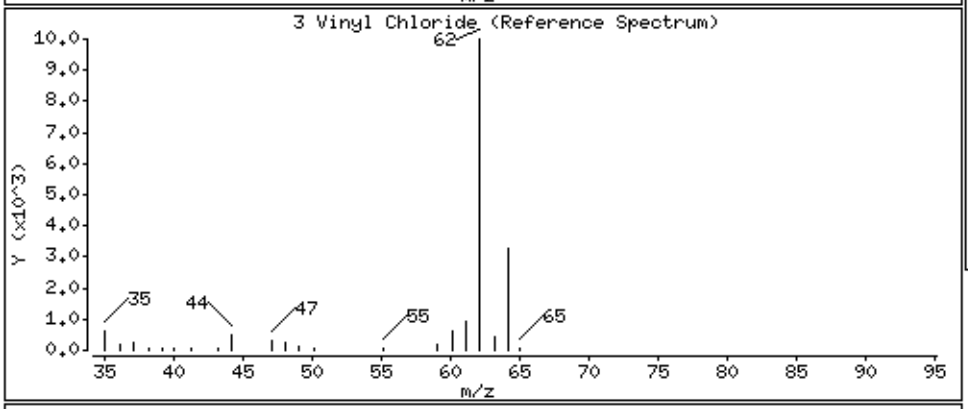
Purge Volume: 5.0 | Operator: VOC

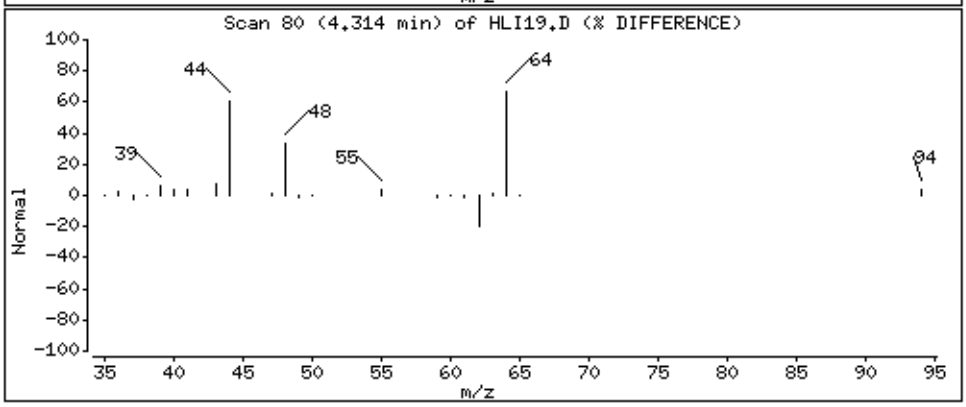
Column phase: RTX 624 | Column diameter: 0.25

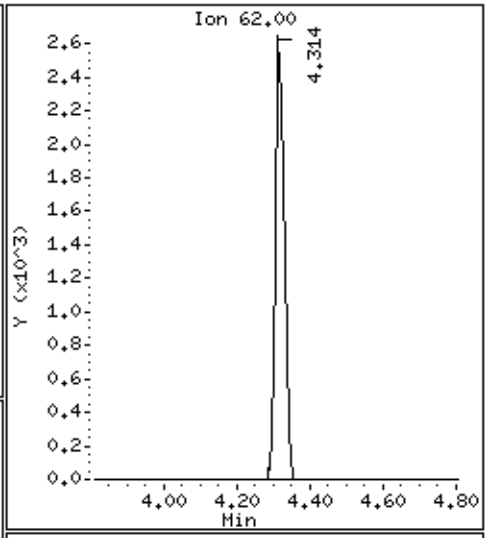
3 Vinyl Chloride | Concentration: 0.6975 UG/L

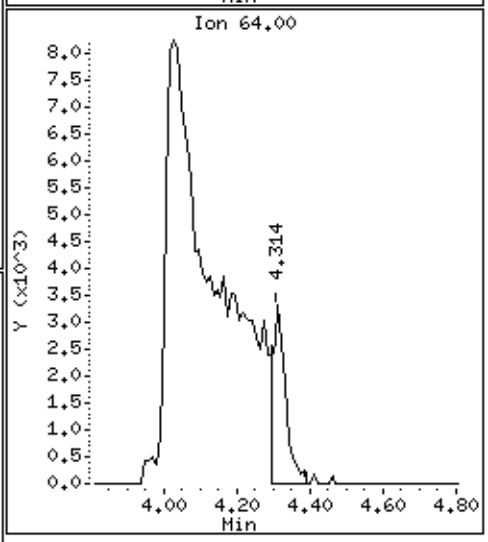












[cis-1,2-Dichloroethene; 0.4 J; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

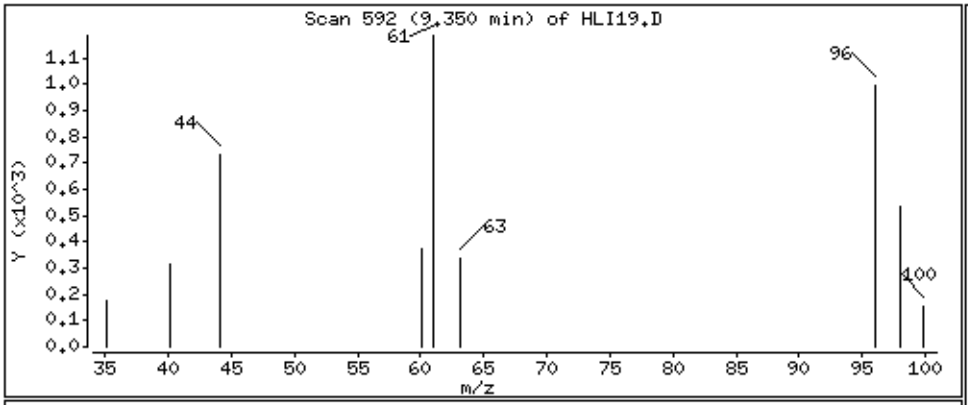
Client ID: DYNA P&T | Instrument: MSVOA08.i

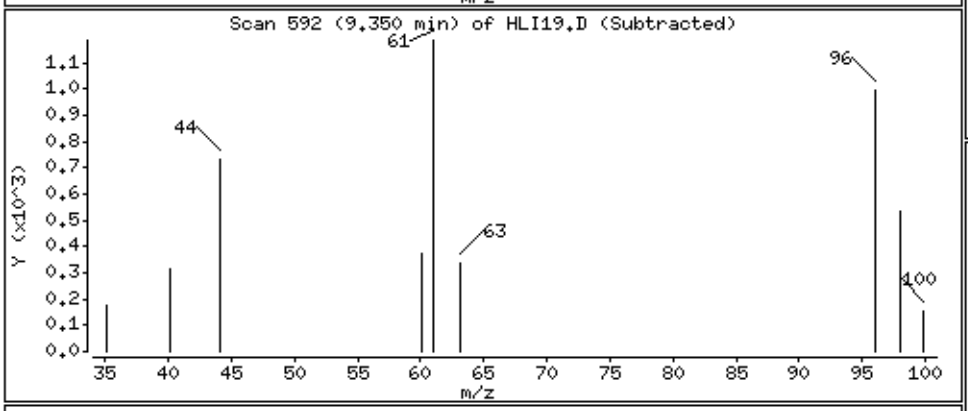
Sample Info: S,272391-001

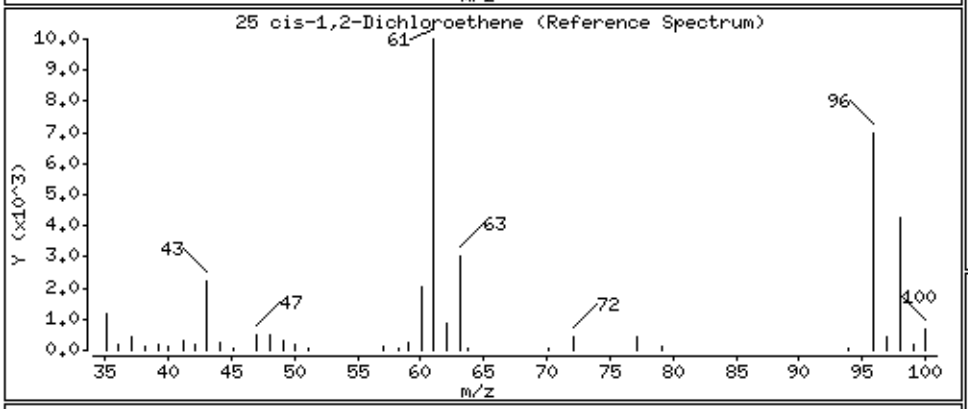
Purge Volume: 5.0 | Operator: VOC

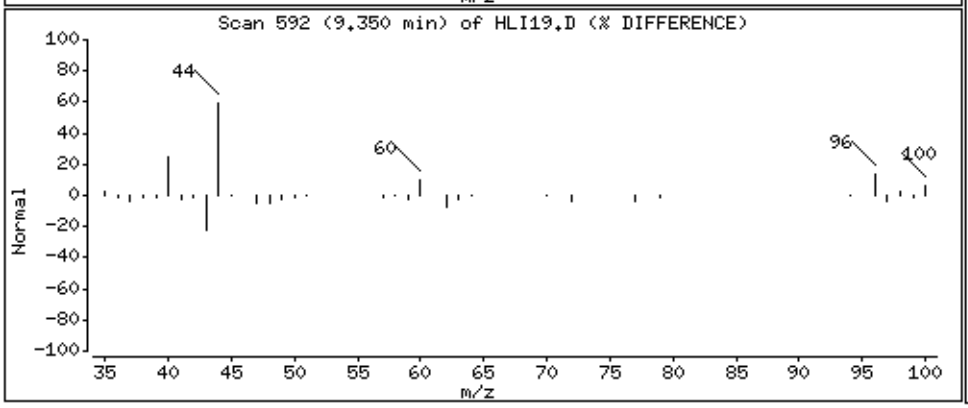
Column phase: RTX 624 | Column diameter: 0.25

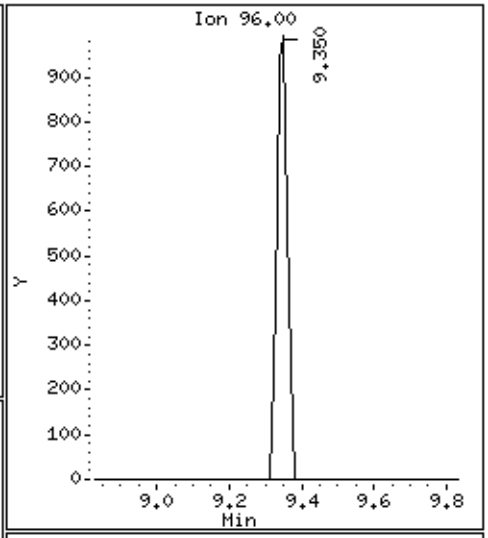
25 cis-1,2-Dichloroethene | Concentration: 0.3668 UG/L

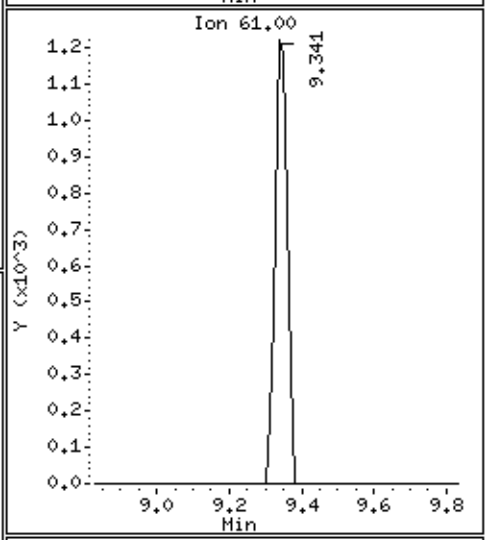


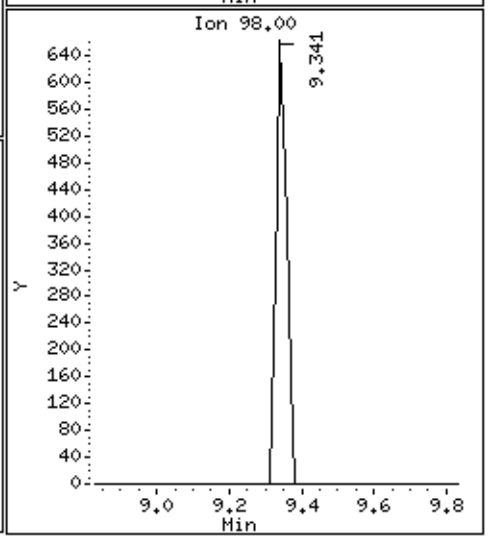












[Carbon Tetrachloride; 6.8; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

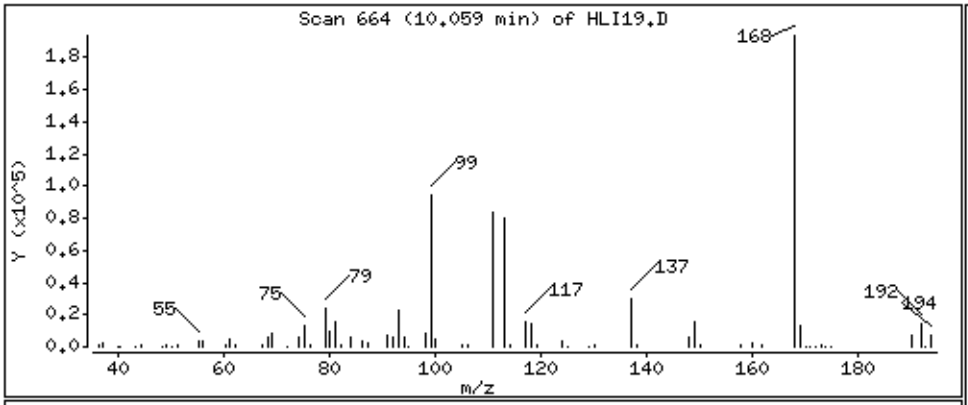
Client ID: DYNA P&T | Instrument: MSVOA08.i

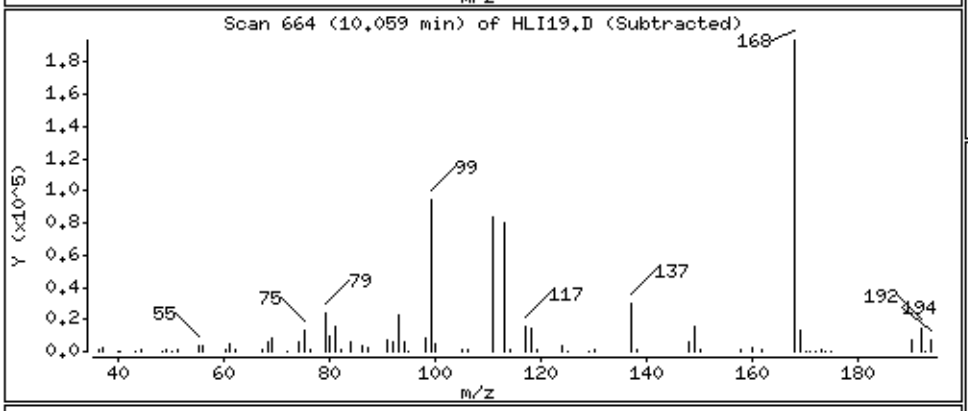
Sample Info: S,272391-001

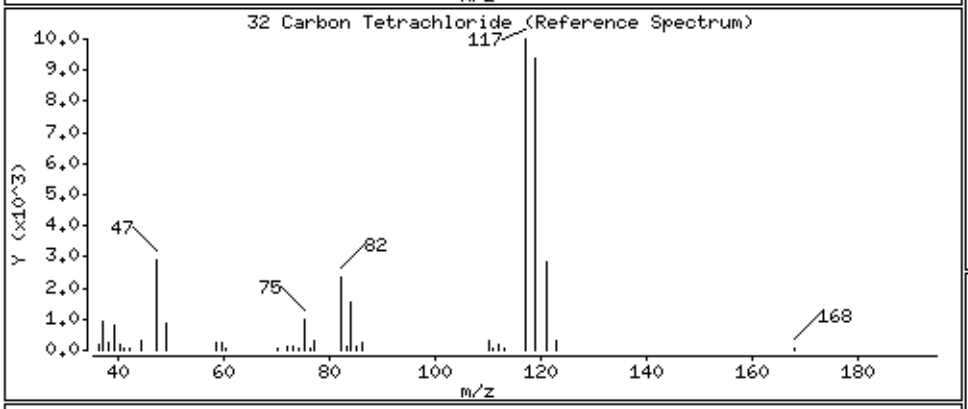
Purge Volume: 5.0 | Operator: VOC

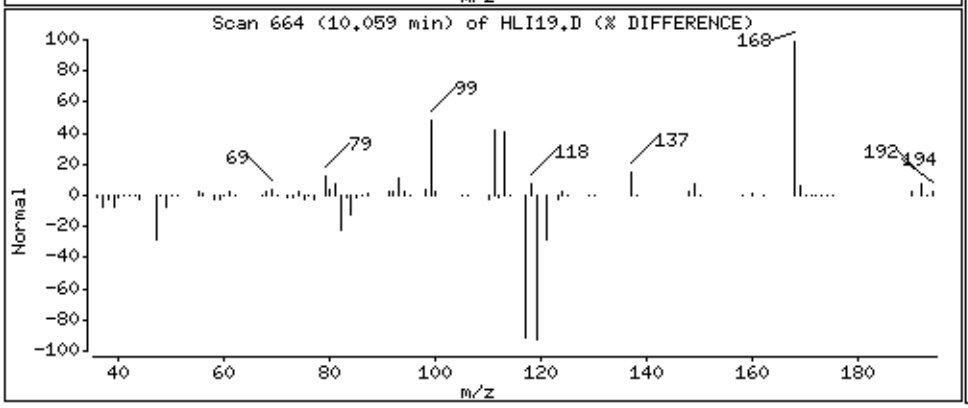
Column phase: RTX 624 | Column diameter: 0.25

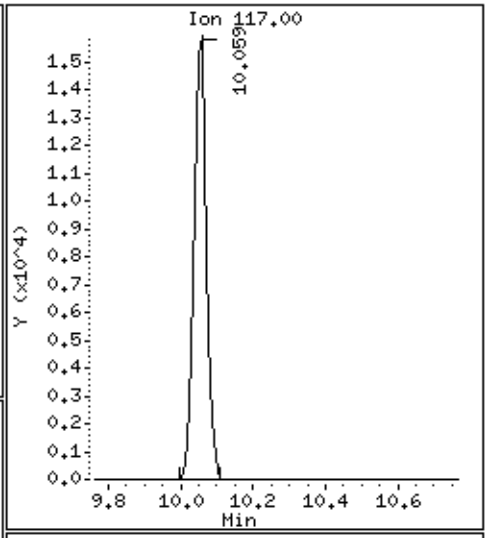
32 Carbon Tetrachloride | Concentration: 6.8164 UG/L

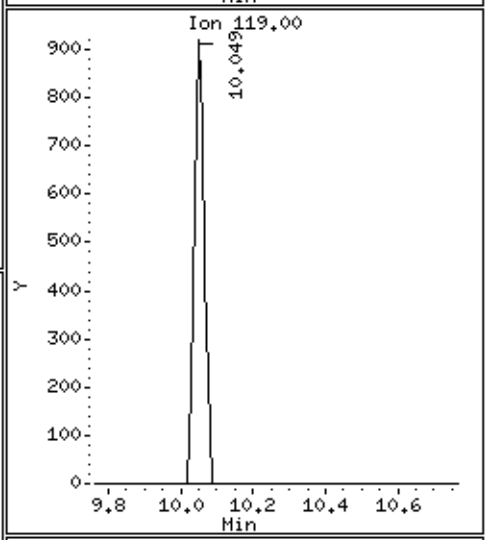


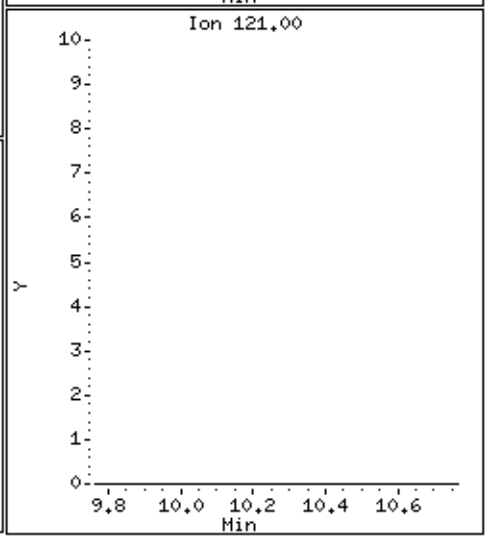












[1,1-Dichloropropene; 4.8; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

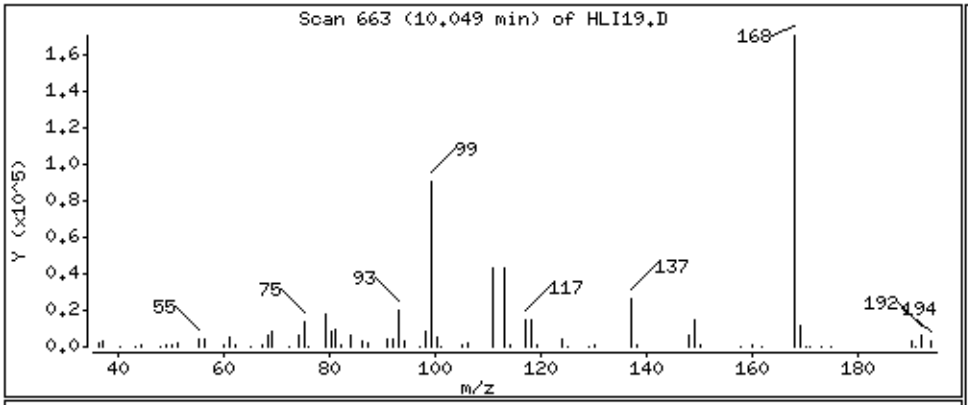
Client ID: DYNA P&T | Instrument: MSVOA08.i

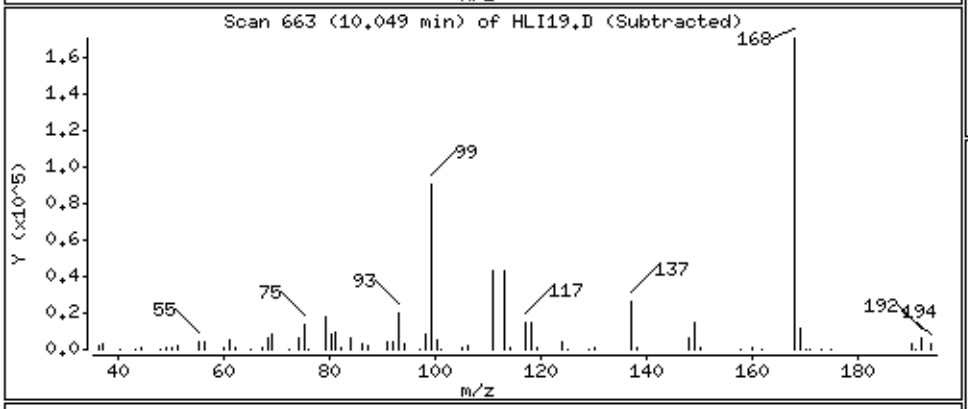
Sample Info: S,272391-001

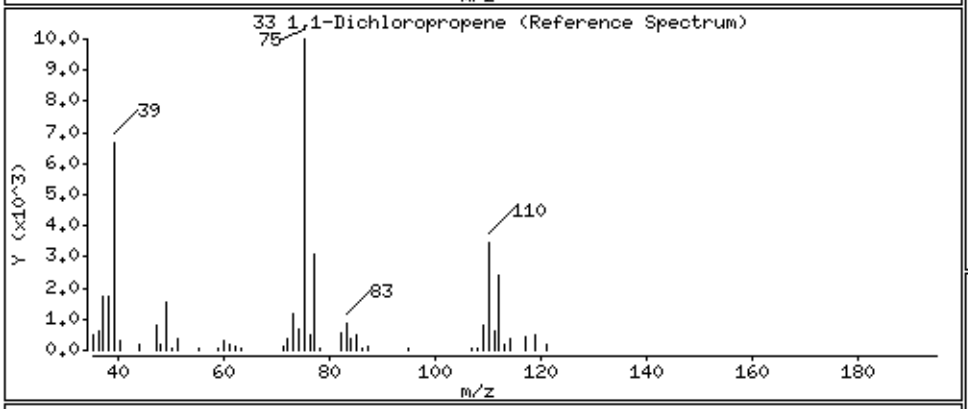
Purge Volume: 5.0 | Operator: VOC

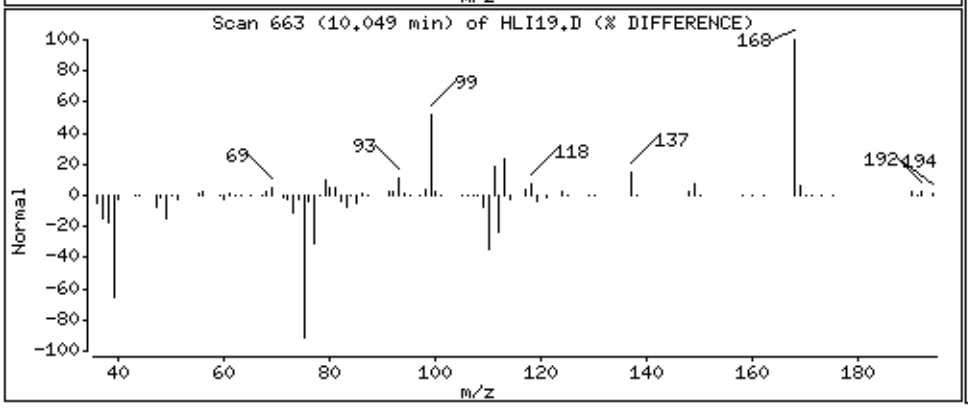
Column phase: RTX 624 | Column diameter: 0.25

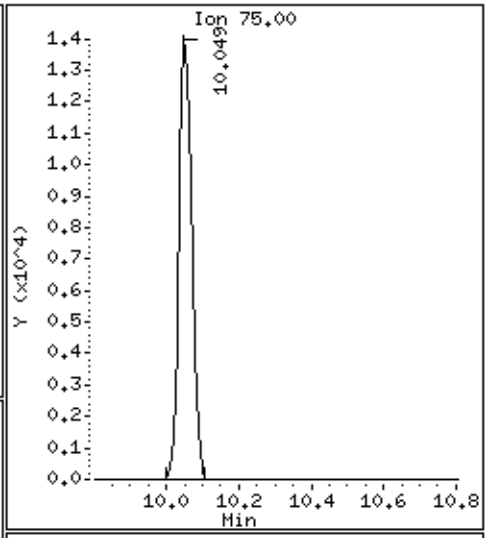
33 1,1-Dichloropropene | Concentration: 4.7639 UG/L

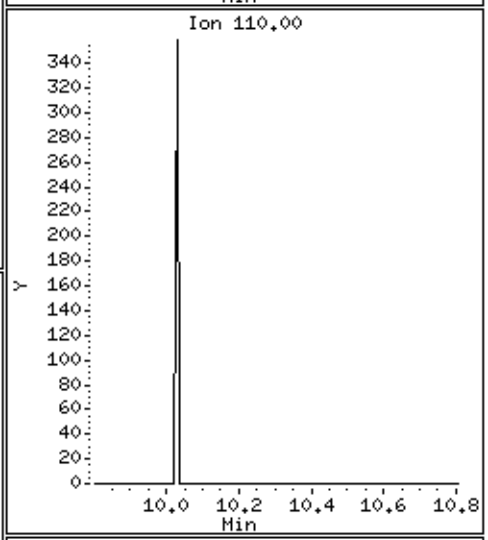


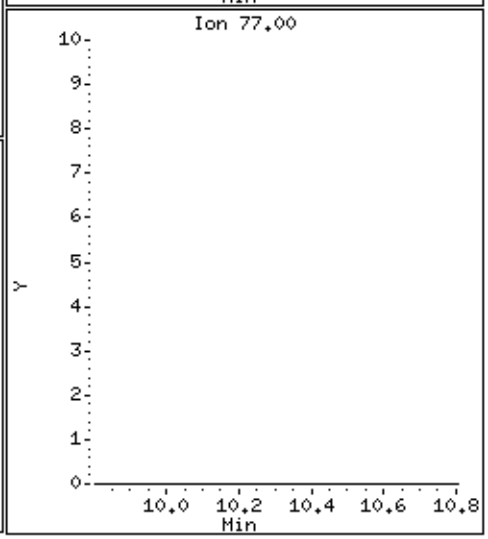












[1,2-Dichloroethane; 3.4; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

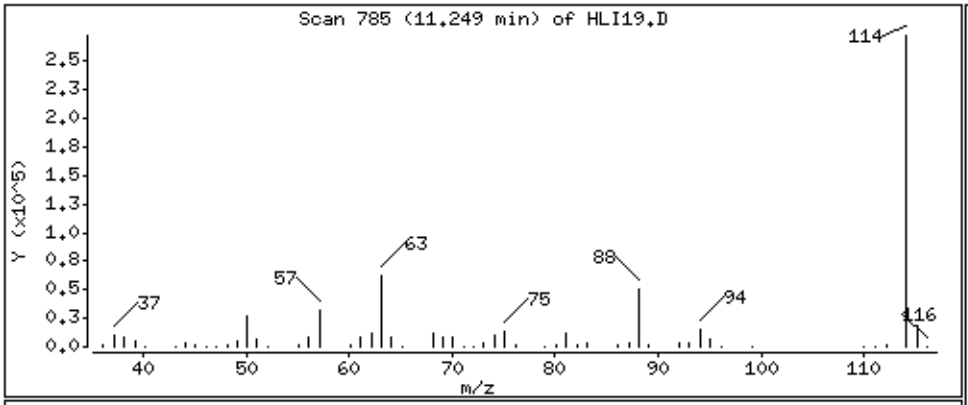
Client ID: DYNA P&T | Instrument: MSVOA08.i

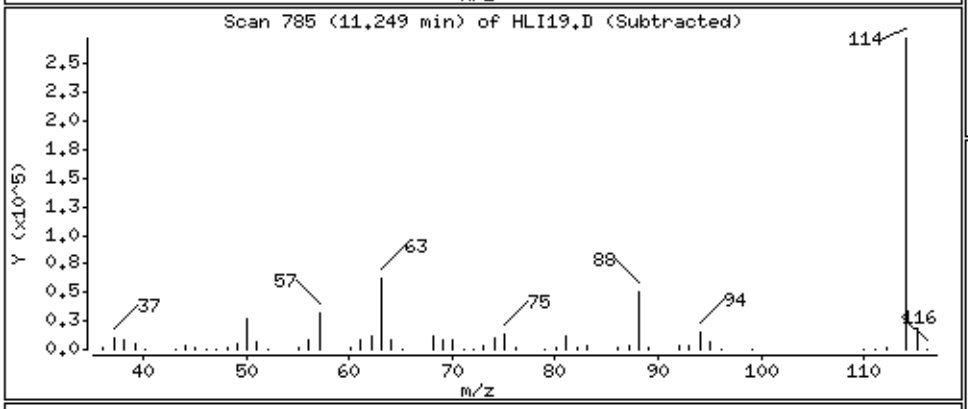
Sample Info: S,272391-001

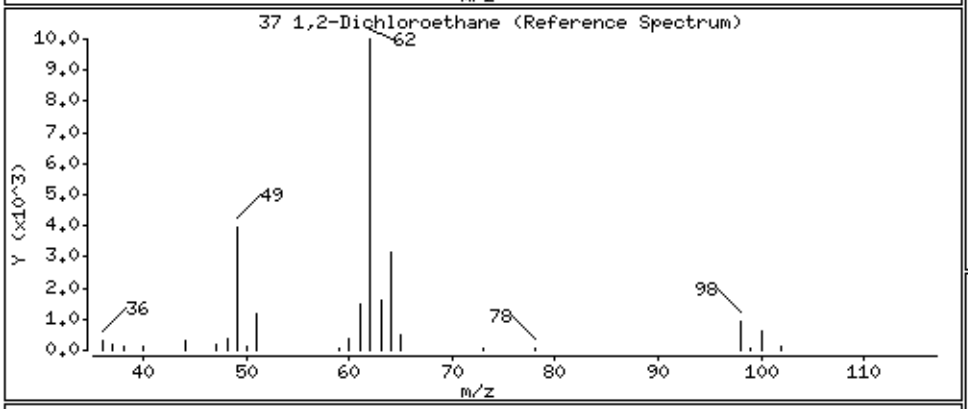
Purge Volume: 5.0 | Operator: VOC

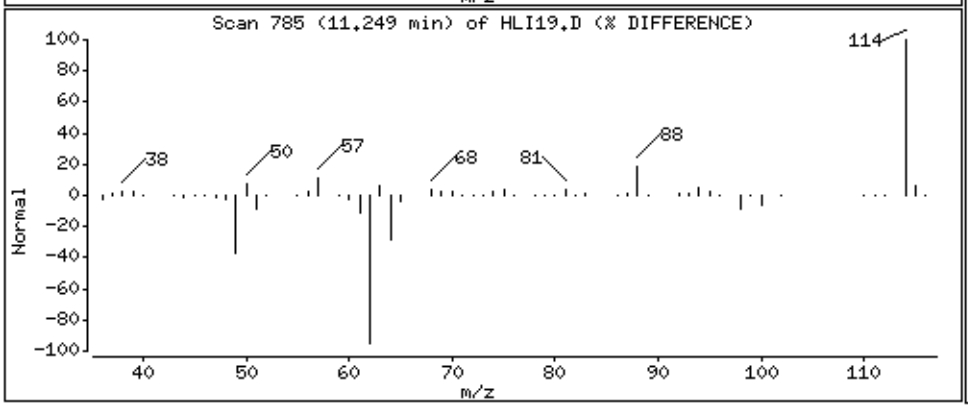
Column phase: RTX 624 | Column diameter: 0.25

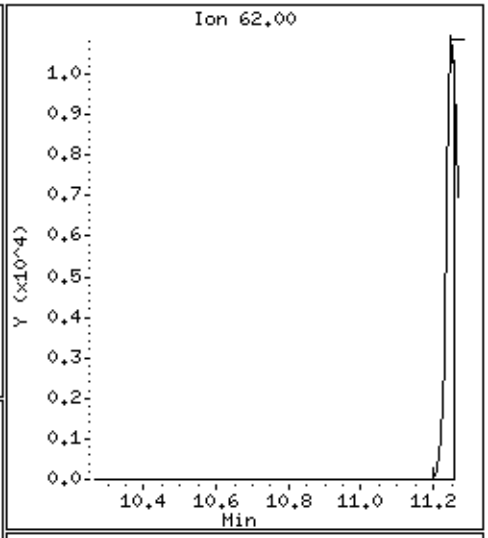
37 1,2-Dichloroethane | Concentration: 3.3557 UG/L

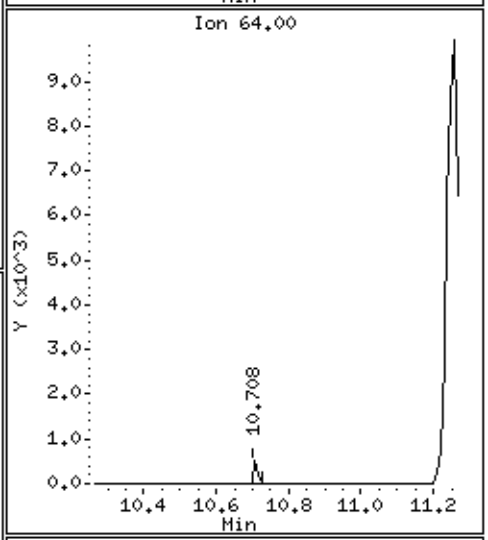


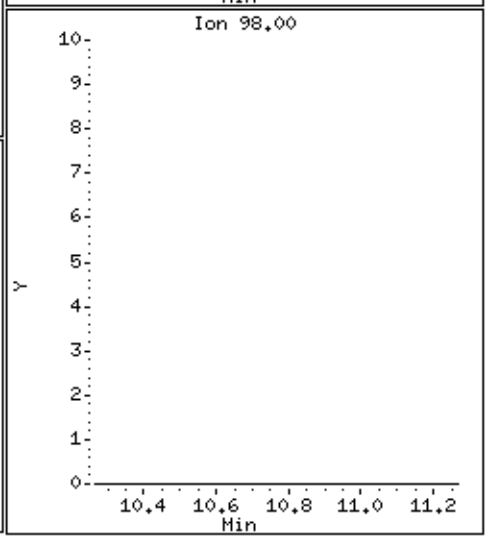












[Trichloroethene; 3.6; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

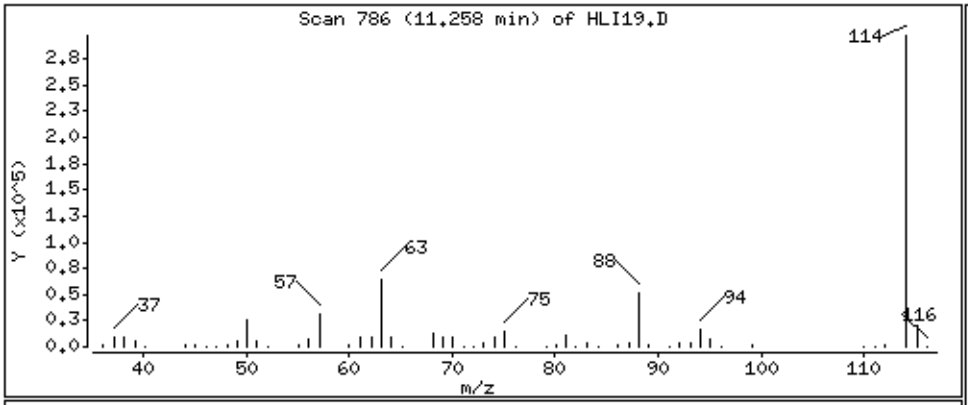
Client ID: DYNA P&T | Instrument: MSVOA08.i

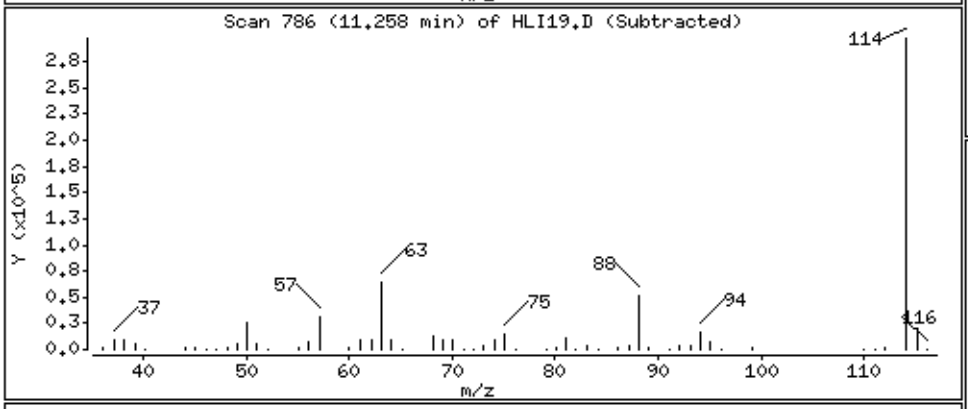
Sample Info: S,272391-001

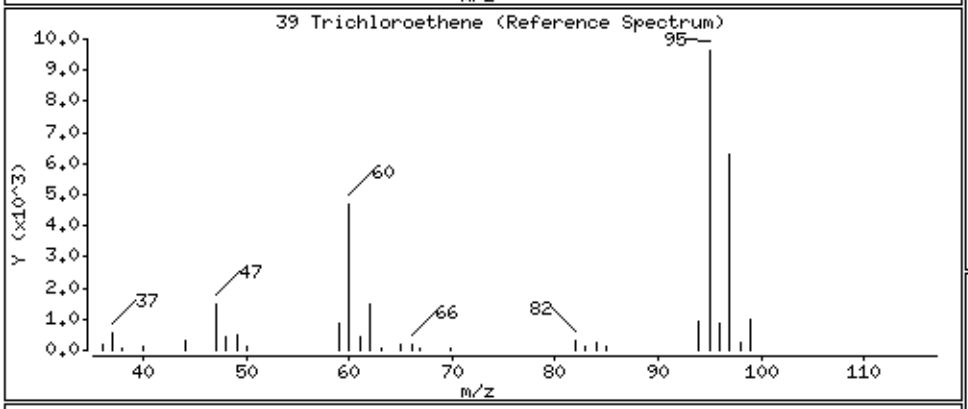
Purge Volume: 5.0 | Operator: VOC

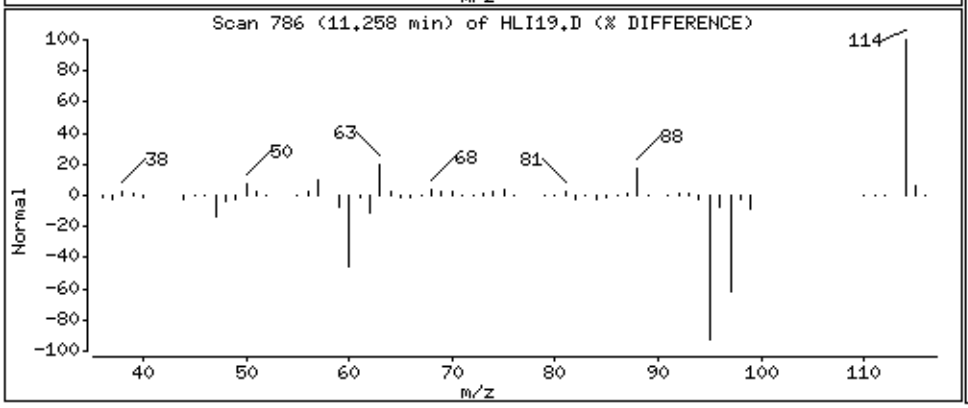
Column phase: RTX 624 | Column diameter: 0.25

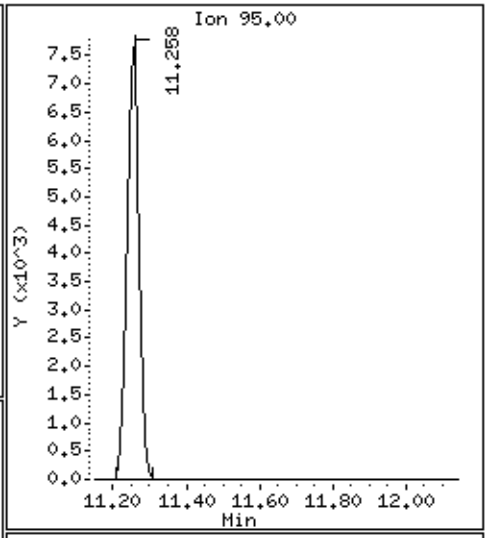
39 Trichloroethene | Concentration: 3.5625 UG/L

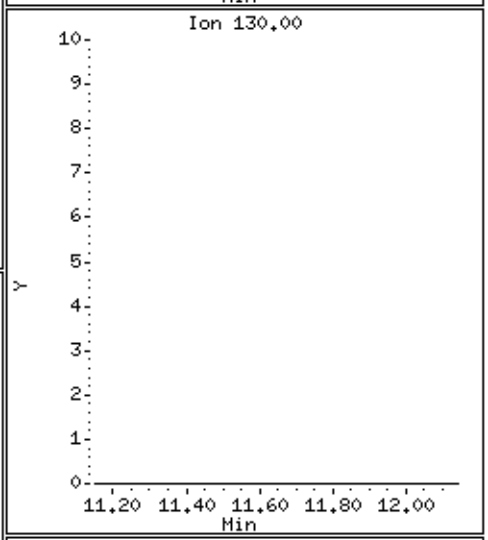


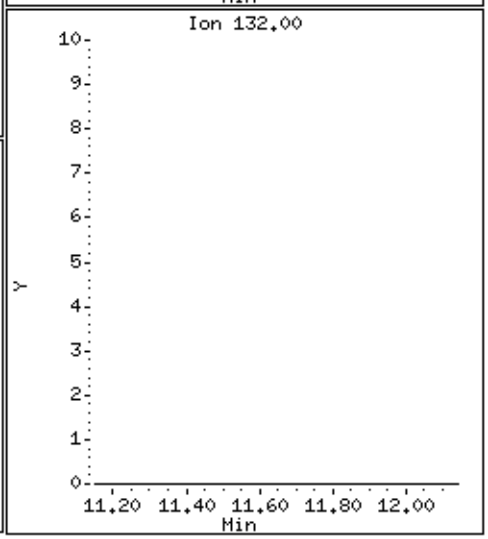












[4-Methyl-2-Pentanone; 1.0 J; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

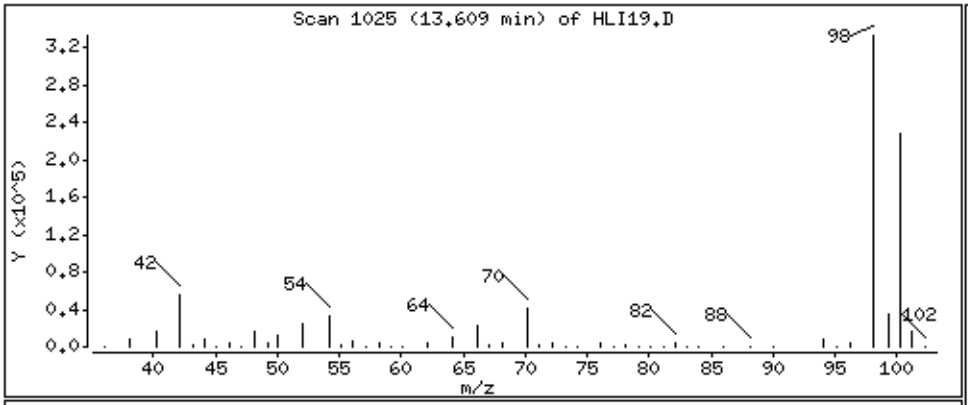
Client ID: DYNA P&T | Instrument: MSVOA08.i

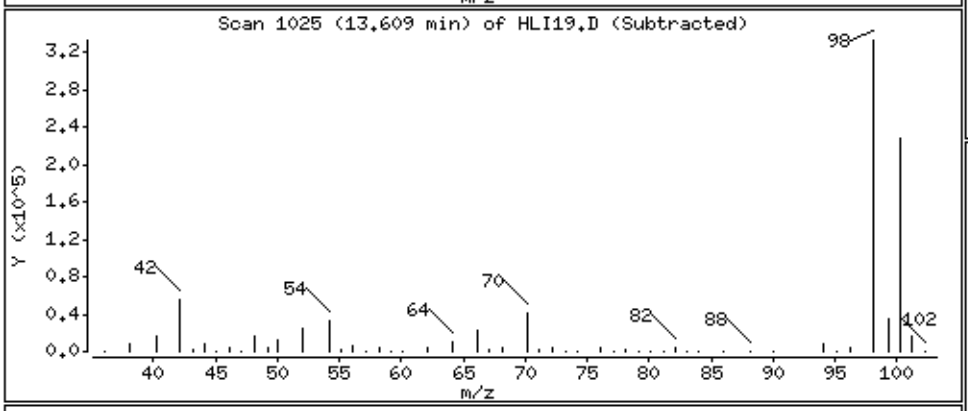
Sample Info: S,272391-001

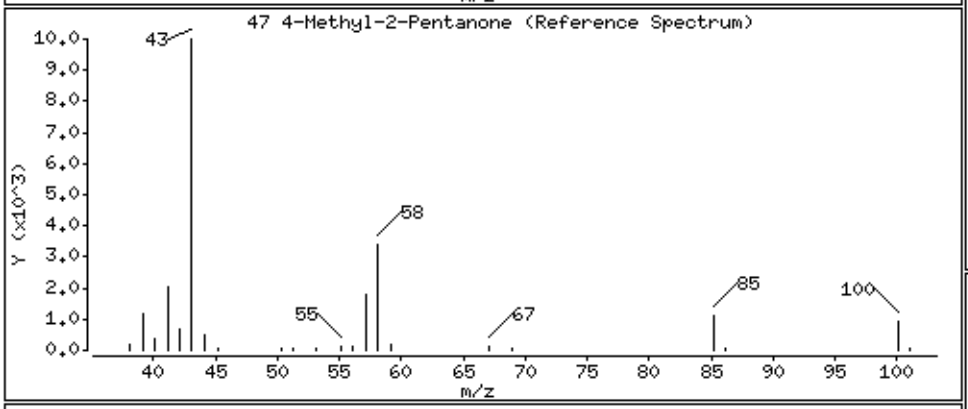
Purge Volume: 5.0 | Operator: VOC

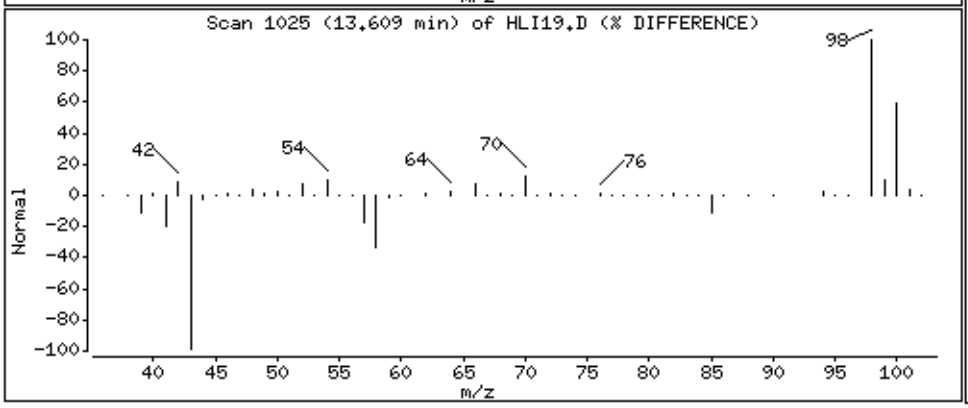
Column phase: RTX 624 | Column diameter: 0.25

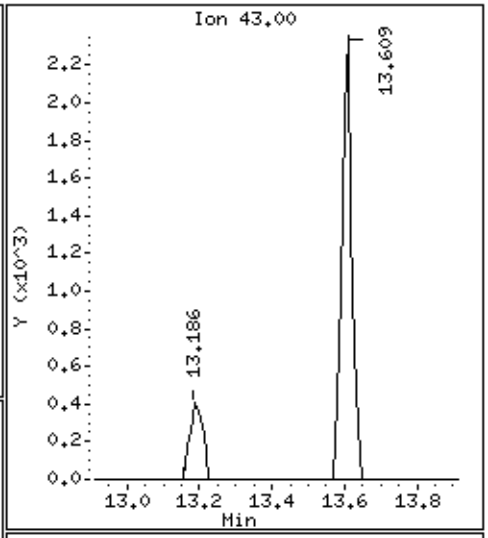
47 4-Methyl-2-Pentanone | Concentration: 0.9728 UG/L

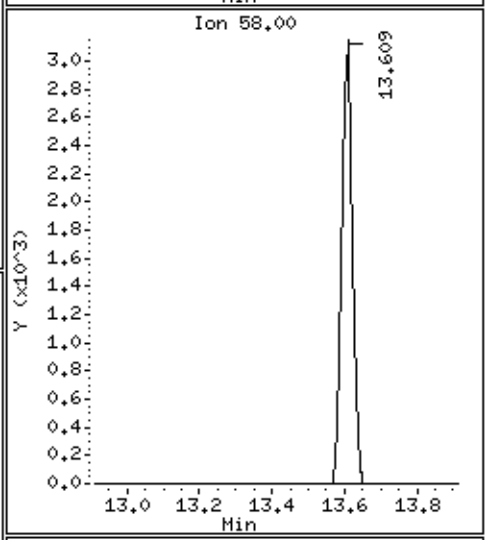


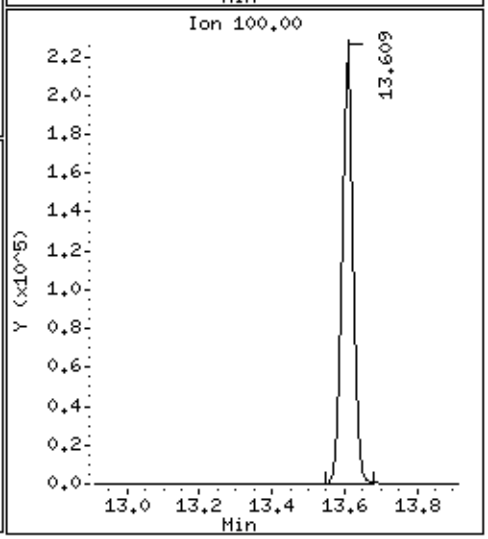












[Naphthalene; 0.2 J; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI19.D

Date : 18-DEC-2015 21:54

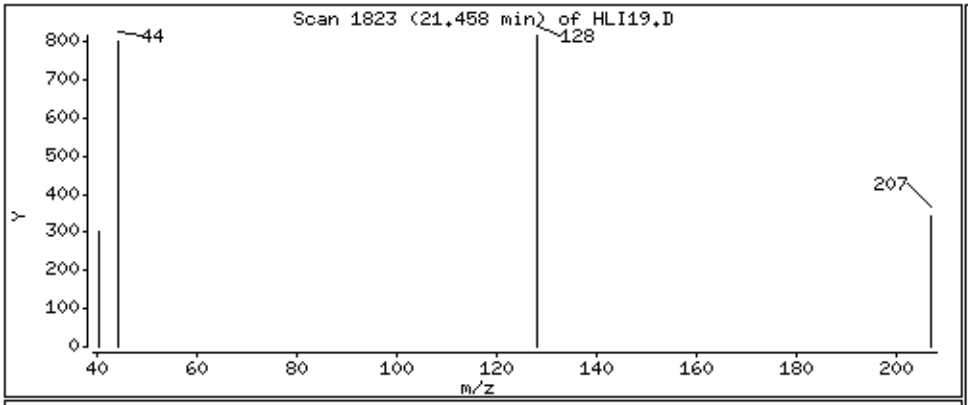
Client ID: DYNA P&T | Instrument: MSVOA08.i

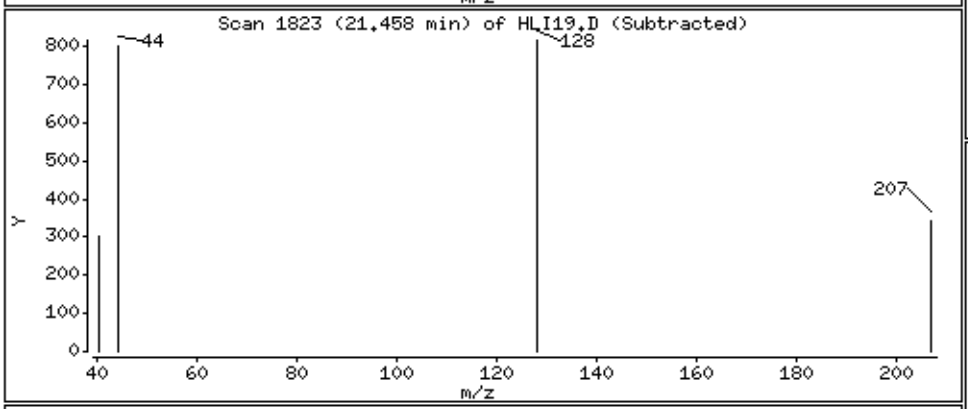
Sample Info: S,272391-001

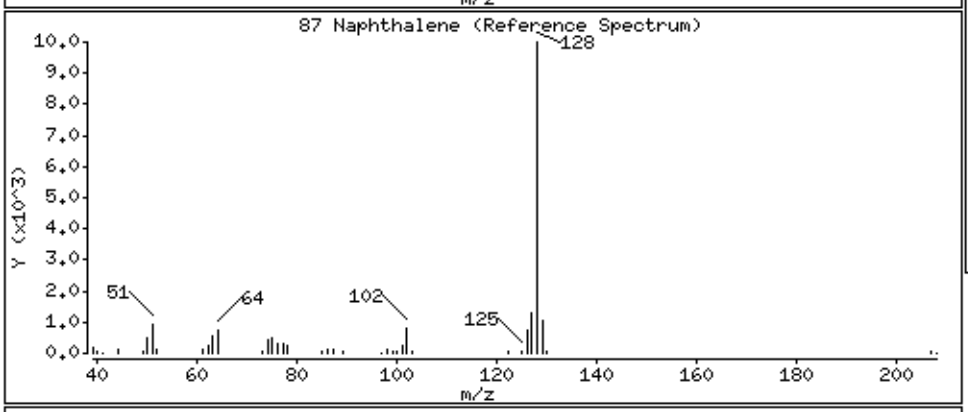
Purge Volume: 5.0 | Operator: VOC

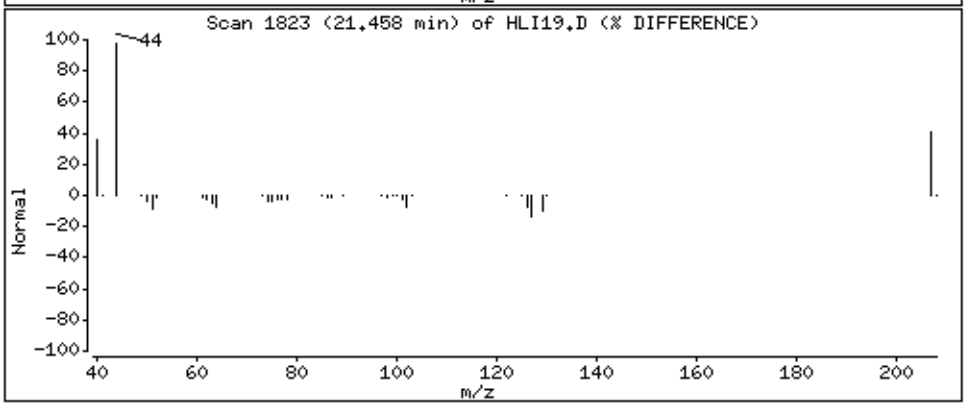
Column phase: RTX 624 | Column diameter: 0.25

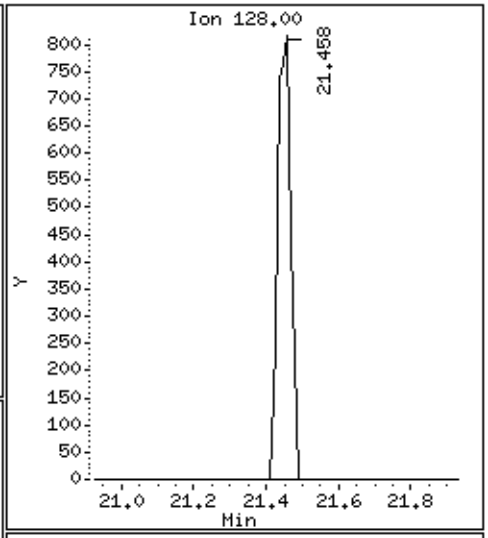
87 Naphthalene | Concentration: 0.1621 UG/L

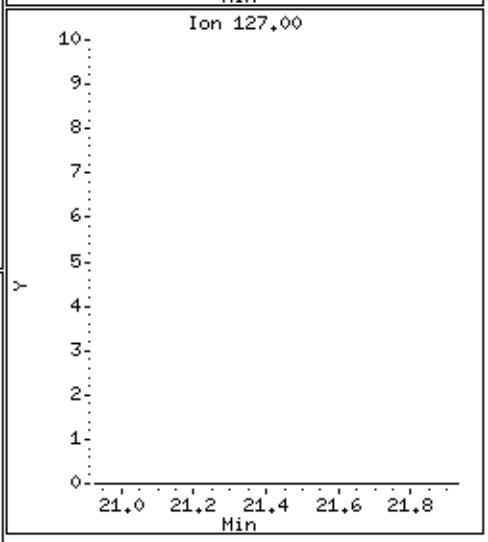












QC Raw Data

CURTIS & TOMPKINS BLANK USER REPORT FOR 272486 MSVOA Water
EPA 8260C

Inst	: MSVOA08	Lab ID	: QC817290		
Seqnum	: 475507613014.9	Matrix	: Water		
File	: hli14	Batch	: 230541	Time	: 18-DEC-2015 19:04
Cal	: 475492027002	Caldate	: 07-DEC-2015	Caltype	: WATER
IDF	: 1.0	Raw Units	: ug/L	Units	: ug/L

Analyte	Raw	Result	RTS	RL	Flags
Freon 12	0	ND		1.0	u v- **b***
Chloromethane	0	ND		1.0	u
Vinyl Chloride	0	ND		0.5	u
Bromomethane	0	ND		1.0	c+ u
Chloroethane	0	ND		1.0	u
Trichlorofluoromethane	0	ND		1.0	u
Acetone	0	ND		10	u
Freon 113	0	ND		2.0	u
1,1-Dichloroethene	0	ND		0.5	u
Methylene Chloride	0	ND		10	u
Carbon Disulfide	0	ND		0.5	u
MTBE	0	ND		0.5	u
trans-1,2-Dichloroethene	0	ND		0.5	u
Vinyl Acetate	0	ND		10	u
1,1-Dichloroethane	0	ND		0.5	u
2-Butanone	0	ND		10	u
cis-1,2-Dichloroethene	0	ND		0.5	u
2,2-Dichloropropane	0	ND		0.5	c+ u
Chloroform	0	ND		0.5	u
Bromochloromethane	0	ND		0.5	u
1,1,1-Trichloroethane	0	ND		0.5	u
1,1-Dichloropropene	4.874	4.9	-0.256	0.5	u x
Carbon Tetrachloride	7.214	7.2	-0.217	0.5	u x
1,2-Dichloroethane	0	ND		0.5	c+ u
Benzene	0	ND		0.5	u
Trichloroethene	3.554	3.6	-0.404	0.5	u x
1,2-Dichloropropane	0	ND		0.5	u
Bromodichloromethane	0	ND		0.5	u
Dibromomethane	0	ND		0.5	u
4-Methyl-2-Pentanone	1.032	1.0 J	0.196	10	u x
cis-1,3-Dichloropropene	0	ND		0.5	c+ u
Toluene	0	ND		0.5	u
trans-1,3-Dichloropropene	0	ND		0.5	u
1,1,2-Trichloroethane	0	ND		0.5	u
2-Hexanone	0	ND		10	u
1,3-Dichloropropane	0	ND		0.5	u
Tetrachloroethene	0	ND		0.5	u
Dibromochloromethane	0	ND		0.5	u
1,2-Dibromoethane	0	ND		0.5	u
Chlorobenzene	0	ND		0.5	u
1,1,1,2-Tetrachloroethane	0	ND		0.5	u
Ethylbenzene	0.04440	ND		0.5	u
m,p-Xylenes	0	ND		0.5	u
o-Xylene	0	ND		0.5	u
Styrene	0	ND		0.5	u
Bromoform	0	ND		1.0	u
Isopropylbenzene	0	ND		0.5	u
1,1,2,2-Tetrachloroethane	0	ND		0.5	u

Analyte	Raw	Result	RTS	RL	Flags
1,2,3-Trichloropropane	0	ND		0.5	u
Propylbenzene	0.04190	ND		0.5	u
Bromobenzene	0	ND		0.5	u
1,3,5-Trimethylbenzene	0	ND		0.5	u
2-Chlorotoluene	0.03530	ND		0.5	u
4-Chlorotoluene	0.03900	ND		0.5	u
tert-Butylbenzene	0.03960	ND		0.5	u
1,2,4-Trimethylbenzene	0	ND		0.5	u
sec-Butylbenzene	0	ND		0.5	u
para-Isopropyl Toluene	0.03420	ND		0.5	u
1,3-Dichlorobenzene	0.04180	ND		0.5	u
1,4-Dichlorobenzene	0.04400	ND		0.5	u
n-Butylbenzene	0.07930	ND		0.5	u
1,2-Dichlorobenzene	0.04470	ND		0.5	u
1,2-Dibromo-3-Chloropropane	0	ND		2.0	u
1,2,4-Trichlorobenzene	0.1034	ND		0.5	u
Hexachlorobutadiene	0.1040	ND		2.0	u
Naphthalene	0.07100	ND		2.0	u
1,2,3-Trichlorobenzene	0.09870	ND		0.5	u

Surrogate	Raw	Spiked	Result	%Rec	Limits	Flags
Dibromofluoromethane	46.42	50.00	46.42	93	85-115	u
1,2-Dichloroethane-d4	54.26	50.00	54.26	109	70-120	u
Toluene-d8	49.11	50.00	49.11	98	85-120	u
Bromofluorobenzene	48.78	50.00	48.78	98	75-120	u

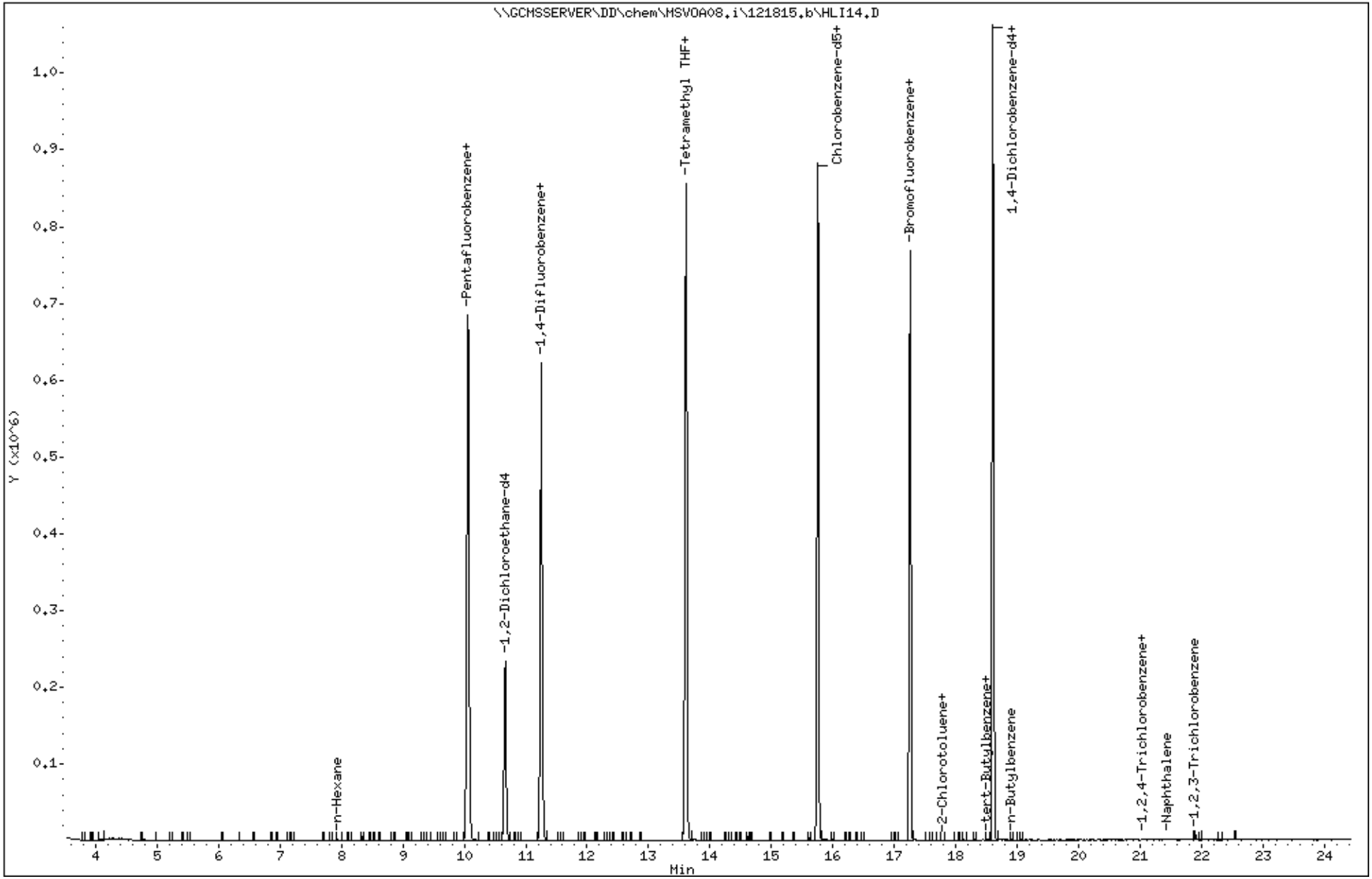
ISTD (ICAL hl715)	ICAL Area	BLANK Area	%Drift	ICAL RT	BLANK RT	Drift
Pentafluorobenzene	462693	425258	-8.09	10.04	10.06	0.02
1,4-Difluorobenzene	638581	640942	0.37	11.24	11.26	0.02
Chlorobenzene-d5	497147	550616	10.76	15.73	15.75	0.02
1,4-Dichlorobenzene-d4	270725	300493	11.00	18.59	18.60	0.01

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/29/15

+=high bias -=low bias b=noncompliant c=CCV u=use v=ICV x=false positive

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D
Date : 18-DEC-2015 19:04
Client ID: DYNA P&T
Sample Info: blank,qc817290
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D
Report Date: 18-Dec-2015 19:41

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 18-DEC-2015 19:04 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : blank,qc817290
Misc Info : 230541,1/1
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\826GOX8.m
Meth Date : 08-Dec-2015 14:20 Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 19
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
18 n-Hexane	57	7.951	7.939	(0.791)	373	0.12895	0.1289(a)
* 29 Pentafluorobenzene	168	10.056	10.040	(1.000)	425258	50.0000	
30 Dibromofluoromethane	113	10.066	10.050	(1.001)	210406	46.4245	46.4244
32 Carbon Tetrachloride	117	10.056	10.267	(0.893)	37054	7.21348	7.2134
33 1,1-Dichloropropene	75	10.056	10.306	(0.893)	31486	4.87423	4.8742
34 1,2-Dichloroethane-d4	65	10.666	10.651	(0.948)	198543	54.2639	54.2638
* 38 1,4-Difluorobenzene	114	11.256	11.233	(1.000)	640942	50.0000	
39 Trichloroethene	95	11.246	11.648	(0.999)	16308	3.55379	3.5537
45 Tetramethyl THF	43	13.617	13.166	(1.210)	4475	0.40352	0.4035(a)
47 4-Methyl-2-Pentanone	43	13.617	13.413	(1.210)	4475	1.03193	1.0319
48 Toluene-d8	98	13.607	13.591	(0.864)	666029	49.1091	49.1091
* 58 Chlorobenzene-d5	117	15.751	15.741	(1.000)	550616	50.0000	
60 Ethylbenzene	91	15.761	15.839	(1.001)	893	0.04443	0.0444(a)
67 Bromofluorobenzene	95	17.256	17.240	(0.928)	273598	48.7775	48.7775
70 Propylbenzene	91	17.256	17.457	(0.928)	1037	0.04191	0.0419(a)
72 2-Chlorotoluene	91	17.777	17.634	(0.956)	555	0.03526	0.0352(a)

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D
Report Date: 18-Dec-2015 19:41

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
74 4-Chlorotoluene	91	17.777	17.772	(0.956)	555	0.03903	0.0390(a)
75 tert-Butylbenzene	119	18.446	18.039	(0.992)	573	0.03965	0.0396(a)
78 para-Isopropyl Toluene	119	18.446	18.433	(0.992)	573	0.03418	0.0341(a)
79 1,3-Dichlorobenzene	146	18.525	18.512	(0.996)	402	0.04184	0.0418(a)
* 80 1,4-Dichlorobenzene-d4	152	18.603	18.591	(1.000)	300493	50.0000	
81 1,4-Dichlorobenzene	146	18.623	18.621	(1.001)	424	0.04402	0.0440(a)
82 n-Butylbenzene	91	18.918	18.897	(1.017)	1156	0.07933	0.0793(a)
83 1,2-Dichlorobenzene	146	18.623	19.065	(1.001)	424	0.04474	0.0447(a)
85 1,2,4-Trichlorobenzene	180	21.053	21.037	(1.132)	522	0.10344	0.1034(a)
86 Hexachlorobutadiene	225	21.151	21.136	(1.137)	264	0.10396	0.1039(a)
87 Naphthalene	128	21.456	21.432	(1.153)	740	0.07104	0.0710(a)
88 1,2,3-Trichlorobenzene	180	21.810	21.777	(1.172)	473	0.09869	0.0986(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

[Carbon Tetrachloride; 7.2; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D

Date : 18-DEC-2015 19:04

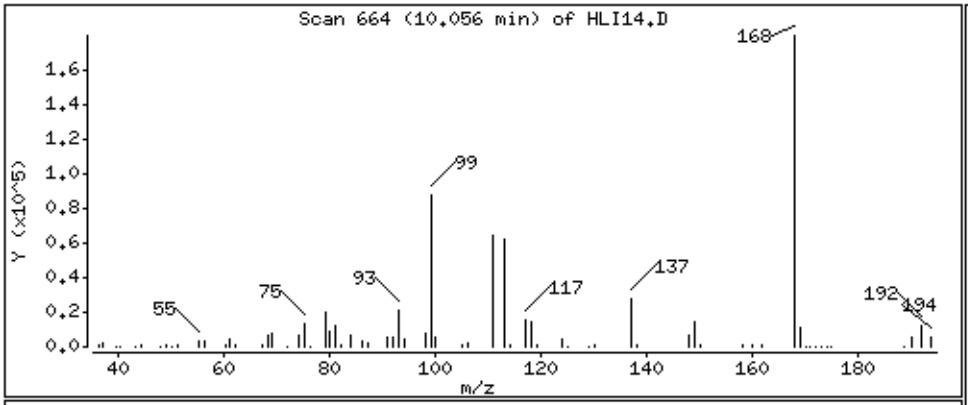
Client ID: DYNA P&T | Instrument: MSVOA08.i

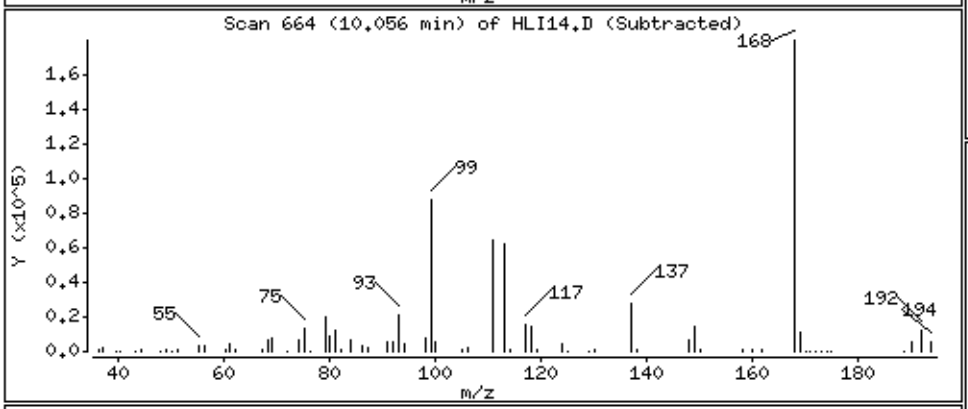
Sample Info: blank,qc817290

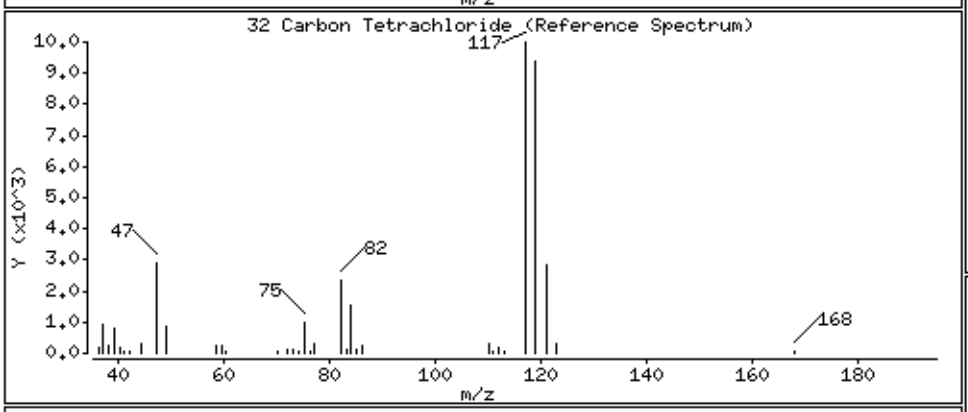
Purge Volume: 5.0 | Operator: VOC

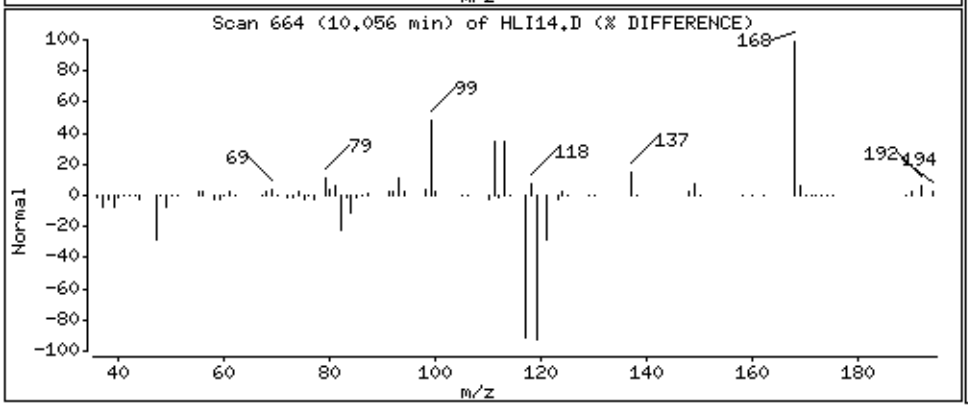
Column phase: RTX 624 | Column diameter: 0.25

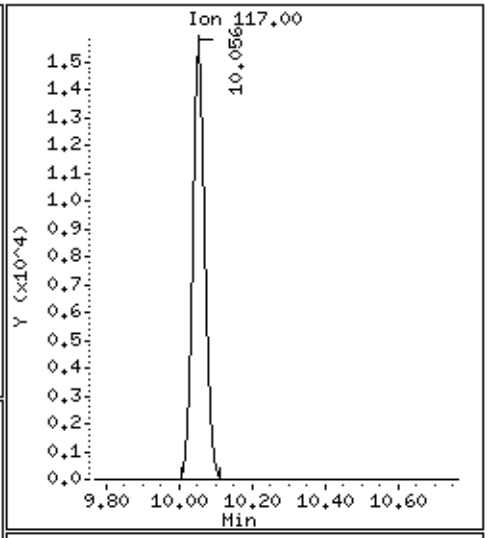
32 Carbon Tetrachloride | Concentration: 7.2134 UG/L

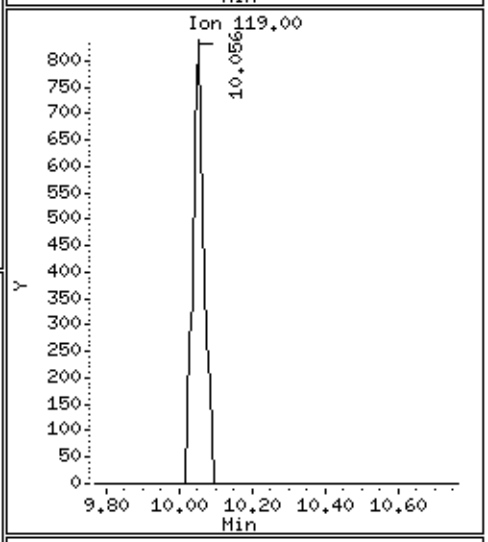


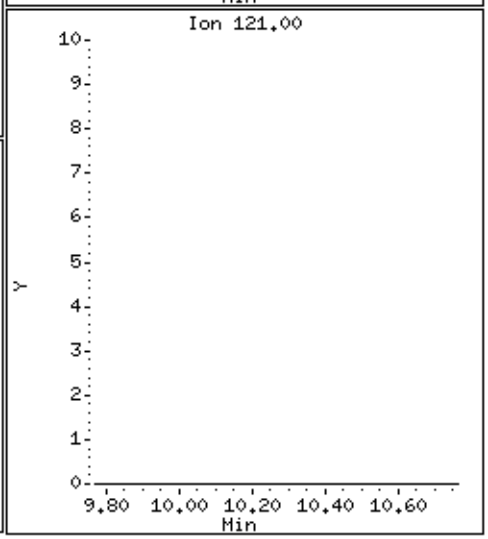












[1,1-Dichloropropene; 4.9; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D

Date : 18-DEC-2015 19:04

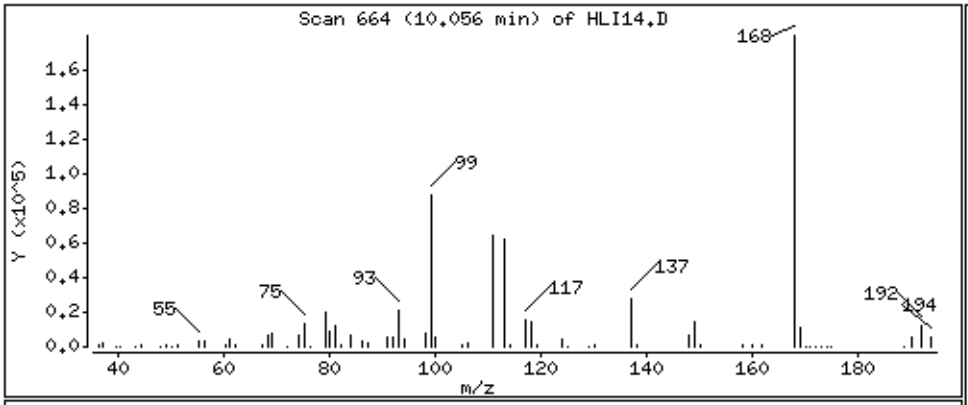
Client ID: DYNA P&T | Instrument: MSVOA08.i

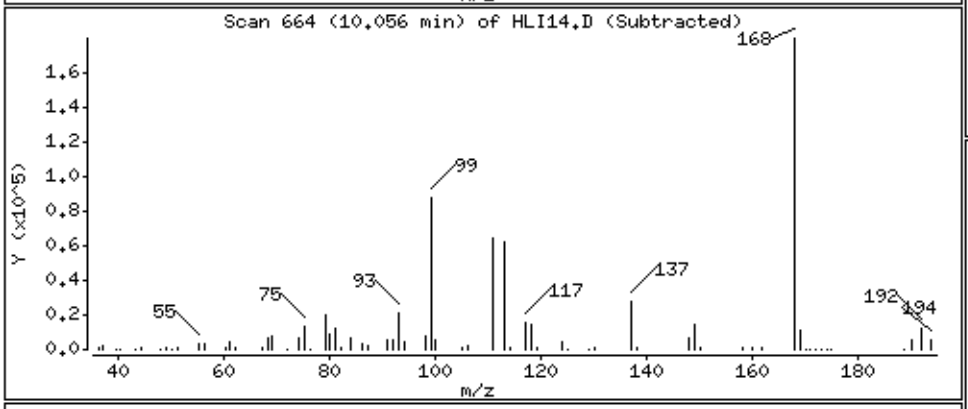
Sample Info: blank,qc817290

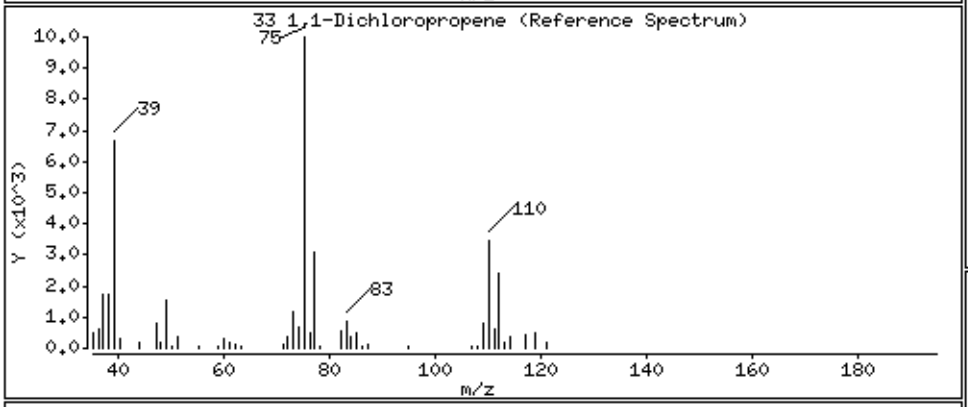
Purge Volume: 5.0 | Operator: VOC

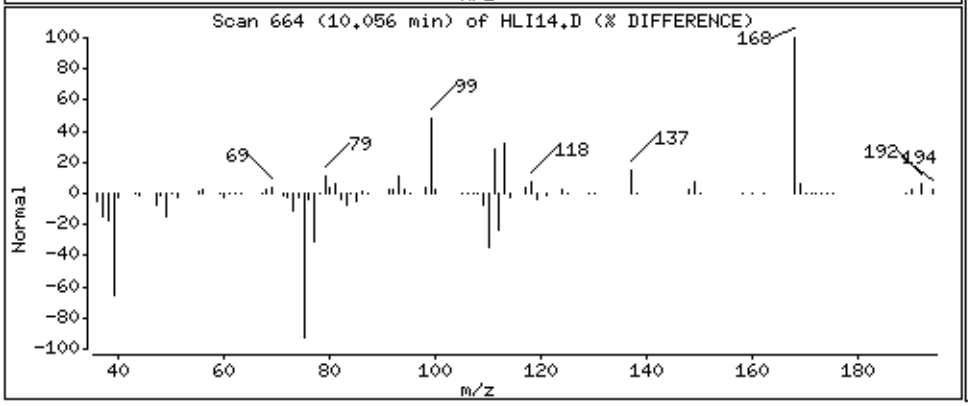
Column phase: RTX 624 | Column diameter: 0.25

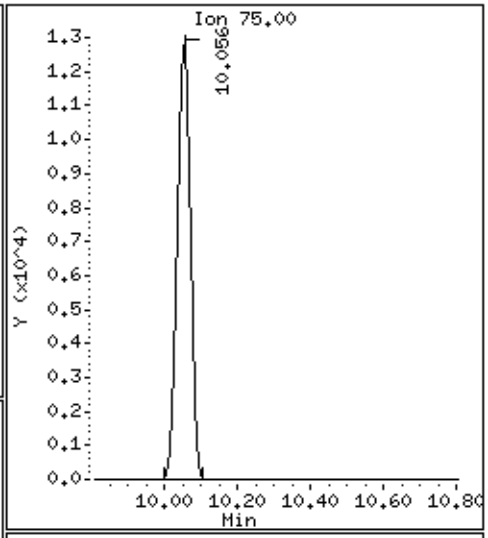
33 1,1-Dichloropropene | Concentration: 4.8742 UG/L

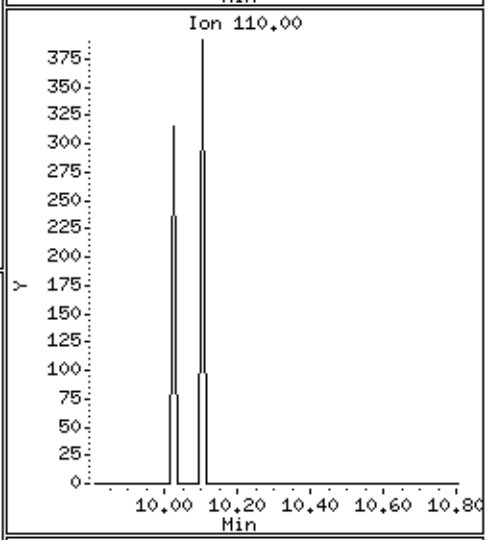


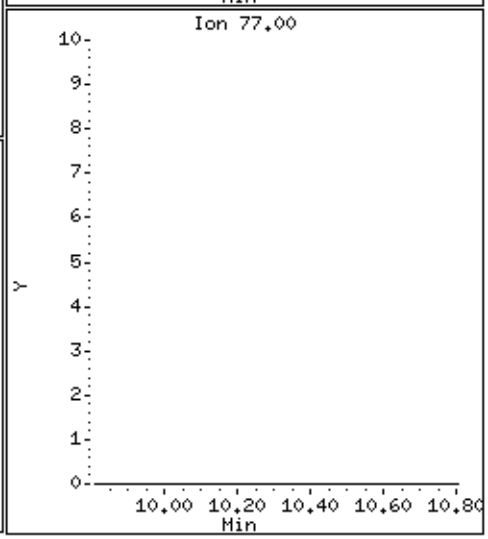












[Trichloroethene; 3.6; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D

Date : 18-DEC-2015 19:04

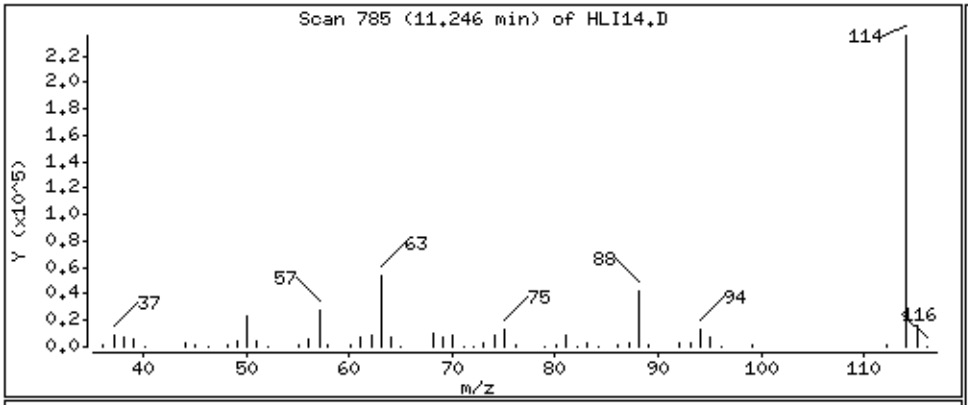
Client ID: DYNA P&T | Instrument: MSVOA08.i

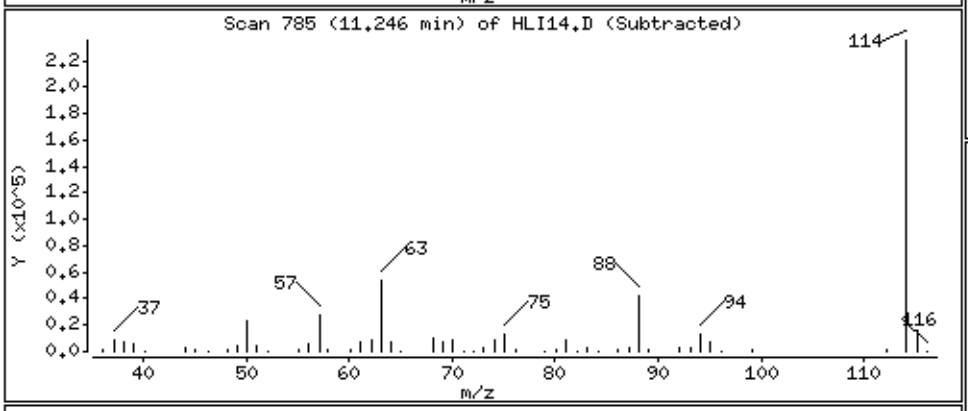
Sample Info: blank,qc817290

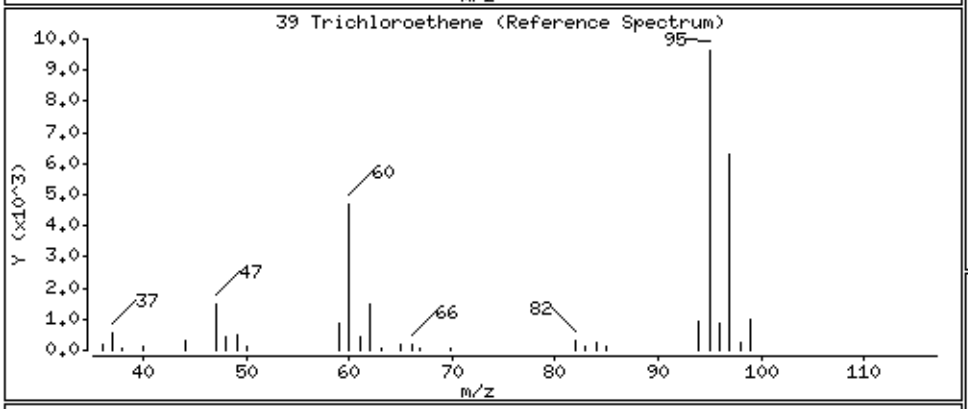
Purge Volume: 5.0 | Operator: VOC

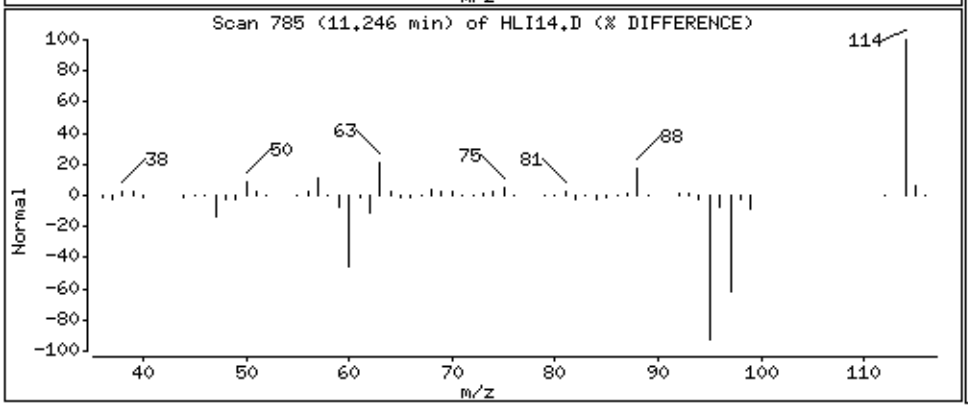
Column phase: RTX 624 | Column diameter: 0.25

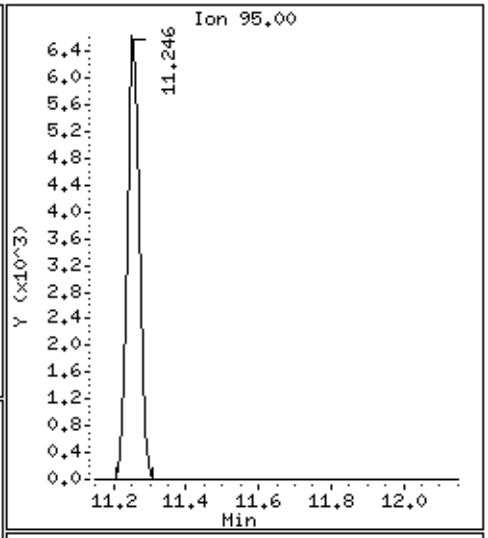
39 Trichloroethene | Concentration: 3.5537 UG/L

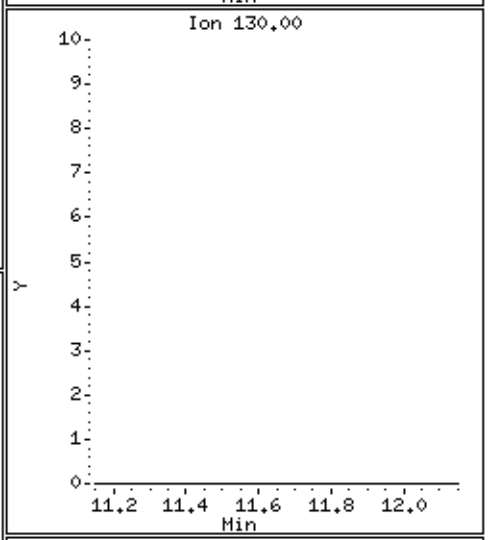


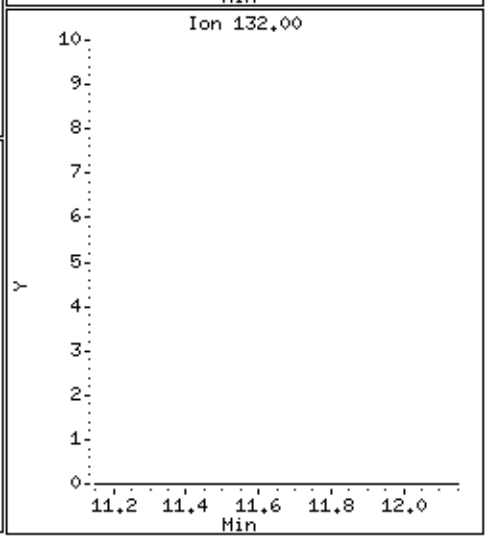












[4-Methyl-2-Pentanone; 1.0 J; FP; u]

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI14.D

Date : 18-DEC-2015 19:04

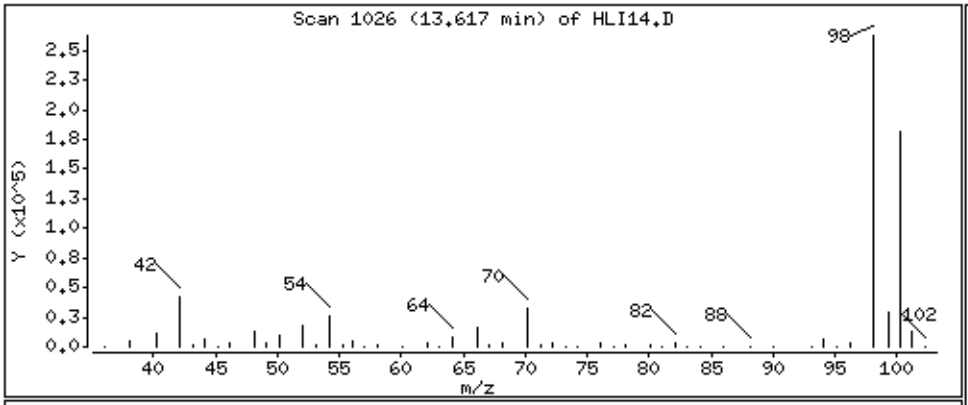
Client ID: DYNA P&T | Instrument: MSVOA08.i

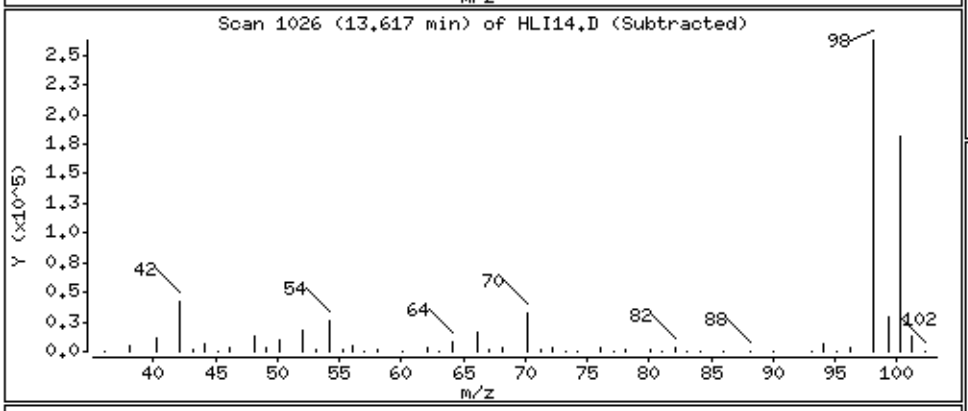
Sample Info: blank,qc817290

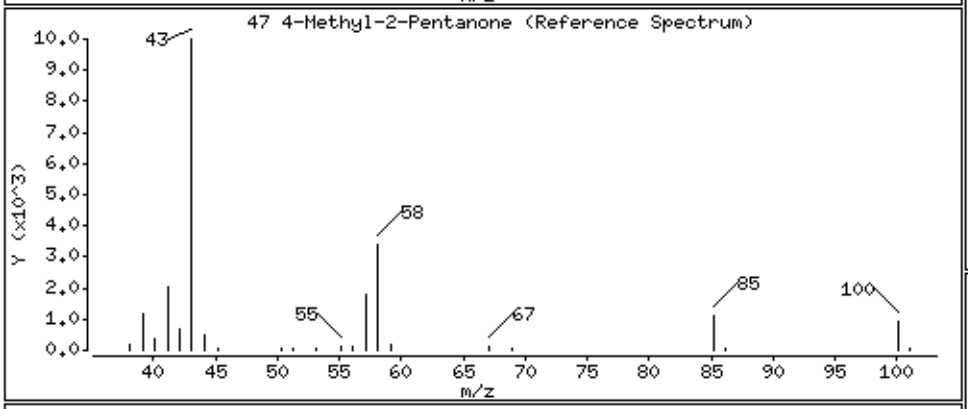
Purge Volume: 5.0 | Operator: VOC

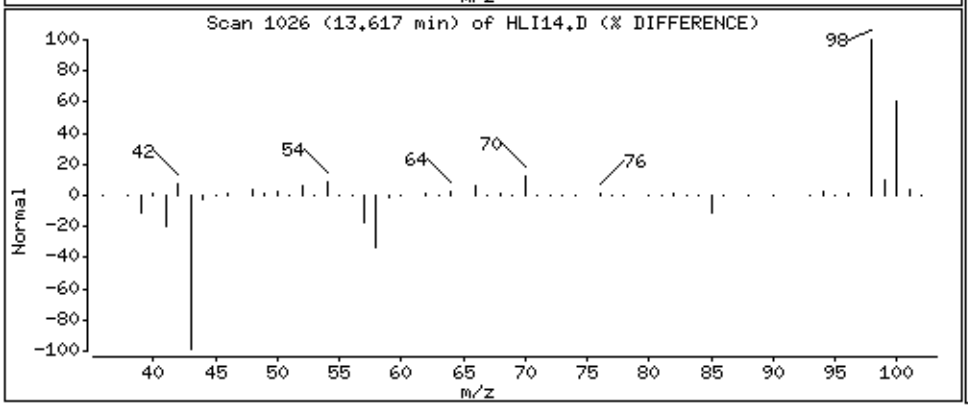
Column phase: RTX 624 | Column diameter: 0.25

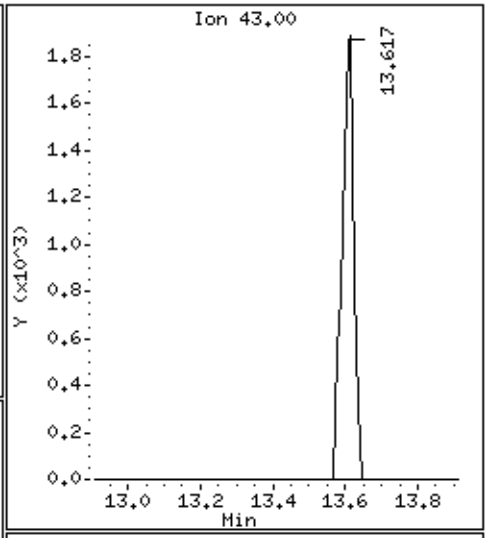
47 4-Methyl-2-Pentanone | Concentration: 1.0319 UG/L

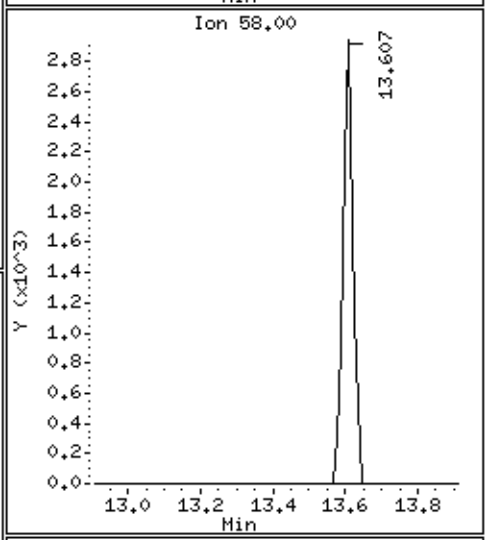


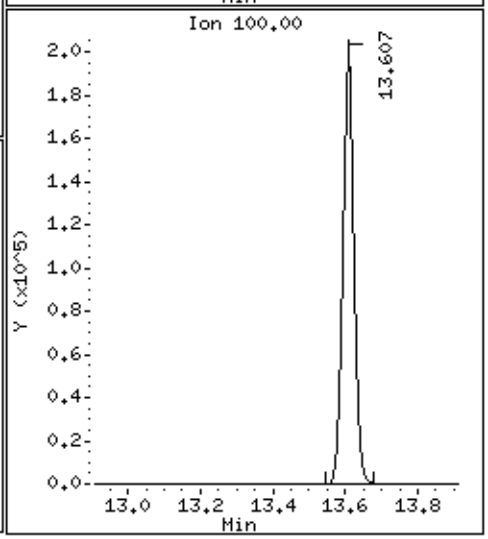












CURTIS & TOMPKINS SPIKE USER REPORT FOR 272486 MSVOA Water
EPA 8260C

Type : BS
Inst : MSVOA08
Seqnum : 475507613011.7
File : hli11
IDF : 1.0
Lab ID : QC817288
Matrix : Water
Batch : 230541
Time : 18-DEC-2015 17:22
Cal : 475492027002
Caltype : WATER
Units : ug/L

Type : BSD
Inst : MSVOA08
Seqnum : 475507613012.7
File : hli12
IDF : 1.0
Lab ID : QC817289
Matrix : Water
Batch : 230541
Time : 18-DEC-2015 17:56
Cal : 475492027002
Caltype : WATER

BS:
BSD:

Analyte	Spiked	BS Raw	BS Result	%Rec	BSD Raw	BSD Result	%Rec	Limits	RPD	Lim	Flags
Freon 12	10.00	8.708	8.708	87	8.625	8.625	86	30-155	1	30	u v- **b***
Chloromethane	10.00	11.19	11.19	112	10.76	10.76	108	40-125	4	30	u
Vinyl Chloride	10.00	12.40	12.40	124	12.01	12.01	120	50-145	3	30	u
Bromomethane	10.00	18.23	18.23	**182***	15.39	15.39	**154***	30-145	17	30	c+ u **b***
Chloroethane	10.00	11.30	11.30	113	11.46	11.46	115	60-135	1	30	u
Trichlorofluoromethane	10.00	11.86	11.86	119	11.41	11.41	114	60-145	4	30	u
Acetone	12.50	14.66	14.66	117	11.95	11.95	96	40-140	20	30	u
Freon 113	12.50	13.36	13.36	107	13.47	13.47	108	61-138	1	30	u
1,1-Dichloroethene	12.50	14.83	14.83	119	14.20	14.20	114	70-130	4	30	u
Methylene Chloride	12.50	15.28	15.28	122	13.79	13.79	110	55-140	10	30	u
Carbon Disulfide	12.50	16.08	16.08	129	15.24	15.24	122	35-160	5	30	u
MTBE	12.50	14.46	14.46	116	13.00	13.00	104	65-125	11	30	u
trans-1,2-Dichloroethene	12.50	13.99	13.99	112	13.22	13.22	106	60-140	6	30	u
Vinyl Acetate	12.50	14.33	14.33	115	14.03	14.03	112	60-194	2	30	u
1,1-Dichloroethane	12.50	14.75	14.75	118	13.84	13.84	111	70-135	6	30	u
2-Butanone	12.50	13.58	13.58	109	12.93	12.93	103	30-150	5	30	u
cis-1,2-Dichloroethene	12.50	15.44	15.44	123	13.91	13.91	111	70-125	10	30	u
2,2-Dichloropropane	12.50	17.77	17.77	**142***	16.59	16.59	133	70-135	7	30	c+ u **b***
Chloroform	12.50	15.54	15.54	124	13.73	13.73	110	65-135	12	30	u
Bromochloromethane	12.50	13.92	13.92	111	13.50	13.50	108	65-130	3	30	u
1,1,1-Trichloroethane	12.50	16.48	16.48	**132***	15.14	15.14	121	65-130	8	30	u
1,1-Dichloropropene	12.50	13.42	13.42	107	12.77	12.77	102	75-130	5	30	u
Carbon Tetrachloride	12.50	15.20	15.20	122	14.92	14.92	119	65-140	2	30	u
1,2-Dichloroethane	12.50	15.87	15.87	127	15.28	15.28	122	70-130	4	30	c+ u **b***
Benzene	12.50	14.70	14.70	118	14.04	14.04	112	80-120	5	30	u
Trichloroethene	12.50	14.52	14.52	116	13.94	13.94	112	70-125	4	30	u
1,2-Dichloropropane	12.50	14.97	14.97	120	13.17	13.17	105	75-125	13	30	u
Bromodichloromethane	12.50	15.39	15.39	**123***	14.09	14.09	113	75-120	9	30	u
Dibromomethane	12.50	13.99	13.99	112	13.95	13.95	112	75-125	0	30	u
4-Methyl-2-Pentanone	12.50	12.52	12.52	100	12.37	12.37	99	60-135	1	30	u
cis-1,3-Dichloropropene	12.50	16.18	16.18	129	15.40	15.40	123	70-130	5	30	c+ u **b***
Toluene	12.50	13.27	13.27	106	14.44	14.44	115	75-120	8	30	u
trans-1,3-Dichloropropene	12.50	13.96	13.96	112	15.06	15.06	121	55-140	8	30	u
1,1,2-Trichloroethane	12.50	12.43	12.43	99	13.37	13.37	107	75-125	7	30	u
2-Hexanone	12.50	11.58	11.58	93	12.54	12.54	100	55-130	8	30	u
1,3-Dichloropropane	12.50	13.42	13.42	107	14.28	14.28	114	75-125	6	30	u
Tetrachloroethene	12.50	13.49	13.49	108	14.77	14.77	118	45-150	9	30	u

Analyte	Spiked	BS Raw	BS Result	%Rec	BSD Raw	BSD Result	%Rec	Limits	RPD	Lim	Flags
Dibromochloromethane	12.50	12.61	12.61	101	13.43	13.43	107	60-135	6	30	u
1,2-Dibromoethane	12.50	11.62	11.62	93	13.20	13.20	106	80-120	13	30	u
Chlorobenzene	12.50	13.97	13.97	112	14.65	14.65	117	80-120	5	30	u
1,1,1,2-Tetrachloroethane	12.50	12.81	12.81	102	12.83	12.83	103	80-130	0	30	u
Ethylbenzene	12.50	13.83	13.83	111	14.56	14.56	116	75-125	5	30	u
m,p-Xylenes	25.00	28.62	28.62	114	30.18	30.18	121	75-130	5	30	u
o-Xylene	12.50	13.87	13.87	111	14.49	14.49	116	80-120	4	30	u
Styrene	12.50	14.42	14.42	115	15.00	15.00	120	65-135	4	30	u
Bromoform	12.50	12.44	12.44	99	13.57	13.57	109	70-130	9	30	u
Isopropylbenzene	12.50	14.30	14.30	114	14.22	14.22	114	75-125	1	30	u
1,1,2,2-Tetrachloroethane	12.50	12.43	12.43	99	12.77	12.77	102	65-130	3	30	u
1,2,3-Trichloropropane	12.50	12.07	12.07	97	12.92	12.92	103	75-125	7	30	u
Propylbenzene	12.50	14.08	14.08	113	13.50	13.50	108	70-130	4	30	u
Bromobenzene	12.50	14.56	14.56	116	13.30	13.30	106	75-125	9	30	u
1,3,5-Trimethylbenzene	12.50	14.45	14.45	116	14.54	14.54	116	75-130	1	30	u
2-Chlorotoluene	12.50	14.29	14.29	114	14.49	14.49	116	75-125	1	30	u
4-Chlorotoluene	12.50	14.67	14.67	117	14.42	14.42	115	75-130	2	30	u
tert-Butylbenzene	12.50	14.44	14.44	116	14.09	14.09	113	70-130	2	30	u
1,2,4-Trimethylbenzene	12.50	14.70	14.70	118	14.30	14.30	114	75-130	3	30	u
sec-Butylbenzene	12.50	13.66	13.66	109	14.55	14.55	116	70-125	6	30	u
para-Isopropyl Toluene	12.50	15.08	15.08	121	14.95	14.95	120	75-130	1	30	u
1,3-Dichlorobenzene	12.50	15.90	15.90	**127***	15.02	15.02	120	75-125	6	30	u
1,4-Dichlorobenzene	12.50	15.08	15.08	121	14.87	14.87	119	75-125	1	30	u
n-Butylbenzene	12.50	15.19	15.19	122	15.18	15.18	121	70-135	0	30	u
1,2-Dichlorobenzene	12.50	14.49	14.49	116	14.37	14.37	115	70-120	1	30	u
1,2-Dibromo-3-Chloropropane	12.50	11.88	11.88	95	12.14	12.14	97	50-130	2	30	u
1,2,4-Trichlorobenzene	12.50	14.56	14.56	117	14.27	14.27	114	65-135	2	30	u
Hexachlorobutadiene	12.50	15.13	15.13	121	16.11	16.11	129	50-140	6	30	u
Naphthalene	12.50	11.87	11.87	95	11.88	11.88	95	55-140	0	30	u
1,2,3-Trichlorobenzene	12.50	13.82	13.82	111	13.61	13.61	109	55-140	2	30	u
Dibromofluoromethane	50.00	52.59	52.59	105	45.65	45.65	91	85-115			u
1,2-Dichloroethane-d4	50.00	57.16	57.16	114	52.90	52.90	106	70-120			u
Toluene-d8	50.00	47.62	47.62	95	50.40	50.40	101	85-120			u
Bromofluorobenzene	50.00	53.03	53.03	106	48.62	48.62	97	75-120			u

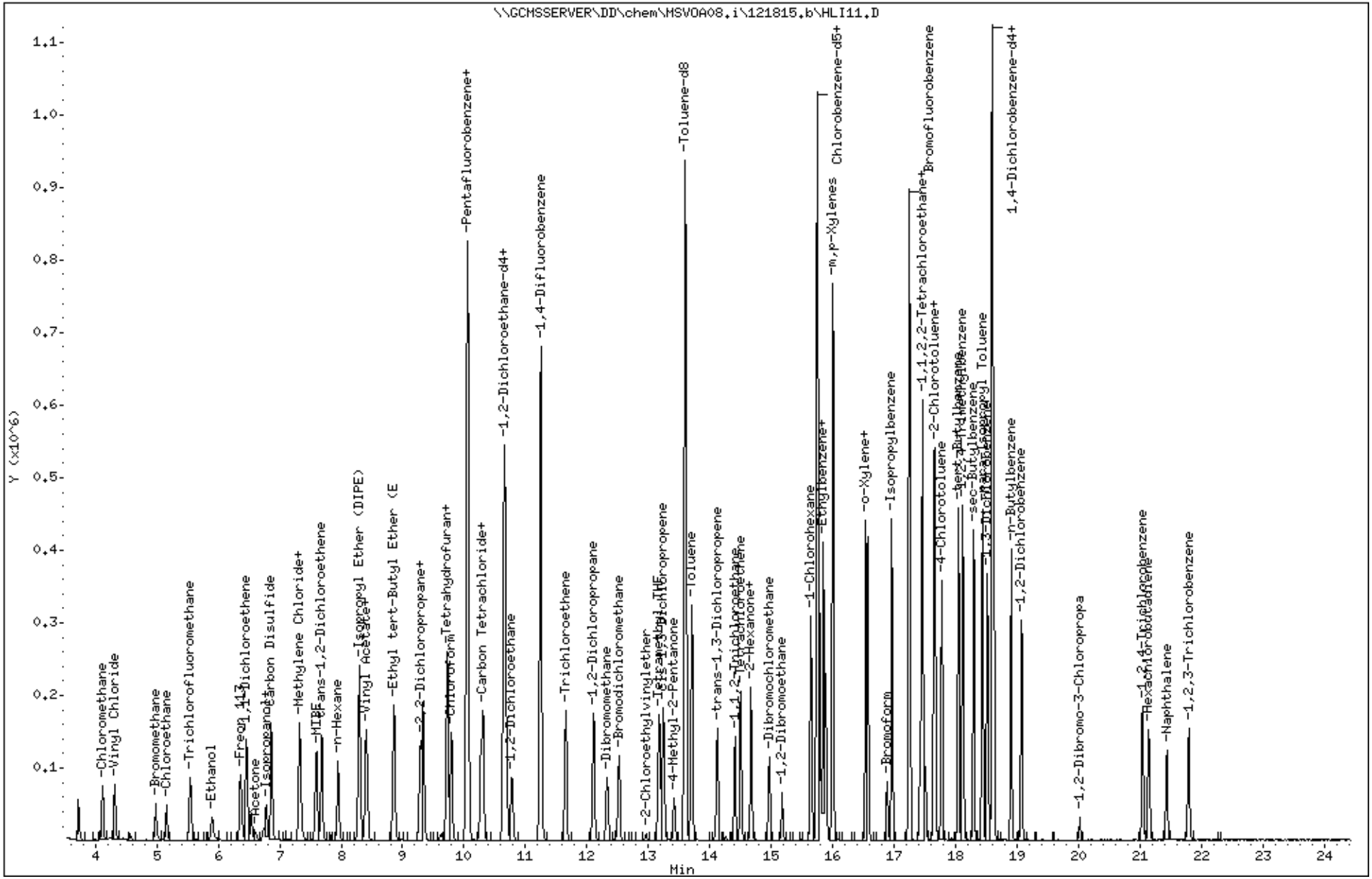
ISTD (ICAL hl715)	ICAL Area	BS Area	%Drift	ICAL RT	BS RT	Drift
Pentafluorobenzene	462693	428006	-7.50	10.04	10.05	0.01
1,4-Difluorobenzene	638581	677747	6.13	11.24	11.25	0.01
Chlorobenzene-d5	497147	624397	25.60	15.73	15.74	0.01
1,4-Dichlorobenzene-d4	270725	315538	16.55	18.59	18.60	0.01

ISTD (ICAL hl715)	ICAL Area	BSD Area	%Drift	ICAL RT	BSD RT	Drift
Pentafluorobenzene	462693	350985	-24.14	10.04	10.05	0.01
1,4-Difluorobenzene	638581	536705	-15.95	11.24	11.25	0.01
Chlorobenzene-d5	497147	447085	-10.07	15.73	15.74	0.01
1,4-Dichlorobenzene-d4	270725	239977	-11.36	18.59	18.60	0.01

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/29/15

+=high bias -=low bias b=noncompliant c=CCV u=use v=ICV

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI11.D
Date : 18-DEC-2015 17:22
Client ID: DYNA P&T
Instrument: MSVOA08.i
Sample Info: bs,qc816587,230360,s28489,.005/100,s28592,
Purge Volume: 5.0
Operator: VOC
Column phase: RTX 624
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI11.D
Report Date: 18-Dec-2015 18:00

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI11.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 18-DEC-2015 17:22 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : bs,qc816587,230360,s28489,.005/100,s28592,
Misc Info : .005/100,s28593,.005/100,s28123,.005/100
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\826GOX8.m
Meth Date : 08-Dec-2015 14:20 Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 14
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
1 Freon 12	85	3.725	3.718	(0.371)	56942	8.70753	8.7075
2 Chloromethane	50	4.118	4.103	(0.410)	86856	11.1927	11.1926
3 Vinyl Chloride	62	4.315	4.310	(0.429)	77848	12.4033	12.4032
4 Bromomethane	94	4.984	4.970	(0.496)	40863	18.2250	18.2250
5 Chloroethane	64	5.161	5.148	(0.514)	49583	11.2950	11.2950
6 Trichlorofluoromethane	101	5.545	5.533	(0.552)	81868	11.8631	11.8631
7 Ethanol	45	5.899	5.888	(0.587)	55558	1112.66	1112.6616
8 Freon 113	101	6.361	6.351	(0.633)	53594	13.3570	13.3570
9 1,1-Dichloroethene	96	6.459	6.460	(0.643)	60064	14.8299	14.8298
10 Acetone	43	6.607	6.598	(0.657)	18313	14.6645	14.6644
11 Isopropanol	45	6.735	6.726	(0.670)	27722	111.798	111.7975
12 Iodomethane	142	6.784	6.775	(0.675)	65556	16.0426	16.0425
13 Carbon Disulfide	76	6.863	6.854	(0.683)	266288	16.0782	16.0782
14 Methylene Chloride	84	7.325	7.318	(0.729)	73107	15.2772	15.2772
15 tert-Butyl Alcohol (TBA)	59	7.364	7.357	(0.733)	19299	56.3498	56.3498
16 MTBE	73	7.600	7.584	(0.756)	153745	14.4636	14.4635

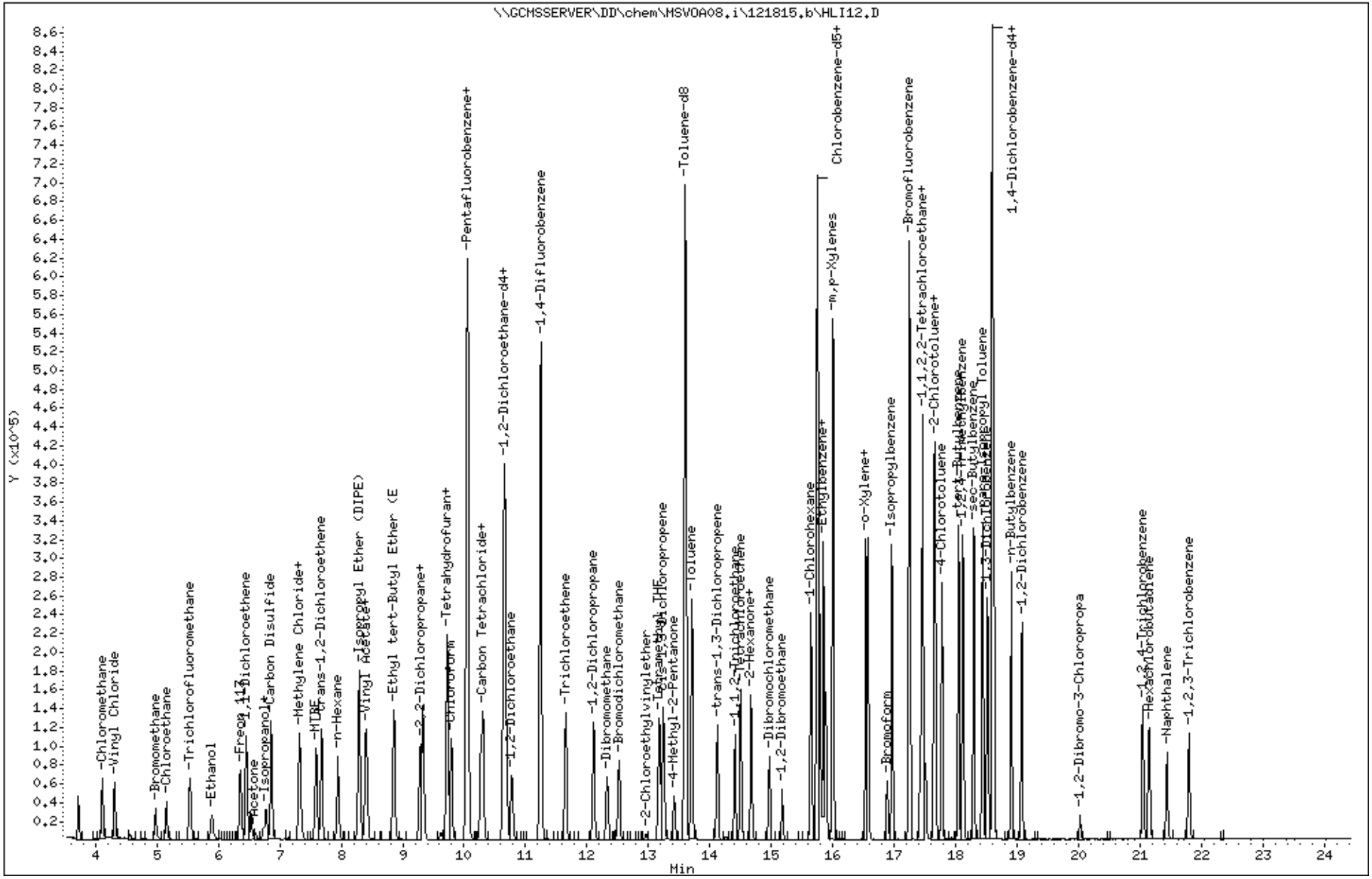
Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI11.D
Report Date: 18-Dec-2015 18:00

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
	17 trans-1,2-Dichloroethene	96	7.679	7.673	(0.764)	63662	13.9935	13.9935
	18 n-Hexane	57	7.954	7.939	(0.792)	60089	20.6379	20.6379
	19 Isopropyl Ether (DIPE)	45	8.299	8.284	(0.826)	321622	15.2635	15.2635
	20 Vinyl Acetate	43	8.387	8.383	(0.835)	146299	14.3250	14.3249
	21 1,1-Dichloroethane	63	8.417	8.403	(0.838)	136756	14.7494	14.7494
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.859	8.847	(0.882)	226821	14.6076	14.6075
	23 2,2-Dichloropropane	77	9.292	9.281	(0.925)	99647	17.7728	17.7728
	24 2-Butanone	43	9.331	9.320	(0.929)	26374	13.5758	13.5757
	25 cis-1,2-Dichloroethene	96	9.331	9.330	(0.929)	82511	15.4350	15.4350
	26 Tetrahydrofuran	42	9.725	9.714	(0.968)	127398	111.752	111.7524
	27 Bromochloromethane	128	9.735	9.724	(0.969)	36698	13.9206	13.9206
	28 Chloroform	83	9.794	9.784	(0.975)	126199	15.5384	15.5383
*	29 Pentafluorobenzene	168	10.049	10.040	(1.000)	428006	50.0000	
	30 Dibromofluoromethane	113	10.059	10.050	(1.001)	239868	52.5852	52.5851
	31 1,1,1-Trichloroethane	97	10.059	10.050	(1.001)	94878	16.4759	16.4759
	32 Carbon Tetrachloride	117	10.276	10.267	(0.913)	82565	15.2004	15.2003
	33 1,1-Dichloropropene	75	10.315	10.306	(0.917)	91636	13.4152	13.4152
	34 1,2-Dichloroethane-d4	65	10.659	10.651	(0.948)	221140	57.1576	57.1575
	35 Methyl tert-Amyl Ether (TAME)	73	10.679	10.671	(0.949)	177359	13.6068	13.6068
	36 Benzene	78	10.649	10.642	(0.947)	274873	14.6990	14.6989
	37 1,2-Dichloroethane	62	10.777	10.770	(0.958)	85302	15.8710	15.8709
*	38 1,4-Difluorobenzene	114	11.249	11.233	(1.000)	677747	50.0000	
	39 Trichloroethene	95	11.653	11.648	(1.036)	70481	14.5242	14.5242
	41 1,2-Dichloropropane	63	12.105	12.101	(1.076)	80925	14.9651	14.9651
	42 Dibromomethane	93	12.331	12.318	(1.096)	41383	13.9949	13.9949
	43 Bromodichloromethane	83	12.518	12.506	(1.113)	93785	15.3853	15.3852
	44 2-Chloroethylvinylether	63	12.961	12.950	(1.152)	5073	5.52036	5.5203
	45 Tetramethyl THF	43	13.177	13.166	(1.171)	152548	13.0080	13.0079
	46 cis-1,3-Dichloropropene	75	13.246	13.236	(1.177)	117964	16.1793	16.1792
	47 4-Methyl-2-Pentanone	43	13.423	13.413	(1.193)	57416	12.5204	12.5204
	48 Toluene-d8	98	13.600	13.591	(0.864)	732447	47.6249	47.6248
	49 Toluene	92	13.708	13.699	(0.871)	164012	13.2733	13.2733
	50 trans-1,3-Dichloropropene	75	14.121	14.113	(0.897)	88835	13.9637	13.9636
	51 1,1,2-Trichloroethane	85	14.407	14.399	(0.915)	28891	12.4306	12.4305
	52 Tetrachloroethene	166	14.505	14.498	(0.921)	72022	13.4892	13.4892
	53 2-Hexanone	43	14.672	14.666	(0.932)	39169	11.5804	11.5803
	54 1,3-Dichloropropane	76	14.672	14.666	(0.932)	94496	13.4180	13.4179
	55 Dibromochloromethane	129	14.967	14.962	(0.951)	68971	12.6095	12.6095
	56 1,2-Dibromoethane	107	15.174	15.169	(0.964)	52747	11.6225	11.6225
	57 1-Chlorohexane	91	15.646	15.642	(0.994)	99065	15.4255	15.4255
*	58 Chlorobenzene-d5	117	15.744	15.741	(1.000)	624397	50.0000	
	59 Chlorobenzene	112	15.784	15.780	(1.002)	191110	13.9676	13.9675
	60 Ethylbenzene	91	15.852	15.839	(1.007)	315344	13.8271	13.8271
	61 1,1,1,2-Tetrachloroethane	131	15.882	15.879	(1.009)	67904	12.8095	12.8094
	62 m,p-Xylenes	106	16.000	15.997	(1.016)	232809	28.6215	28.6214
	63 o-Xylene	106	16.541	16.530	(1.051)	120238	13.8734	13.8733
	64 Styrene	104	16.570	16.559	(1.052)	210396	14.4213	14.4213

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI11.D
Report Date: 18-Dec-2015 18:00

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
	65 Bromoform	173	16.885	16.885	(1.072)	41961	12.4363	12.4362
	66 Isopropylbenzene	105	16.964	16.954	(0.912)	302114	14.3010	14.3010
	67 Bromofluorobenzene	95	17.249	17.240	(0.928)	312340	53.0296	53.0295
	68 1,1,2,2-Tetrachloroethane	83	17.426	17.417	(0.937)	64029	12.4258	12.4257
	69 Bromobenzene	156	17.456	17.447	(0.939)	85987	14.5623	14.5622
	70 Propylbenzene	91	17.465	17.457	(0.939)	365907	14.0768	14.0768
	71 1,2,3-Trichloropropane	110	17.515	17.506	(0.942)	15015	12.0687	12.0687
	72 2-Chlorotoluene	91	17.642	17.634	(0.949)	236601	14.2944	14.2944
	73 1,3,5-Trimethylbenzene	105	17.662	17.654	(0.950)	253610	14.4491	14.4491
	74 4-Chlorotoluene	91	17.770	17.772	(0.956)	219366	14.6715	14.6714
	75 tert-Butylbenzene	119	18.046	18.039	(0.970)	219149	14.4375	14.4374
	76 1,2,4-Trimethylbenzene	105	18.115	18.108	(0.974)	252735	14.7025	14.7024
	77 sec-Butylbenzene	105	18.292	18.285	(0.984)	322750	13.6643	13.6642
	78 para-Isopropyl Toluene	119	18.439	18.433	(0.992)	265474	15.0754	15.0753
	79 1,3-Dichlorobenzene	146	18.518	18.512	(0.996)	160613	15.8978	15.8978
*	80 1,4-Dichlorobenzene-d4	152	18.597	18.591	(1.000)	315538	50.0000	
	81 1,4-Dichlorobenzene	146	18.626	18.621	(1.002)	152582	15.0791	15.0790
	82 n-Butylbenzene	91	18.901	18.897	(1.016)	232455	15.1888	15.1888
	83 1,2-Dichlorobenzene	146	19.069	19.065	(1.025)	144216	14.4854	14.4853
	84 1,2-Dibromo-3-Chloropropane	75	20.023	20.011	(1.077)	8601	11.8794	11.8794
	85 1,2,4-Trichlorobenzene	180	21.046	21.037	(1.132)	77218	14.5633	14.5633
	86 Hexachlorobutadiene	225	21.144	21.136	(1.137)	40392	15.1292	15.1292
	87 Naphthalene	128	21.439	21.432	(1.153)	129961	11.8743	11.8743
	88 1,2,3-Trichlorobenzene	180	21.793	21.777	(1.172)	69605	13.8205	13.8204

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI12.D
Date : 18-DEC-2015 17:56
Client ID: DYNA P&T
Instrument: MSVOA08.i
Sample Info: bsd,qc816588,230360,s28489,.005/100,s28592,
Purge Volume: 5.0
Operator: VOC
Column phase: RTX 624
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI12.D
Report Date: 18-Dec-2015 18:34

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI12.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 18-DEC-2015 17:56 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : bsd,qc816588,230360,s28489,.005/100,s28592,
Misc Info : .005/100,s28593,.005/100,s28123,.005/100
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\826GOX8.m
Meth Date : 08-Dec-2015 14:20 Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 15
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
1 Freon 12	85	3.724	3.718	(0.371)	46250	8.62453	8.6245
2 Chloromethane	50	4.108	4.103	(0.409)	68504	10.7649	10.7649
3 Vinyl Chloride	62	4.315	4.310	(0.429)	61828	12.0127	12.0126
4 Bromomethane	94	4.983	4.970	(0.496)	27730	15.3897	15.3897
5 Chloroethane	64	5.151	5.148	(0.513)	41240	11.4562	11.4561
6 Trichlorofluoromethane	101	5.534	5.533	(0.551)	64587	11.4127	11.4127
7 Ethanol	45	5.898	5.888	(0.587)	45898	1120.93	1120.9283
8 Freon 113	101	6.360	6.351	(0.633)	44306	13.4655	13.4655
9 1,1-Dichloroethene	96	6.459	6.460	(0.643)	47169	14.2019	14.2018
10 Acetone	43	6.606	6.598	(0.657)	12235	11.9477	11.9476
11 Isopropanol	45	6.734	6.726	(0.670)	21673	106.585	106.5851
12 Iodomethane	142	6.783	6.775	(0.675)	48678	14.7969	14.7968
13 Carbon Disulfide	76	6.862	6.854	(0.683)	207040	15.2441	15.2441
14 Methylene Chloride	84	7.324	7.318	(0.729)	54105	13.7876	13.7875
15 tert-Butyl Alcohol (TBA)	59	7.364	7.357	(0.733)	15643	55.6988	55.6987
16 MTBE	73	7.590	7.584	(0.755)	113297	12.9973	12.9972

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI12.D
Report Date: 18-Dec-2015 18:34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
	17 trans-1,2-Dichloroethene	96	7.678	7.673	(0.764)	49323	13.2207	13.2207
	18 n-Hexane	57	7.944	7.939	(0.791)	47591	19.9323	19.9322
	19 Isopropyl Ether (DIPE)	45	8.288	8.284	(0.825)	234284	13.5586	13.5585
	20 Vinyl Acetate	43	8.387	8.383	(0.835)	117505	14.0305	14.0304
	21 1,1-Dichloroethane	63	8.416	8.403	(0.838)	105224	13.8390	13.8389
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.859	8.847	(0.882)	169381	13.3021	13.3021
	23 2,2-Dichloropropane	77	9.291	9.281	(0.925)	76262	16.5868	16.5868
	24 2-Butanone	43	9.321	9.320	(0.928)	20596	12.9279	12.9278
	25 cis-1,2-Dichloroethene	96	9.331	9.330	(0.929)	60957	13.9055	13.9054
	26 Tetrahydrofuran	42	9.724	9.714	(0.968)	116637	124.764	124.7643
	27 Bromochloromethane	128	9.734	9.724	(0.969)	29190	13.5025	13.5025
	28 Chloroform	83	9.793	9.784	(0.975)	91473	13.7343	13.7342
*	29 Pentafluorobenzene	168	10.049	10.040	(1.000)	350985	50.0000	
	30 Dibromofluoromethane	113	10.059	10.050	(1.001)	170754	45.6481	45.6480
	31 1,1,1-Trichloroethane	97	10.068	10.050	(1.002)	71491	15.1389	15.1389
	32 Carbon Tetrachloride	117	10.275	10.267	(0.913)	64192	14.9236	14.9235
	33 1,1-Dichloropropene	75	10.305	10.306	(0.916)	69092	12.7729	12.7729
	34 1,2-Dichloroethane-d4	65	10.659	10.651	(0.948)	162077	52.9007	52.9007
	35 Methyl tert-Amyl Ether (TAME)	73	10.678	10.671	(0.949)	142024	13.7594	13.7594
	36 Benzene	78	10.649	10.642	(0.947)	207929	14.0412	14.0411
	37 1,2-Dichloroethane	62	10.777	10.770	(0.958)	65050	15.2836	15.2835
*	38 1,4-Difluorobenzene	114	11.249	11.233	(1.000)	536705	50.0000	
	39 Trichloroethene	95	11.652	11.648	(1.036)	53570	13.9404	13.9403
	41 1,2-Dichloropropane	63	12.104	12.101	(1.076)	56375	13.1650	13.1649
	42 Dibromomethane	93	12.321	12.318	(1.095)	32659	13.9469	13.9468
	43 Bromodichloromethane	83	12.518	12.506	(1.113)	68016	14.0901	14.0900
	44 2-Chloroethylvinylether	63	12.960	12.950	(1.152)	3238	4.62645	4.6264
	45 Tetramethyl THF	43	13.177	13.166	(1.171)	114399	12.3185	12.3184
	46 cis-1,3-Dichloropropene	75	13.245	13.236	(1.177)	88904	15.3980	15.3979
	47 4-Methyl-2-Pentanone	43	13.422	13.413	(1.193)	44912	12.3674	12.3673
	48 Toluene-d8	98	13.600	13.591	(0.864)	555061	50.4045	50.4044
	49 Toluene	92	13.708	13.699	(0.871)	127729	14.4366	14.4366
	50 trans-1,3-Dichloropropene	75	14.121	14.113	(0.897)	68622	15.0643	15.0642
	51 1,1,2-Trichloroethane	85	14.406	14.399	(0.915)	22249	13.3695	13.3694
	52 Tetrachloroethene	166	14.504	14.498	(0.921)	56449	14.7657	14.7656
	53 2-Hexanone	43	14.672	14.666	(0.932)	30362	12.5367	12.5366
	54 1,3-Dichloropropane	76	14.672	14.666	(0.932)	71989	14.2763	14.2762
	55 Dibromochloromethane	129	14.967	14.962	(0.951)	52590	13.4278	13.4277
	56 1,2-Dibromoethane	107	15.173	15.169	(0.964)	42890	13.1986	13.1986
	57 1-Chlorohexane	91	15.645	15.642	(0.994)	78941	17.0500	17.0500
*	58 Chlorobenzene-d5	117	15.744	15.741	(1.000)	447085	50.0000	
	59 Chlorobenzene	112	15.793	15.780	(1.003)	143562	14.6537	14.6537
	60 Ethylbenzene	91	15.852	15.839	(1.007)	237697	14.5560	14.5559
	61 1,1,1,2-Tetrachloroethane	131	15.891	15.879	(1.009)	48682	12.8255	12.8254
	62 m,p-Xylenes	106	15.999	15.997	(1.016)	176179	30.1827	30.1826
	63 o-Xylene	106	16.540	16.530	(1.051)	89917	14.4894	14.4894
	64 Styrene	104	16.570	16.559	(1.052)	156678	14.9985	14.9984

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI12.D
Report Date: 18-Dec-2015 18:34

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (UG/L)
	65 Bromoform	173	16.885	16.885	(1.072)	32773	13.5654	13.5654
	66 Isopropylbenzene	105	16.963	16.954	(0.912)	228474	14.2205	14.2204
	67 Bromofluorobenzene	95	17.249	17.240	(0.928)	217781	48.6174	48.6173
	68 1,1,2,2-Tetrachloroethane	83	17.426	17.417	(0.937)	50036	12.7676	12.7676
	69 Bromobenzene	156	17.455	17.447	(0.939)	59747	13.3044	13.3044
	70 Propylbenzene	91	17.465	17.457	(0.939)	266841	13.4980	13.4979
	71 1,2,3-Trichloropropane	110	17.514	17.506	(0.942)	12223	12.9189	12.9188
	72 2-Chlorotoluene	91	17.642	17.634	(0.949)	182386	14.4885	14.4884
	73 1,3,5-Trimethylbenzene	105	17.662	17.654	(0.950)	194123	14.5423	14.5423
	74 4-Chlorotoluene	91	17.780	17.772	(0.956)	163987	14.4211	14.4210
	75 tert-Butylbenzene	119	18.045	18.039	(0.970)	162683	14.0921	14.0921
	76 1,2,4-Trimethylbenzene	105	18.114	18.108	(0.974)	186948	14.2998	14.2997
	77 sec-Butylbenzene	105	18.291	18.285	(0.984)	261370	14.5498	14.5498
	78 para-Isopropyl Toluene	119	18.439	18.433	(0.992)	200203	14.9486	14.9485
	79 1,3-Dichlorobenzene	146	18.517	18.512	(0.996)	115393	15.0182	15.0182
*	80 1,4-Dichlorobenzene-d4	152	18.596	18.591	(1.000)	239977	50.0000	
	81 1,4-Dichlorobenzene	146	18.626	18.621	(1.002)	114460	14.8734	14.8733
	82 n-Butylbenzene	91	18.911	18.897	(1.017)	176738	15.1844	15.1843
	83 1,2-Dichlorobenzene	146	19.078	19.065	(1.026)	108827	14.3726	14.3725
	84 1,2-Dibromo-3-Chloropropane	75	20.022	20.011	(1.077)	6684	12.1385	12.1385
	85 1,2,4-Trichlorobenzene	180	21.045	21.037	(1.132)	57537	14.2683	14.2682
	86 Hexachlorobutadiene	225	21.153	21.136	(1.138)	32702	16.1057	16.1056
	87 Naphthalene	128	21.439	21.432	(1.153)	98869	11.8779	11.8778
	88 1,2,3-Trichlorobenzene	180	21.803	21.777	(1.172)	52137	13.6119	13.6118

CURTIS & TOMPKINS SPIKE USER REPORT FOR 272486 MSVOA Water
EPA 8260C

Type : MSS	Type : MS	Type : MSD
Inst : MSVOA08	Inst : MSVOA08	Inst : MSVOA08
Seqnum : 475507613023	Seqnum : 475507613028.9	Seqnum : 475507613029.9
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Lab ID : 272485-002	Lab ID : QC817299	Lab ID : QC817300
Matrix : Water	Matrix : Water	Matrix : Water
Batch : 230541	Batch : 230541	Batch : 230541
Time : 19-DEC-2015 00:11	Time : 19-DEC-2015 03:03	Time : 19-DEC-2015 03:37
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Caltype : WATER	Caltype : WATER	Caltype : WATER
Units : ug/L		

MSS:
MS:
MSD:

Analyte	MSS	Spiked	MS Raw	MS Result	%Rec	MSD Raw	MSD Result	%Rec	Limits	RPD	Lim	Flags
Freon 12	ND	142.9	13.63	97.38	68	13.50	96.45	68	30-155	1	30	u v- **b***
Chloromethane	ND	142.9	17.50	125.0	87	17.65	126.1	88	40-125	1	30	u
Vinyl Chloride	20.31	142.9	23.27	166.2	102	23.72	169.4	104	50-145	2	30	u
Bromomethane	ND	142.9	18.36	131.1	92	23.44	167.4	117	30-145	24	30	c+ u **b***
Chloroethane	ND	142.9	21.60	154.3	108	21.52	153.7	108	60-135	0	30	u
Trichlorofluoromethane	ND	142.9	22.00	157.1	110	22.81	163.0	114	60-145	4	30	u
Acetone	ND	178.6	22.53	160.9	90	27.24	194.6	109	40-140	19	30	u
Freon 113	ND	178.6	25.08	179.1	100	26.11	186.5	104	61-138	4	30	u
1,1-Dichloroethene	ND	178.6	28.69	204.9	115	29.57	211.2	118	70-130	3	30	u
Methylene Chloride	ND	178.6	31.11	222.2	124	32.05	229.0	128	55-140	3	30	u
Carbon Disulfide	ND	178.6	30.25	216.1	121	31.78	227.0	127	35-160	5	30	u
MTBE	ND	178.6	29.30	209.3	117	30.96	221.1	124	65-125	5	30	u
trans-1,2-Dichloroethene	4.930	178.6	28.17	201.2	110	28.48	203.4	111	60-140	1	30	u
Vinyl Acetate	ND	178.6	28.44	203.1	114	31.65	226.1	127	60-194	11	30	u
1,1-Dichloroethane	ND	178.6	28.63	204.5	115	29.82	213.0	119	70-135	4	30	u
2-Butanone	ND	178.6	25.62	183.0	102	27.96	199.7	112	30-150	9	30	u
cis-1,2-Dichloroethene	3.573	178.6	30.47	217.7	120	31.07	221.9	122	70-125	2	30	u
2,2-Dichloropropane	ND	178.6	28.88	206.3	116	28.88	206.3	116	70-135	0	30	c+ u **b***
Chloroform	ND	178.6	29.70	212.2	119	31.05	221.8	124	65-135	4	30	u
Bromochloromethane	ND	178.6	28.72	205.2	115	29.83	213.1	119	65-130	4	30	u
1,1,1-Trichloroethane	ND	178.6	31.13	222.4	125	30.92	220.9	124	65-130	1	30	u
1,1-Dichloropropene	ND	178.6	25.92	185.2	104	23.87	170.5	95	75-130	8	30	u
Carbon Tetrachloride	ND	178.6	30.70	219.3	123	28.37	202.6	113	65-140	8	30	u
1,2-Dichloroethane	ND	178.6	32.53	232.4	130	31.83	227.4	127	70-130	2	30	c+ u **b***
Benzene	1.069 J	178.6	29.97	214.0	119	28.78	205.6	115	80-120	4	30	u
Trichloroethene	ND	178.6	28.58	204.1	114	27.21	194.4	109	70-125	5	30	u
1,2-Dichloropropane	ND	178.6	30.10	215.0	120	29.13	208.1	117	75-125	3	30	u
Bromodichloromethane	ND	178.6	30.73	219.5	**123***	30.60	218.6	**122***	75-120	0	30	u
Dibromomethane	ND	178.6	30.90	220.7	124	28.77	205.5	115	75-125	7	30	u
4-Methyl-2-Pentanone	ND	178.6	25.89	184.9	104	27.32	195.1	109	60-135	5	30	u
cis-1,3-Dichloropropene	ND	178.6	32.52	232.3	130	30.32	216.6	121	70-130	7	30	c+ u **b***
Toluene	0.9143 J	178.6	27.10	193.6	108	27.06	193.3	108	75-120	0	30	u
trans-1,3-Dichloropropene	ND	178.6	28.55	203.9	114	27.29	194.9	109	55-140	5	30	u
1,1,2-Trichloroethane	ND	178.6	27.97	199.8	112	27.46	196.1	110	75-125	2	30	u
2-Hexanone	ND	178.6	26.89	192.1	108	26.01	185.8	104	55-130	3	30	u
1,3-Dichloropropane	ND	178.6	29.40	210.0	118	27.57	197.0	110	75-125	6	30	u

Analyte	MSS	Spiked	MS Raw	MS Result	%Rec	MSD Raw	MSD Result	%Rec	Limits	RPD	Lim	Flags
Tetrachloroethene	ND	178.6	28.04	200.3	112	26.75	191.0	107	45-150	5	30	u
Dibromochloromethane	ND	178.6	27.94	199.6	112	27.29	195.0	109	60-135	2	30	u
1,2-Dibromoethane	ND	178.6	27.37	195.5	109	26.50	189.3	106	80-120	3	30	u
Chlorobenzene	23.98	178.6	32.64	233.1	117	30.82	220.2	110	80-120	6	30	u
1,1,1,2-Tetrachloroethane	ND	178.6	27.51	196.5	110	25.86	184.7	103	80-130	6	30	u
Ethylbenzene	ND	178.6	27.14	193.8	109	26.78	191.3	107	75-125	1	30	u
m,p-Xylenes	ND	357.1	55.43	395.9	111	53.45	381.8	107	75-130	4	30	u
o-Xylene	2.191 J	178.6	27.78	198.5	110	27.07	193.3	107	80-120	3	30	u
Styrene	ND	178.6	26.18	187.0	105	25.11	179.3	100	65-135	4	30	u
Bromoform	ND	178.6	29.88	213.5	120	29.58	211.3	118	70-130	1	30	u
Isopropylbenzene	0.9057 J	178.6	26.57	189.8	106	26.23	187.3	104	75-125	1	30	u
1,1,2,2-Tetrachloroethane	ND	178.6	26.74	191.0	107	27.49	196.4	110	65-130	3	30	u
1,2,3-Trichloropropane	ND	178.6	24.79	177.1	99	25.90	185.0	104	75-125	4	30	u
Propylbenzene	ND	178.6	24.99	178.5	100	24.62	175.9	98	70-130	1	30	u
Bromobenzene	ND	178.6	27.97	199.8	112	28.46	203.3	114	75-125	2	30	u
1,3,5-Trimethylbenzene	0.7921 J	178.6	26.34	188.1	105	26.15	186.8	104	75-130	1	30	u
2-Chlorotoluene	ND	178.6	27.00	192.8	108	26.69	190.6	107	75-125	1	30	u
4-Chlorotoluene	ND	178.6	25.94	185.3	104	27.77	198.4	111	75-130	7	30	u
tert-Butylbenzene	ND	178.6	26.41	188.6	106	27.02	193.0	108	70-130	2	30	u
1,2,4-Trimethylbenzene	4.289	178.6	26.46	189.0	103	26.72	190.9	104	75-130	1	30	u
sec-Butylbenzene	0.8721 J	178.6	24.99	178.5	99	25.71	183.6	102	70-125	3	30	u
para-Isopropyl Toluene	ND	178.6	25.70	183.6	103	24.76	176.9	99	75-130	4	30	u
1,3-Dichlorobenzene	7.642	178.6	29.98	214.2	116	29.66	211.8	114	75-125	1	30	u
1,4-Dichlorobenzene	33.59	178.6	34.46	246.2	119	34.61	247.2	120	75-125	0	30	u
n-Butylbenzene	ND	178.6	25.81	184.4	103	25.15	179.6	101	70-135	3	30	u
1,2-Dichlorobenzene	8.360	178.6	29.28	209.1	112	30.76	219.7	118	70-120	5	30	u
1,2-Dibromo-3-Chloropropane	ND	178.6	26.13	186.7	105	27.71	198.0	111	50-130	6	30	u
1,2,4-Trichlorobenzene	ND	178.6	29.24	208.8	117	30.55	218.2	122	65-135	4	30	u
Hexachlorobutadiene	ND	178.6	27.46	196.2	110	28.67	204.8	115	50-140	4	30	u
Naphthalene	2.387 J	178.6	27.69	197.8	109	28.30	202.1	112	55-140	2	30	u
1,2,3-Trichlorobenzene	ND	178.6	29.35	209.6	117	31.35	223.9	125	55-140	7	30	u
Dibromofluoromethane		357.1	49.88	356.3	100	52.09	372.1	104	85-115			u
1,2-Dichloroethane-d4		357.1	56.83	405.9	114	55.74	398.1	111	70-120			u
Toluene-d8		357.1	49.42	353.0	99	47.04	336.0	94	85-120			u
Bromofluorobenzene		357.1	49.43	353.0	99	49.20	351.4	98	75-120			u

ISTD (ICAL hl715)	ICAL Area	MS Area	%Drift	ICAL RT	MS RT	Drift
Pentafluorobenzene	462693	457273	-1.17	10.04	10.06	0.02
1,4-Difluorobenzene	638581	695986	8.99	11.24	11.25	0.01
Chlorobenzene-d5	497147	621280	24.97	15.73	15.76	0.03
1,4-Dichlorobenzene-d4	270725	343407	26.85	18.59	18.61	0.02

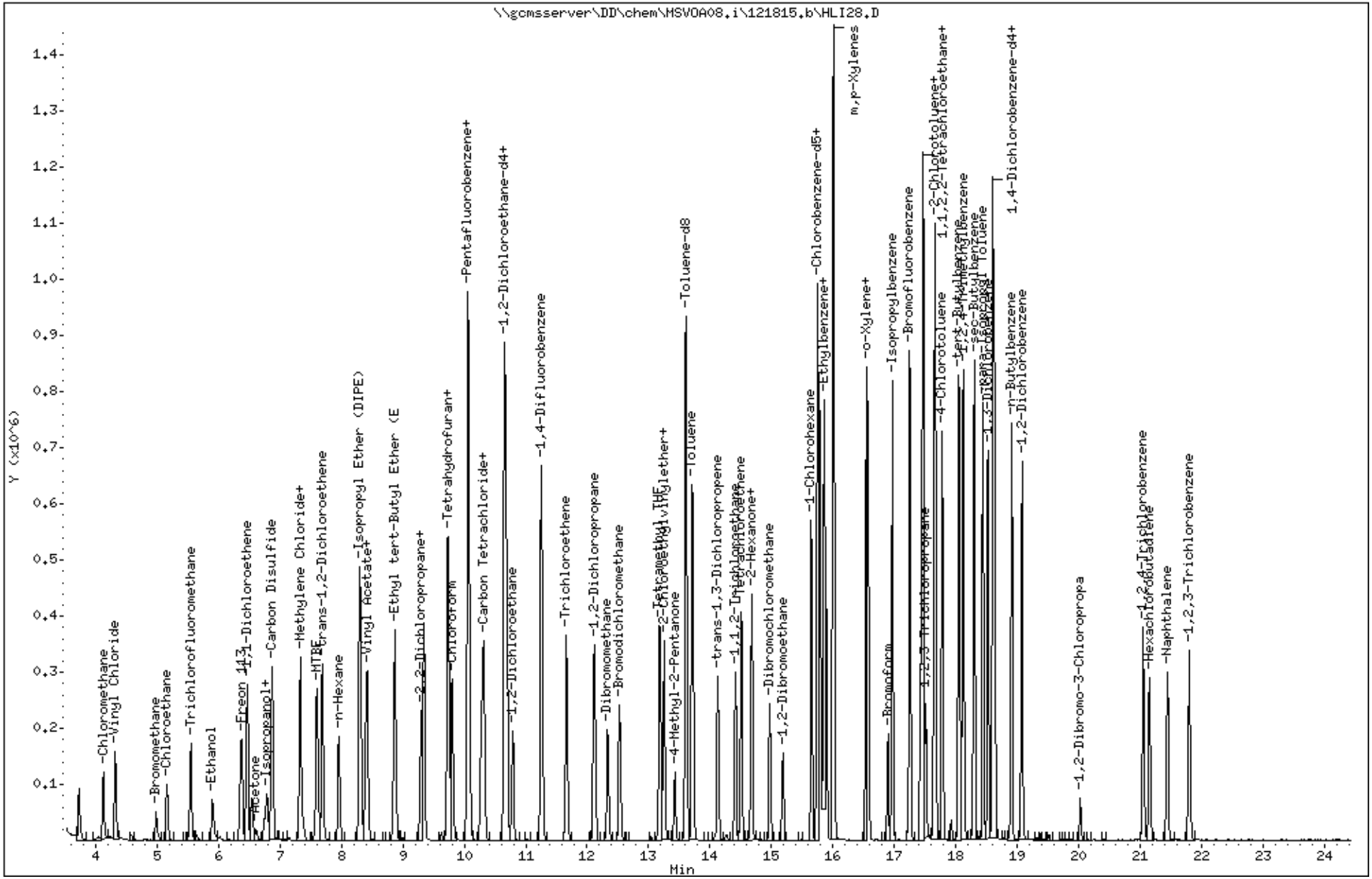
ISTD (ICAL hl715)	ICAL Area	MSD Area	%Drift	ICAL RT	MSD RT	Drift
Pentafluorobenzene	462693	428959	-7.29	10.04	10.06	0.02
1,4-Difluorobenzene	638581	717298	12.33	11.24	11.26	0.02
Chlorobenzene-d5	497147	631694	27.06	15.73	15.75	0.02
1,4-Dichlorobenzene-d4	270725	332254	22.73	18.59	18.61	0.02

DAR 12/21/15 : Was diluted due to foaming. [general version]

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/29/15

+=high bias -=low bias b=noncompliant c=CCV u=use v=ICV

Data File: \\gcmsserver\DD\chem\MSVOA08.i\121815.b\HLI28.D
Date : 19-DEC-2015 03:03
Client ID: DYNA P&T
Instrument: MSVOA08.i
Sample Info: Ms,qc817299,230541,14/100,s28489,.01/100,
Purge Volume: 5.0
Operator: VOC
Column phase: RTX 624
Column diameter: 0.25



Data File: \\gcmsserver\DD\chem\MSVOA08.i\121815.b\HLI28.D
Report Date: 19-Dec-2015 10:05

Curtis & Tompkins, Ltd.

Data file : \\gcmsserver\DD\chem\MSVOA08.i\121815.b\HLI28.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 19-DEC-2015 03:03 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : Ms,qc817299,230541,14/100,s28489,.01/100,
Misc Info : s28592,.01/100,s28593,.01/100,s28123,.01/100
Comment :
Method : \\gcmsserver\DD\chem\MSVOA08.i\121815.b\826GOX8.m
Meth Date : 19-Dec-2015 05:58 tapsvc Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 15
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.10
Processing Host: PC_MSVOA_WK01

Concentration Formula: Amt * DF * Uf/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
1 Freon 12	85	3.728	3.717	(0.371)	95251	13.6333	13.6332
2 Chloromethane	50	4.121	4.102	(0.410)	145085	17.4996	17.4995
3 Vinyl Chloride	62	4.318	4.309	(0.429)	156006	23.2650	23.2649
4 Bromomethane	94	4.977	4.970	(0.495)	44022	18.3597	18.3597
5 Chloroethane	64	5.164	5.147	(0.513)	101302	21.5995	21.5994
6 Trichlorofluoromethane	101	5.548	5.532	(0.551)	162185	21.9973	21.9972
7 Ethanol	45	5.902	5.887	(0.587)	122078	2288.38	2288.3780(A)
8 Freon 113	101	6.364	6.351	(0.632)	107505	25.0781	25.0780
9 1,1-Dichloroethene	96	6.462	6.459	(0.642)	124146	28.6900	28.6899
10 Acetone	43	6.610	6.597	(0.657)	30061	22.5312	22.5312
11 Isopropanol	45	6.748	6.726	(0.671)	66041	249.284	249.2835(A)
12 Iodomethane	142	6.787	6.775	(0.674)	121022	25.5440	25.5439(A)
13 Carbon Disulfide	76	6.866	6.854	(0.682)	535236	30.2486	30.2486
14 Methylene Chloride	84	7.328	7.317	(0.728)	159048	31.1090	31.1089
15 tert-Butyl Alcohol (TBA)	59	7.377	7.357	(0.733)	47516	129.857	129.8566(A)
16 MTBE	73	7.603	7.584	(0.756)	332768	29.3014	29.3013
17 trans-1,2-Dichloroethene	96	7.692	7.672	(0.764)	136935	28.1729	28.1728
18 n-Hexane	57	7.957	7.939	(0.791)	99476	31.9787	31.9786(A)
19 Isopropyl Ether (DIPE)	45	8.302	8.284	(0.825)	640317	28.4432	28.4432(A)
20 Vinyl Acetate	43	8.400	8.382	(0.835)	310319	28.4403	28.4403
21 1,1-Dichloroethane	63	8.420	8.402	(0.837)	283647	28.6339	28.6339
22 Ethyl tert-Butyl Ether (ETBE)	59	8.872	8.846	(0.882)	481276	29.0110	29.0110(A)

Data File: \\gcmsserver\DD\chem\MSVOA08.i\121815.b\HLI28.D
Report Date: 19-Dec-2015 10:05

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
	23 2,2-Dichloropropane	77	9.295	9.280	(0.924)	172968	28.8757	28.8756
	24 2-Butanone	43	9.334	9.319	(0.928)	53174	25.6185	25.6185
	25 cis-1,2-Dichloroethene	96	9.344	9.329	(0.929)	174036	30.4725	30.4725
	26 Tetrahydrofuran	42	9.728	9.714	(0.967)	295151	242.333	242.3328(A)
	27 Bromochloromethane	128	9.738	9.724	(0.968)	80899	28.7230	28.7230
	28 Chloroform	83	9.806	9.783	(0.975)	257741	29.7034	29.7034
*	29 Pentafluorobenzene	168	10.062	10.039	(1.000)	457273	50.0000	
	30 Dibromofluoromethane	113	10.072	10.049	(1.001)	243111	49.8849	49.8848
	31 1,1,1-Trichloroethane	97	10.072	10.049	(1.001)	191532	31.1313	31.1313
	32 Carbon Tetrachloride	117	10.279	10.266	(0.913)	171223	30.6961	30.6961
	33 1,1-Dichloropropene	75	10.318	10.306	(0.917)	181829	25.9216	25.9215
	34 1,2-Dichloroethane-d4	65	10.662	10.651	(0.948)	225775	56.8263	56.8263
	35 Methyl tert-Amyl Ether (TAME)	73	10.692	10.671	(0.950)	388972	29.0596	29.0595(A)
	36 Benzene	78	10.652	10.641	(0.947)	575458	29.9665	29.9664
	37 1,2-Dichloroethane	62	10.790	10.769	(0.959)	179554	32.5316	32.5316
*	38 1,4-Difluorobenzene	114	11.252	11.233	(1.000)	695986	50.0000	
	39 Trichloroethene	95	11.665	11.647	(1.037)	142410	28.5774	28.5774
	41 1,2-Dichloropropane	63	12.118	12.101	(1.077)	167153	30.1008	30.1008
	42 Dibromomethane	93	12.334	12.318	(1.096)	93820	30.8959	30.8959
	43 Bromodichloromethane	83	12.531	12.505	(1.114)	192339	30.7259	30.7258
	44 2-Chloroethylvinylether	63	13.259	12.950	(1.178)	1509	2.22960	2.2296
	45 Tetramethyl THF	43	13.180	13.166	(1.171)	335878	27.8901	27.8901(A)
	46 cis-1,3-Dichloropropene	75	13.259	13.235	(1.178)	243509	32.5229	32.5228
	47 4-Methyl-2-Pentanone	43	13.426	13.413	(1.193)	121917	25.8887	25.8887
	48 Toluene-d8	98	13.613	13.590	(0.864)	756207	49.4165	49.4164
	49 Toluene	92	13.711	13.699	(0.870)	333176	27.0988	27.0988
	50 trans-1,3-Dichloropropene	75	14.134	14.113	(0.897)	180726	28.5501	28.5500
	51 1,1,2-Trichloroethane	85	14.410	14.399	(0.914)	64687	27.9708	27.9708
	52 Tetrachloroethene	166	14.518	14.498	(0.921)	148990	28.0448	28.0448
	53 2-Hexanone	43	14.675	14.665	(0.931)	90503	26.8912	26.8911
	54 1,3-Dichloropropane	76	14.685	14.665	(0.932)	206044	29.4040	29.4040
	55 Dibromochloromethane	129	14.980	14.961	(0.951)	152072	27.9416	27.9416
	56 1,2-Dibromoethane	107	15.187	15.168	(0.964)	123576	27.3658	27.3657
	57 1-Chlorohexane	91	15.649	15.642	(0.993)	194747	28.4576	28.4576(A)
*	58 Chlorobenzene-d5	117	15.757	15.740	(1.000)	621280	50.0000	
	59 Chlorobenzene	112	15.796	15.780	(1.002)	444319	32.6367	32.6366
	60 Ethylbenzene	91	15.855	15.839	(1.006)	615831	27.1382	27.1382
	61 1,1,1,2-Tetrachloroethane	131	15.895	15.878	(1.009)	145092	27.5074	27.5074
	62 m,p-Xylenes	106	16.013	15.997	(1.016)	469540	55.4259	55.4258
	63 o-Xylene	106	16.544	16.529	(1.050)	239600	27.7842	27.7841
	64 Styrene	104	16.573	16.559	(1.052)	380006	26.1776	26.1776
	65 Bromoform	173	16.898	16.884	(1.072)	100329	29.8840	29.8839
	66 Isopropylbenzene	105	16.977	16.953	(0.912)	610840	26.5684	26.5684
	67 Bromofluorobenzene	95	17.252	17.239	(0.927)	316821	49.4250	49.4249
	68 1,1,2,2-Tetrachloroethane	83	17.429	17.417	(0.937)	149965	26.7408	26.7407
	69 Bromobenzene	156	17.459	17.446	(0.938)	179763	27.9729	27.9729
	70 Propylbenzene	91	17.478	17.457	(0.939)	706951	24.9900	24.9900
	71 1,2,3-Trichloropropane	110	17.518	17.506	(0.941)	33570	24.7931	24.7930
	72 2-Chlorotoluene	91	17.655	17.634	(0.949)	486357	26.9989	26.9989
	73 1,3,5-Trimethylbenzene	105	17.675	17.654	(0.950)	503112	26.3380	26.3379
	74 4-Chlorotoluene	91	17.783	17.772	(0.956)	422148	25.9425	25.9425
	75 tert-Butylbenzene	119	18.059	18.038	(0.970)	436301	26.4108	26.4107
	76 1,2,4-Trimethylbenzene	105	18.127	18.107	(0.974)	495002	26.4592	26.4591
	77 sec-Butylbenzene	105	18.304	18.285	(0.984)	642350	24.9882	24.9881

Data File: \\gcmsserver\DD\chem\MSVOA08.i\121815.b\HLI28.D
Report Date: 19-Dec-2015 10:05

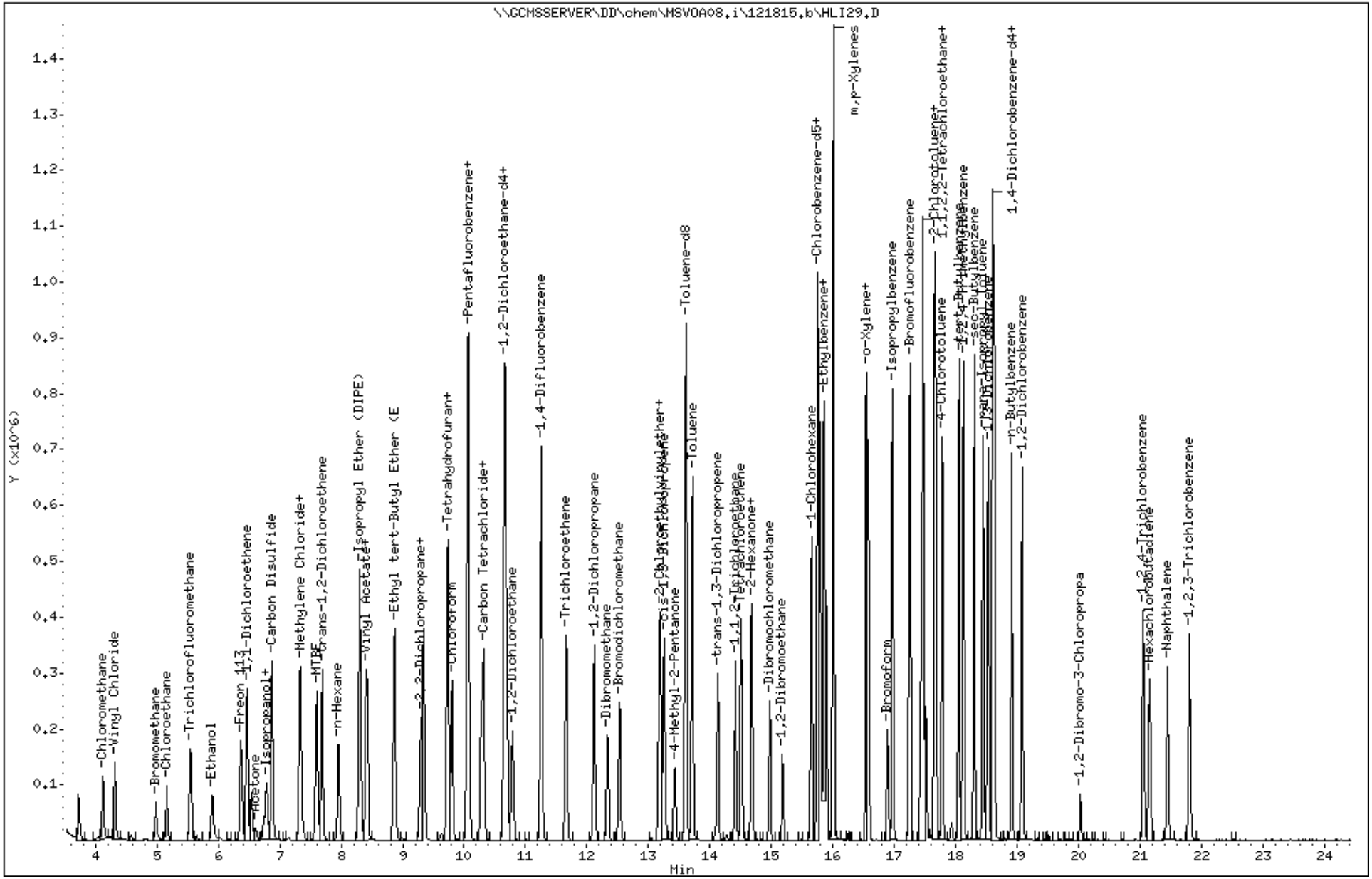
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
78 para-Isopropyl Toluene	119	18.442	18.433	(0.991)	492514	25.6985	25.6984
79 1,3-Dichlorobenzene	146	18.531	18.512	(0.996)	329650	29.9814	29.9814
* 80 1,4-Dichlorobenzene-d4	152	18.609	18.591	(1.000)	343407	50.0000	
81 1,4-Dichlorobenzene	146	18.629	18.620	(1.001)	379525	34.4631	34.4631
82 n-Butylbenzene	91	18.914	18.897	(1.016)	429960	25.8141	25.8140
83 1,2-Dichlorobenzene	146	19.082	19.064	(1.025)	317233	29.2777	29.2777
84 1,2-Dibromo-3-Chloropropane	75	20.026	20.011	(1.076)	20594	26.1334	26.1334
85 1,2,4-Trichlorobenzene	180	21.058	21.037	(1.132)	168720	29.2381	29.2381
86 Hexachlorobutadiene	225	21.157	21.135	(1.137)	79799	27.4637	27.4636
87 Naphthalene	128	21.452	21.431	(1.153)	329856	27.6925	27.6925
88 1,2,3-Trichlorobenzene	180	21.806	21.776	(1.172)	160852	29.3462	29.3461

QC Flag Legend

A - Target compound detected but, quantitated amount exceeded maximum amount.

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI29.D
Date : 19-DEC-2015 03:37
Client ID: DYNA P&T
Sample Info: IB,
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI29.D
Report Date: 19-Dec-2015 04:15

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI29.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 19-DEC-2015 03:37 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : IB,
Misc Info : 1/1
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\826GOX8.m
Meth Date : 08-Dec-2015 14:20 Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 16
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
1 Freon 12	85	3.724	3.718	(0.370)	88501	13.5033	13.5033
2 Chloromethane	50	4.118	4.103	(0.409)	137262	17.6489	17.6488
3 Vinyl Chloride	62	4.324	4.310	(0.430)	149193	23.7176	23.7175
4 Bromomethane	94	4.983	4.970	(0.495)	54666	23.4392	23.4391
5 Chloroethane	64	5.160	5.148	(0.513)	94695	21.5236	21.5236
6 Trichlorofluoromethane	101	5.544	5.533	(0.551)	157794	22.8144	22.8144
7 Ethanol	45	5.898	5.888	(0.586)	138276	2763.11	2763.1129
8 Freon 113	101	6.370	6.351	(0.633)	105011	26.1132	26.1132
9 1,1-Dichloroethene	96	6.468	6.460	(0.643)	120016	29.5664	29.5664
10 Acetone	43	6.616	6.598	(0.658)	34094	27.2415	27.2414
11 Isopropanol	45	6.744	6.726	(0.670)	70906	285.313	285.3134
12 Iodomethane	142	6.793	6.775	(0.675)	156445	33.9297	33.9297
13 Carbon Disulfide	76	6.872	6.854	(0.683)	527454	31.7764	31.7764
14 Methylene Chloride	84	7.334	7.318	(0.729)	153728	32.0532	32.0531
15 tert-Butyl Alcohol (TBA)	59	7.373	7.357	(0.733)	50433	146.927	146.9265
16 MTBE	73	7.599	7.584	(0.756)	329816	30.9583	30.9583

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI29.D
Report Date: 19-Dec-2015 04:15

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
	17 trans-1,2-Dichloroethene	96	7.688	7.673	(0.764)	129844	28.4774	28.4773
	18 n-Hexane	57	7.954	7.939	(0.791)	98006	33.5859	33.5859
	19 Isopropyl Ether (DIPE)	45	8.298	8.284	(0.825)	635862	30.1097	30.1096
	20 Vinyl Acetate	43	8.396	8.383	(0.835)	323947	31.6489	31.6489
	21 1,1-Dichloroethane	63	8.426	8.403	(0.838)	277113	29.8208	29.8207
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.868	8.847	(0.882)	480571	30.8806	30.8805
	23 2,2-Dichloropropane	77	9.301	9.281	(0.925)	162302	28.8835	28.8834
	24 2-Butanone	43	9.331	9.320	(0.928)	54444	27.9621	27.9620
	25 cis-1,2-Dichloroethene	96	9.340	9.330	(0.929)	166468	31.0714	31.0714
	26 Tetrahydrofuran	42	9.724	9.714	(0.967)	301944	264.273	264.2733
	27 Bromochloromethane	128	9.744	9.724	(0.969)	78825	29.8342	29.8341
	28 Chloroform	83	9.803	9.784	(0.975)	252751	31.0510	31.0509
*	29 Pentafluorobenzene	168	10.058	10.040	(1.000)	428959	50.0000	
	30 Dibromofluoromethane	113	10.068	10.050	(1.001)	238154	52.0934	52.0934
	31 1,1,1-Trichloroethane	97	10.068	10.050	(1.001)	178470	30.9231	30.9230
	32 Carbon Tetrachloride	117	10.285	10.267	(0.914)	163083	28.3682	28.3682
	33 1,1-Dichloropropene	75	10.314	10.306	(0.916)	172558	23.8690	23.8690
	34 1,2-Dichloroethane-d4	65	10.668	10.651	(0.948)	228239	55.7396	55.7396
	35 Methyl tert-Amyl Ether (TAME)	73	10.688	10.671	(0.949)	392292	28.4368	28.4368
	36 Benzene	78	10.658	10.642	(0.947)	569662	28.7833	28.7832
	37 1,2-Dichloroethane	62	10.786	10.770	(0.958)	181062	31.8301	31.8301
*	38 1,4-Difluorobenzene	114	11.258	11.233	(1.000)	717298	50.0000	
	39 Trichloroethene	95	11.662	11.648	(1.036)	139753	27.2111	27.2110
	41 1,2-Dichloropropane	63	12.114	12.101	(1.076)	166713	29.1297	29.1297
	42 Dibromomethane	93	12.330	12.318	(1.095)	90040	28.7702	28.7702
	43 Bromodichloromethane	83	12.527	12.506	(1.113)	197423	30.6011	30.6010
	44 2-Chloroethylvinylether	63	13.186	12.950	(1.171)	210	1.05810	1.0580
	45 Tetramethyl THF	43	13.186	13.166	(1.171)	355029	28.6044	28.6044
	46 cis-1,3-Dichloropropene	75	13.255	13.236	(1.177)	233944	30.3171	30.3170
	47 4-Methyl-2-Pentanone	43	13.422	13.413	(1.192)	132584	27.3173	27.3173
	48 Toluene-d8	98	13.609	13.591	(0.864)	731908	47.0401	47.0400
	49 Toluene	92	13.717	13.699	(0.871)	338239	27.0571	27.0570
	50 trans-1,3-Dichloropropene	75	14.130	14.113	(0.897)	175642	27.2896	27.2895
	51 1,1,2-Trichloroethane	85	14.416	14.399	(0.915)	64567	27.4588	27.4587
	52 Tetrachloroethene	166	14.514	14.498	(0.921)	144472	26.7461	26.7460
	53 2-Hexanone	43	14.681	14.666	(0.932)	89007	26.0107	26.0107
	54 1,3-Dichloropropane	76	14.681	14.666	(0.932)	196455	27.5734	27.5733
	55 Dibromochloromethane	129	14.976	14.962	(0.951)	151035	27.2936	27.2935
	56 1,2-Dibromoethane	107	15.183	15.169	(0.964)	121687	26.5033	26.5032
	57 1-Chlorohexane	91	15.655	15.642	(0.994)	186983	27.1021	27.1020
*	58 Chlorobenzene-d5	117	15.753	15.741	(1.000)	631694	50.0000	
	59 Chlorobenzene	112	15.793	15.780	(1.002)	426634	30.8210	30.8210
	60 Ethylbenzene	91	15.861	15.839	(1.007)	617805	26.7764	26.7764
	61 1,1,1,2-Tetrachloroethane	131	15.891	15.879	(1.009)	138711	25.8641	25.8641
	62 m,p-Xylenes	106	16.009	15.997	(1.016)	458638	53.4502	53.4501
	63 o-Xylene	106	16.550	16.530	(1.051)	237333	27.0676	27.0676
	64 Styrene	104	16.579	16.559	(1.052)	370559	25.1060	25.1060

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI29.D
Report Date: 19-Dec-2015 04:15

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
65 Bromoform	173	16.894	16.885	(1.072)	100963	29.5771	29.5770
66 Isopropylbenzene	105	16.973	16.954	(0.912)	583403	26.2269	26.2268
67 Bromofluorobenzene	95	17.258	17.240	(0.928)	305106	49.1952	49.1952
68 1,1,2,2-Tetrachloroethane	83	17.425	17.417	(0.937)	149181	27.4940	27.4939
69 Bromobenzene	156	17.465	17.447	(0.939)	176924	28.4554	28.4554
70 Propylbenzene	91	17.474	17.457	(0.939)	673929	24.6224	24.6224
71 1,2,3-Trichloropropane	110	17.514	17.506	(0.941)	33925	25.8967	25.8966
72 2-Chlorotoluene	91	17.652	17.634	(0.949)	465164	26.6893	26.6892
73 1,3,5-Trimethylbenzene	105	17.671	17.654	(0.950)	483271	26.1485	26.1485
74 4-Chlorotoluene	91	17.779	17.772	(0.956)	437210	27.7700	27.7700
75 tert-Butylbenzene	119	18.055	18.039	(0.970)	431791	27.0152	27.0151
76 1,2,4-Trimethylbenzene	105	18.124	18.108	(0.974)	483716	26.7238	26.7238
77 sec-Butylbenzene	105	18.301	18.285	(0.984)	639371	25.7072	25.7071
78 para-Isopropyl Toluene	119	18.448	18.433	(0.992)	459154	24.7620	24.7620
79 1,3-Dichlorobenzene	146	18.527	18.512	(0.996)	315487	29.6565	29.6565
* 80 1,4-Dichlorobenzene-d4	152	18.606	18.591	(1.000)	332254	50.0000	
81 1,4-Dichlorobenzene	146	18.635	18.621	(1.002)	368816	34.6149	34.6149
82 n-Butylbenzene	91	18.910	18.897	(1.016)	405253	25.1474	25.1474
83 1,2-Dichlorobenzene	146	19.078	19.065	(1.025)	322445	30.7577	30.7577
84 1,2-Dibromo-3-Chloropropane	75	20.032	20.011	(1.077)	21130	27.7141	27.7141
85 1,2,4-Trichlorobenzene	180	21.055	21.037	(1.132)	170585	30.5538	30.5537
86 Hexachlorobutadiene	225	21.163	21.136	(1.137)	80605	28.6723	28.6722
87 Naphthalene	128	21.448	21.432	(1.153)	326132	28.2990	28.2989
88 1,2,3-Trichlorobenzene	180	21.802	21.777	(1.172)	166230	31.3455	31.3454

Initial Calibration Raw Data

CURTIS & TOMPKINS BFB TUNE FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 Run Name : BFB IDF : 1.0
Seqnum : 475492027004 File : hl704 Time : 07-DEC-2015 18:27

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	4082	23.41	
75	30% - 60% of mass 95	8174	46.89	
95		17434	100.00	
96	5% - 9% of mass 95	1305	7.49	
173	< 2% of mass 174	0	0.00	
174	> 50% and < 100% of mass 95	14010	80.36	
175	5% - 9% of mass 174	1090	7.78	
176	> 95% and < 101% of mass 174	13520	96.50	
177	5% - 9% of mass 176	1005	7.43	

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL704.D

Date : 07-DEC-2015 18:27

Client ID: bfb tune std

Instrument: MSVOA08.i

Sample Info: BFB,S27825

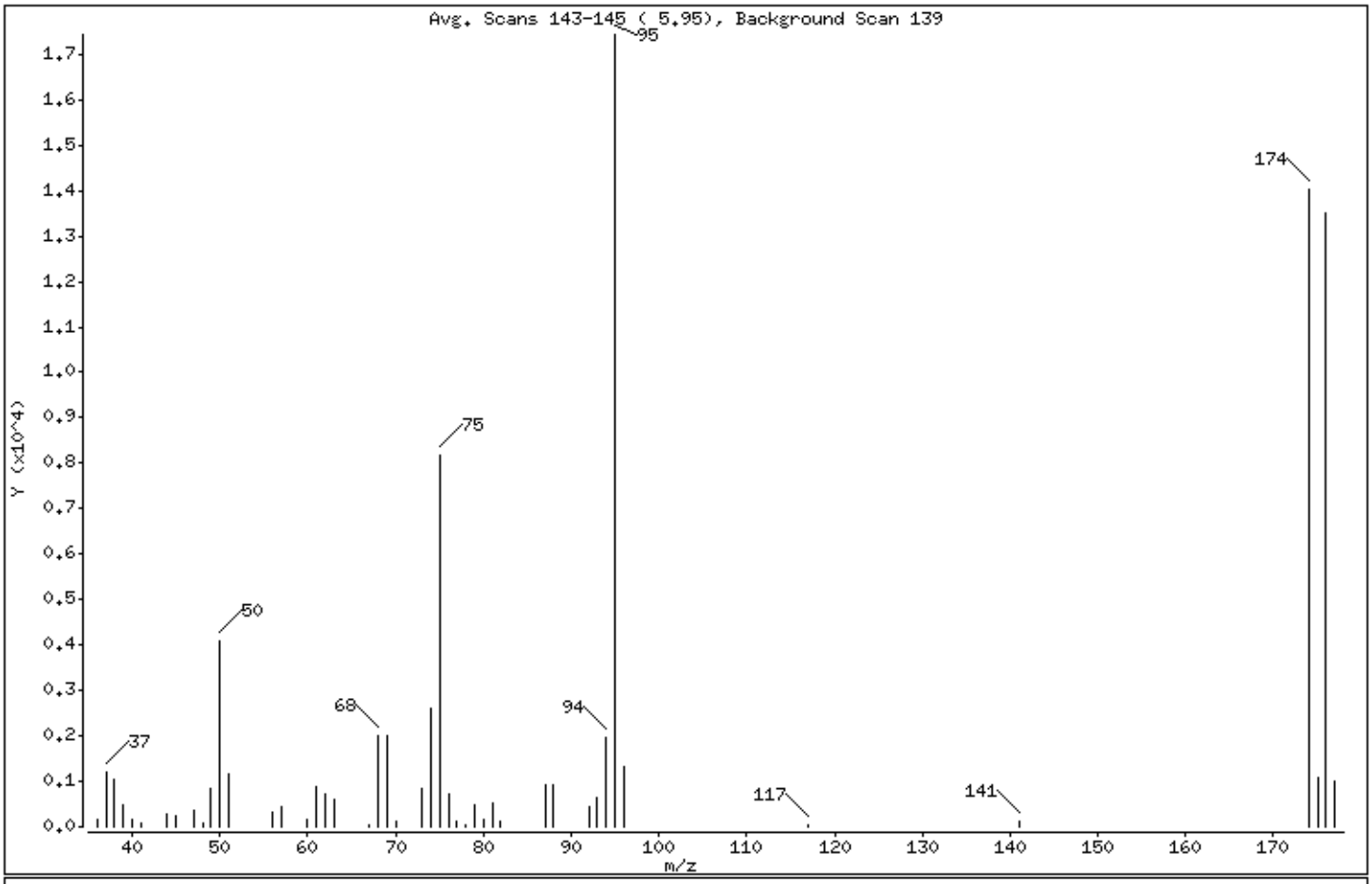
Volume Injected (uL): 1.0

Operator: VOC

Column phase:

Column diameter: 2.00

1 Bromofluorobenzene



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	23.41
75	30.00 - 60.00% of mass 95	46.89
96	5.00 - 9.00% of mass 95	7.49
173	Less than 2.00% of mass 174	0.00 (0.00)
174	50.00 - 99.99% of mass 95	80.36
175	5.00 - 9.00% of mass 174	6.25 (7.78)
176	95.01 - 100.99% of mass 174	77.55 (96.50)
177	5.00 - 9.00% of mass 176	5.76 (7.43)

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL704.D

Date : 07-DEC-2015 18:27

Client ID: bfb tune std

Instrument: MSVOA08.i

Sample Info: BFB,S27825

Volume Injected (uL): 1.0

Operator: VOC

Column phase:

Column diameter: 2.00

Data File: HL704.D
Spectrum: Avg. Scans 143-145 (5.95), Background Scan 139
Location of Maximum: 95.00
Number of points: 46

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	175	51.00	1169	74.00	2608	93.00	653
37.00	1220	56.00	327	75.00	8174	94.00	1971
38.00	1044	57.00	451	76.00	704	95.00	17432
39.00	500	60.00	163	77.00	113	96.00	1305
40.00	175	61.00	886	78.00	56	117.00	55
41.00	75	62.00	732	79.00	499	141.00	103
44.00	283	63.00	594	80.00	165	174.00	14010
45.00	239	67.00	59	81.00	538	175.00	1090
47.00	371	68.00	2006	82.00	124	176.00	13520
48.00	76	69.00	1992	87.00	927	177.00	1005
49.00	856	70.00	123	88.00	908		
50.00	4082	73.00	828	92.00	423		

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL704.D

Date : 07-DEC-2015 18:27

Client ID: bfb tune std

Instrument: MSVOA08.i

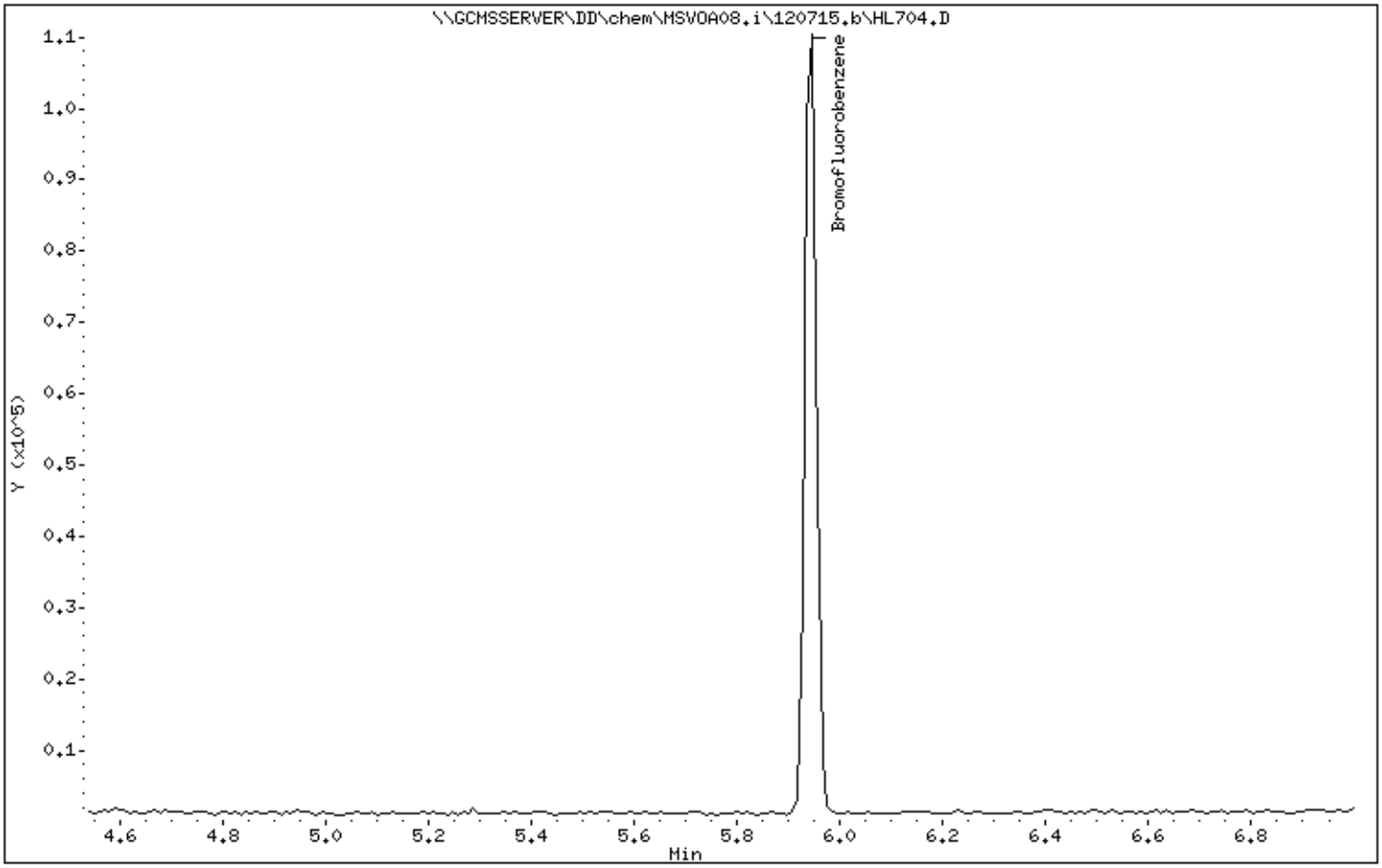
Sample Info: BFB,S27825

Volume Injected (uL): 1.0

Operator: VOC

Column phase:

Column diameter: 2.00



CURTIS & TOMPKINS BFB TUNE FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 Run Name : BFB IDF : 1.0
Seqnum : 475507613009 File : hli09 Time : 18-DEC-2015 16:20

Standards: S27825

Mass	Ion Abundance Criteria	Abundance	% Relative Abundance	Q
50	15% - 40% of mass 95	2419	23.69	
75	30% - 60% of mass 95	4730	46.33	
95		10210	100.00	
96	5% - 9% of mass 95	748	7.33	
173	< 2% of mass 174	61	0.68	
174	> 50% and < 100% of mass 95	8937	87.53	
175	5% - 9% of mass 174	724	8.10	
176	> 95% and < 101% of mass 174	8648	96.77	
177	5% - 9% of mass 176	596	6.89	

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/21/15

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI09.D

Date : 18-DEC-2015 16:20

Client ID: bfb tune std

Instrument: MSVOA08.i

Sample Info: BFB,S27825

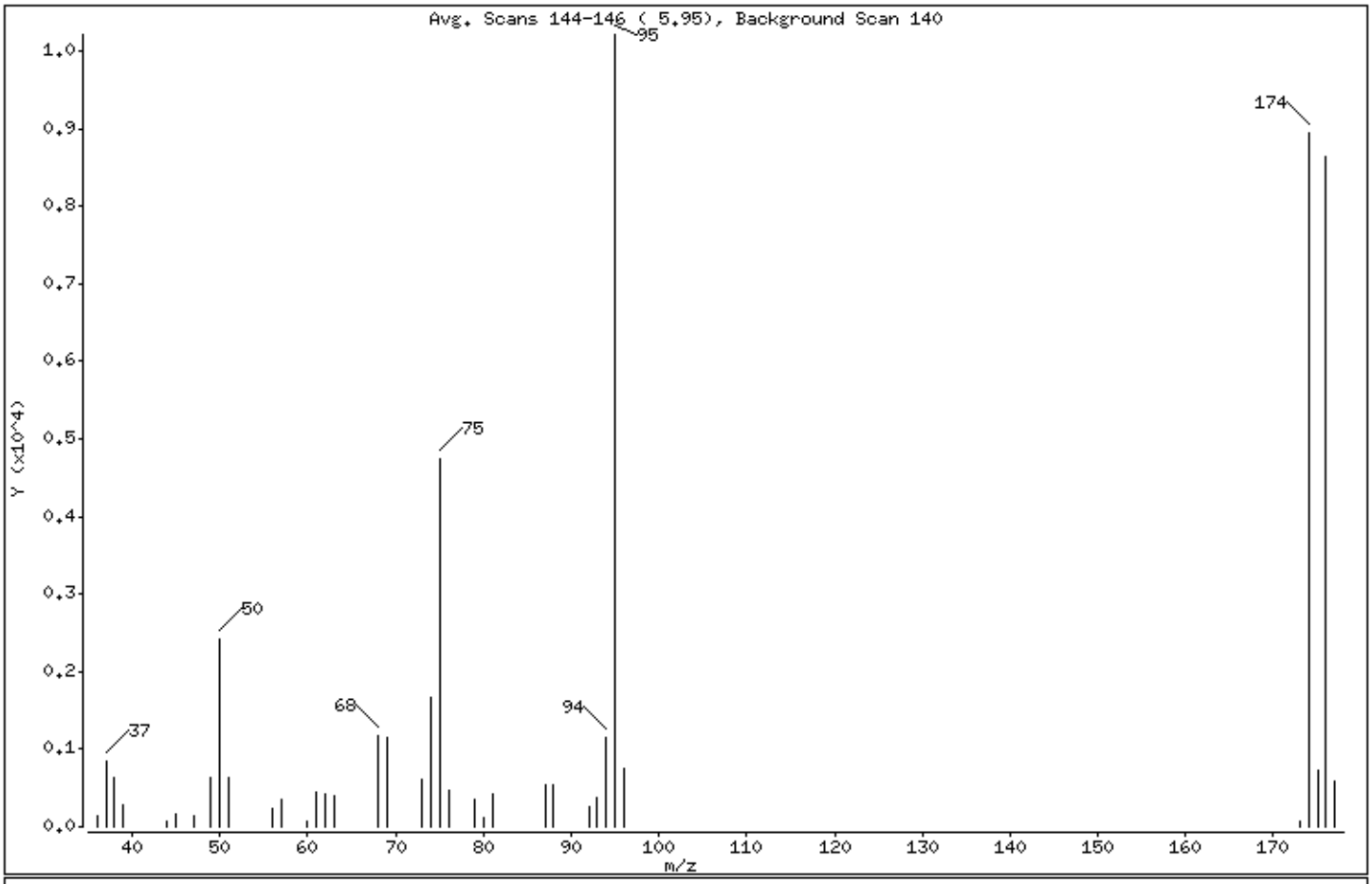
Volume Injected (uL): 1.0

Operator: VOC

Column phase:

Column diameter: 2.00

1 Bromofluorobenzene



m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
95	Base Peak, 100% relative abundance	100.00
50	15.00 - 40.00% of mass 95	23.69
75	30.00 - 60.00% of mass 95	46.33
96	5.00 - 9.00% of mass 95	7.33
173	Less than 2.00% of mass 174	0.60 (0.68)
174	50.00 - 99.99% of mass 95	87.53
175	5.00 - 9.00% of mass 174	7.09 (8.10)
176	95.01 - 100.99% of mass 174	84.70 (96.77)
177	5.00 - 9.00% of mass 176	5.84 (6.89)

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI09.D

Date : 18-DEC-2015 16:20

Client ID: bfb tune std

Instrument: MSVOA08.i

Sample Info: BFB,S27825

Volume Injected (uL): 1.0

Operator: VOC

Column phase:

Column diameter: 2.00

Data File: HLI09.D
Spectrum: Avg. Scans 144-146 (5.95), Background Scan 140
Location of Maximum: 95.00
Number of points: 37

m/z	Y	m/z	Y	m/z	Y	m/z	Y
36.00	134	56.00	224	75.00	4730	95.00	10210
37.00	835	57.00	354	76.00	463	96.00	748
38.00	624	60.00	64	79.00	347	173.00	61
39.00	291	61.00	455	80.00	116	174.00	8937
44.00	66	62.00	415	81.00	434	175.00	724
45.00	156	63.00	402	87.00	545	176.00	8648
47.00	138	68.00	1183	88.00	538	177.00	596
49.00	629	69.00	1158	92.00	268		
50.00	2419	73.00	599	93.00	382		
51.00	624	74.00	1659	94.00	1157		

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI09.D

Date : 18-DEC-2015 16:20

Client ID: bfb tune std

Instrument: MSVOA08.i

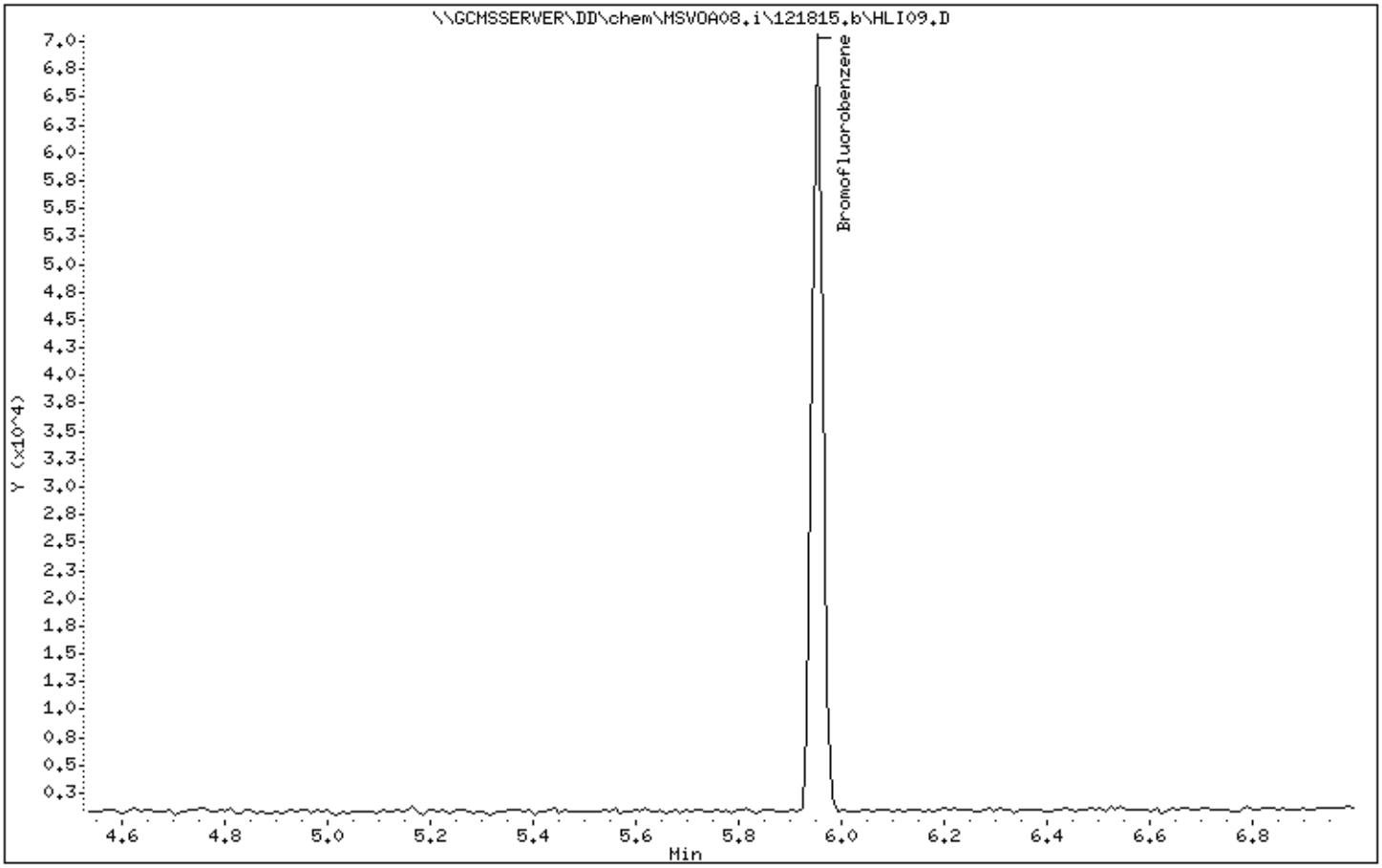
Sample Info: BFB,S27825

Volume Injected (uL): 1.0

Operator: VOC

Column phase:

Column diameter: 2.00



CURTIS & TOMPKINS INITIAL CALIBRATION FOR 272486 MSVOA Water: EPA 8260C

Inst : MSVOA08 Name : 826GOX8
Calnum : 475492027002 Date : 07-DEC-2015 21:20 Type : WATER
Units : ug/L X Axis : R

Level	File	Seqnum	Sample ID	Analyzed	Stds
L1	hl709	475492027009	.25PPB	07-DEC-2015 21:20	S27004 (2000000X), S28295 (2000000X), S28355 (2000000X), S27081 (1000000X), S28588 (5000X)
L2	hl710	475492027010	.5PPB	07-DEC-2015 21:54	S28588 (5000X), S27004 (1000000X), S28295 (1000000X), S28355 (1000000X), S27081 (500000X)
L3	hl711	475492027011	2PPB	07-DEC-2015 22:28	S27004 (500000X), S28295 (250000X), S28355 (250000X), S27081 (250000X), S28588 (5000X)
L4	hl712	475492027012	5PPB	07-DEC-2015 23:03	S28588 (5000X), S27004 (200000X), S28295 (100000X), S28355 (100000X), S27081 (100000X)
L5	hl713	475492027013	10PPB	07-DEC-2015 23:37	S28588 (5000X), S27004 (100000X), S28295 (50000X), S28355 (50000X), S27081 (50000X)
L6	hl714	475492027014	20PPB	08-DEC-2015 00:11	S28588 (5000X), S27004 (50000X), S28295 (25000X), S28355 (25000X), S27081 (25000X)
L7	hl715	475492027015	50PPB	08-DEC-2015 00:45	S28588 (5000X), S27004 (20000X), S28295 (10000X), S28355 (10000X), S27081 (10000X)
L8	hl716	475492027016	75PPB	08-DEC-2015 01:20	S28588 (5000X), S27004 (13330X), S28295 (6667X), S28355 (6667X), S27081 (6667X)
L9	hl717	475492027017	100PPB	08-DEC-2015 01:54	S28588 (5000X), S27004 (10000X), S28295 (5000X), S28355 (5000X), S27081 (5000X)

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Freon 12		0.8463	0.7872	0.8185	0.6879	0.7983	0.7105	0.7196	0.7432	AVRG		1.30899		0.7639	7	15	0.100	0.99	
Chloromethane	1.0329	1.0245	0.9871	0.8970	0.9121	0.8893	0.7923	0.8286	0.7951	AVRG		1.10309		0.9065	10	15	0.100	0.99	
Vinyl Chloride	0.7914	0.7334	0.7547	0.7622	0.7268	0.7489	0.6745	0.6767	0.7305	AVRG		1.36385		0.7332	5	15	0.100	0.99	
Bromomethane	0.2025	0.2101	0.2102	0.2098	0.2320	0.2707	0.3619			QUAD	0.37279	4.09742	-0.07493	0.2425	1.000	15	0.100	0.99	
Chloroethane		0.5521	0.5253	0.5088	0.5473	0.5212	0.4692	0.4870	0.4919	AVRG		1.94998		0.5128	6	15	0.100	0.99	
Trichlorofluoromethane		0.8477	0.8109	0.8770	0.7787	0.8254	0.7267	0.7969	0.7862	AVRG		1.24041		0.8062	6	15	0.100	0.99	
Acetone			0.1541	0.1370	0.1380	0.1431	0.1655	0.1508	0.1327	AVRG		6.85468		0.1459	8	15	0.100	0.99	
Freon 113		0.5170	0.4853	0.4824	0.4856	0.4603	0.4509	0.4425	0.4260	AVRG		2.13339		0.4687	6	15	0.100	0.99	
1,1-Dichloroethene		0.5275	0.4995	0.4686	0.4841	0.4786	0.4533	0.4391	0.4345	AVRG		2.11350		0.4731	7	15	0.100	0.99	
Methylene Chloride		0.5935	0.5816	0.5583	0.5710	0.5964	0.4978	0.5343	0.5393	AVRG		1.78880		0.5590	6	15	0.100	0.99	
Carbon Disulfide		2.2028	2.0174	1.9554	1.9369	2.0007	1.8058	1.7809	1.7783	AVRG		0.51685		1.9348	8	15	0.100	0.99	
MTBE		1.2425	1.3178	1.2409	1.2680	1.3404	1.0735	1.2030	1.2482	AVRG		0.80529		1.2418	7	15	0.100	0.99	
trans-1,2-Dichloroethene		0.5316	0.5689	0.5333	0.5440	0.5790	0.4895	0.4928	0.5127	AVRG		1.88158		0.5315	6	15	0.100	0.99	
Vinyl Acetate			1.2288	1.1736	1.2428	1.2530	1.0424	1.2518	1.1592	AVRG		0.83817		1.1931	6	15	0.05	0.99	
1,1-Dichloroethane		1.2239	1.1315	1.1061	1.1245	1.1364	0.9571	0.9740	1.0116	AVRG		0.92323		1.0832	9	15	0.200	0.99	
2-Butanone			0.2119	0.2337	0.2181	0.2304	0.2461	0.2388	0.2096	AVRG		4.40617		0.2270	6	15	0.100	0.99	
2,2-Dichloropropane		0.7684	0.7187	0.6971	0.6508	0.6550	0.5842	0.5815	0.5843	AVRG		1.52677		0.6550	11	15	0.05	0.99	
cis-1,2-Dichloroethene		0.6669	0.6677	0.6267	0.6423	0.6523	0.5564	0.5838	0.5998	AVRG		1.60131		0.6245	7	15	0.100	0.99	
Chloroform		1.0351	1.0004	0.9735	0.9740	0.9756	0.8485	0.8563	0.9271	AVRG		1.05397		0.9488	7	15	0.200	0.99	
Bromochloromethane		0.2851	0.3133	0.3309	0.3277	0.3301	0.2744	0.2992	0.3030	AVRG		3.24708		0.3080	7	15	0.05	0.99	
1,1,1-Trichloroethane		0.7653	0.7142	0.6680	0.6882	0.6813	0.6161	0.6230	0.6257	AVRG		1.48649		0.6727	8	15	0.100	0.99	
1,1-Dichloropropene		0.6445	0.5054	0.4747	0.5088	0.4739	0.5342	0.4648	0.4252	AVRG		1.98440		0.5039	13	15	0.05	0.99	
Carbon Tetrachloride		0.4875	0.3841	0.3819	0.3987	0.3807	0.4293	0.3789	0.3647	AVRG		2.49547		0.4007	10	15	0.100	0.99	
1,2-Dichloroethane		0.4528	0.3840	0.3835	0.4127	0.3918	0.3782	0.3948	0.3743	AVRG		2.52198		0.3965	6	15	0.100	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Benzene		1.7246	1.3482	1.3610	1.4222	1.3665	1.3419	1.3136	1.1586	AVRG		0.72486		1.3796	12	15	0.500	0.99	
Trichloroethene		0.4648	0.3320	0.3430	0.3705	0.3431	0.3662	0.3275	0.3170	AVRG		2.79327		0.3580	13	15	0.200	0.99	
1,2-Dichloropropane		0.4121	0.4105	0.4147	0.4190	0.3871	0.3955	0.3837	0.3689	AVRG		2.50666		0.3989	4	15	0.100	0.99	
Bromodichloromethane		0.4645	0.4339	0.4331	0.4781	0.4528	0.4507	0.4431	0.4413	AVRG		2.22365		0.4497	3	15	0.200	0.99	
Dibromomethane		0.2276	0.2109	0.2113	0.2295	0.2204	0.2189	0.2239	0.2027	AVRG		4.58392		0.2182	4	15	0.05	0.99	
4-Methyl-2-Pentanone			0.3203	0.3174	0.3452	0.3234	0.3833	0.3725	0.3063	AVRG		2.95582		0.3383	9	15	0.100	0.99	
cis-1,3-Dichloropropene		0.5803	0.5419	0.5379	0.5528	0.5364	0.5138	0.5294	0.5106	AVRG		1.85911		0.5379	4	15	0.200	0.99	
Toluene		1.2651	0.9463	0.9255	0.9602	1.0083	1.0713	0.9062	0.8330	AVRG		1.01063		0.9895	13	15	0.400	0.99	
trans-1,3-Dichloropropene		0.5595	0.4607	0.4734	0.5136	0.5356	0.5515	0.5138	0.4675	AVRG		1.96293		0.5094	8	15	0.100	0.99	
1,1,2-Trichloroethane		0.2323	0.1704	0.1734	0.1830	0.1862	0.1985	0.1828	0.1623	AVRG		5.37287		0.1861	12	15	0.100	0.99	
2-Hexanone			0.2483	0.2449	0.2626	0.2800	0.3291	0.2945	0.2367	AVRG		3.69202		0.2709	12	15	0.100	0.99	
1,3-Dichloropropane		0.6480	0.5322	0.5295	0.5555	0.5872	0.5805	0.5707	0.5079	AVRG		1.77323		0.5639	8	15	0.05	0.99	
Tetrachloroethene	0.4705	0.5443	0.3926	0.3535	0.3938	0.3988	0.4845	0.3824		AVRG		2.33891		0.4276	15	15	0.200	0.99	
Dibromochloromethane		0.4942	0.4065	0.3982	0.4358	0.4564	0.4788	0.4360	0.3982	AVRG		2.28307		0.4380	8	15	0.100	0.99	
1,2-Dibromoethane		0.4052	0.3438	0.3288	0.3595	0.3706	0.4061	0.3669	0.3264	AVRG		2.75163		0.3634	8	15	0.100	0.99	
Chlorobenzene		1.4205	1.0348	1.0094	1.0914	1.0966	1.1587	1.0063	0.9475	AVRG		0.91270		1.0956	13	15	0.500	0.99	
1,1,1,2-Tetrachloroethane		0.5561	0.3915	0.3814	0.4191	0.4392	0.4350	0.3990	0.3747	AVRG		2.35572		0.4245	14	15	0.05	0.99	
Ethylbenzene		2.3986	1.7541	1.6787	1.7950	1.8397	1.9882	1.6476	1.5082	AVRG		0.54757		1.8263	15	15	0.100	0.99	
m,p-Xylenes	0.8053	0.9713	0.6525	0.6498	0.6333	0.6660	0.7580			QUAD	-0.2872	1.62499	-0.00399	0.7337	1.000	15	0.100	0.99	
o-Xylene		0.8605	0.6664	0.6313	0.7103	0.7049	0.7639	0.6260	0.5889	AVRG		1.44088		0.6940	13	15	0.300	0.99	
Styrene		1.3857	1.0806	1.0425	1.1902	1.2216	1.3099	1.1256	0.9900	AVRG		0.85597		1.1683	12	15	0.300	0.99	
Bromoform		0.3002	0.2389	0.2340	0.2661	0.2802	0.3139	0.2815	0.2468	AVRG		3.70108		0.2702	11	15	0.100	0.99	
Isopropylbenzene		4.3930	3.2787	3.0984	3.1900	3.1583	3.7040	3.0754	2.8823	AVRG		0.29873		3.3475	14	15	0.100	0.99	
1,1,2,2-Tetrachloroethane		0.9771	0.7654	0.7285	0.7981	0.8012	0.8735	0.8592	0.7292	AVRG		1.22468		0.8165	10	15	0.300	0.99	
1,2,3-Trichloropropane		0.2662	0.1931	0.1769	0.1799	0.1859	0.1984	0.2055	0.1712	AVRG		5.07245		0.1971	15	15	0.05	0.99	
Propylbenzene		5.3566	3.9617	3.6951	3.9037	3.7498	4.5071	3.6583		AVRG		0.24278		4.1189	15	15	0.05	0.99	
Bromobenzene		1.1297	0.9152	0.8740	0.9342	0.9170	0.9655	0.9042	0.8455	AVRG		1.06875		0.9357	9	15	0.05	0.99	
1,3,5-Trimethylbenzene		3.5943	2.7164	2.4690	2.6779	2.4569	3.0477	2.5067		AVRG		0.35955		2.7813	15	15	0.05	0.99	
2-Chlorotoluene		3.4665	2.6255	2.4170	2.5710	2.4285	2.8708	2.4720	2.1312	AVRG		0.38127		2.6228	15	15	0.05	0.99	
4-Chlorotoluene		3.1275	2.4437	2.2350	2.2467	2.2572	2.4186	2.2275	1.9979	AVRG		0.42207		2.3693	14	15	0.05	0.99	
tert-Butylbenzene		3.2340	2.2879	2.1452	2.2967	2.2380	2.6268	2.3084	2.1052	AVRG		0.41575		2.4053	15	15	0.05	0.99	
1,2,4-Trimethylbenzene		3.6607	2.6266	2.3856	2.6427	2.5809	2.9269	2.5866	2.3812	AVRG		0.36712		2.7239	15	15	0.05	0.99	
sec-Butylbenzene		4.8879	3.6645	3.3083	3.4641	3.3897	4.0259	3.4593		AVRG		0.26718		3.7428	15	15	0.05	0.99	
para-Isopropyl Toluene		3.6720	2.7726	2.5864	2.6640	2.5833	3.0582	2.6893	2.2977	AVRG		0.35837		2.7904	15	15	0.05	0.99	
1,3-Dichlorobenzene		1.9813	1.5792	1.4476	1.5652	1.5323	1.7001	1.5924	1.4091	AVRG		0.62465		1.6009	11	15	0.600	0.99	
1,4-Dichlorobenzene		2.0079	1.6066	1.4927	1.5293	1.5219	1.6812	1.5616	1.4261	AVRG		0.62367		1.6034	11	15	0.500	0.99	
n-Butylbenzene	2.5589	3.2389	2.2644	2.1436	2.2877	2.1656	2.7796	2.2771	2.1103	AVRG		0.41235		2.4251	15	15	0.05	0.99	
1,2-Dichlorobenzene		2.0203	1.5286	1.4124	1.5560	1.5049	1.6322	1.5333	1.4334	AVRG		0.63387		1.5776	12	15	0.400	0.99	
1,2-Dibromo-3-Chloropropane		0.1192	0.1017	0.1015	0.1084	0.1074	0.1385	0.1332	0.1079	AVRG		8.71555		0.1147	12	15	0.050	0.99	
1,2,4-Trichlorobenzene		0.9213	0.7560	0.7433	0.7849	0.8087	0.9522	0.9102	0.8449	AVRG		1.19021		0.8402	9	15	0.200	0.99	
Hexachlorobutadiene		0.4376	0.4059	0.3871	0.3999	0.3801	0.5310	0.4474	0.3954	AVRG		2.36374		0.4231	12	15	0.05	0.99	

Analyte	L1	L2	L3	L4	L5	L6	L7	L8	L9	Type	a0	a1	a2	Avg	r^2 %RSD	Max %RSD	Min RF	Min r^2	Flg
Naphthalene		1.5778	1.4047	1.4653	1.6930	1.7459	2.0930	2.1143	1.7804	AVRG		0.57660		1.7343	15	15	0.05	0.99	
1,2,3-Trichlorobenzene		0.8088	0.7226	0.7204	0.7639	0.7787	0.9205	0.8775	0.7921	AVRG		1.25304		0.7981	9	15	0.05	0.99	
Dibromofluoromethane	0.5747	0.4427	0.5739	0.5738	0.5664	0.5578	0.4352	0.5159	0.5555	AVRG		1.87659		0.5329	11	15	0.05	0.99	
1,2-Dichloroethane-d4	0.3064	0.2554	0.2963	0.3131	0.3050	0.2905	0.2472	0.2880	0.2669	AVRG		3.50352		0.2854	8	15	0.05	0.99	
Toluene-d8	1.2336	1.3003	1.1810	1.1604	1.1998	1.2719	1.3767	1.1853	1.1749	AVRG		0.81199		1.2315	6	15	0.05	0.99	
Bromofluorobenzene	0.9273	0.9061	0.9349	0.9347	0.9080	0.9599	0.9194	0.9428	0.9667	AVRG		1.07145		0.9333	2	15	0.05	0.99	

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
Freon 12			1.0000	11	2.0000	3	5.0000	7	10.000	-10	20.000	4	50.000	-7	75.000	-6	100.00	-3
Chloromethane	0.5000	14	1.0000	13	2.0000	9	5.0000	-1	10.000	1	20.000	-2	50.000	-13	75.000	-9	100.00	-12
Vinyl Chloride	0.5000	8	1.0000	0	2.0000	3	5.0000	4	10.000	-1	20.000	2	50.000	-8	75.000	-8	100.00	0
Bromomethane	0.5000	**57**	1.0000	**23**	2.0000	4	5.0000	-8	10.000	-5	20.000	2	50.000	0				
Chloroethane			1.0000	8	2.0000	2	5.0000	-1	10.000	7	20.000	2	50.000	-9	75.000	-5	100.00	-4
Trichlorofluoromethane			1.0000	5	2.0000	1	5.0000	9	10.000	-3	20.000	2	50.000	-10	75.000	-1	100.00	-2
Acetone					2.0000	6	5.0000	-6	10.000	-5	20.000	-2	50.000	13	75.000	3	100.00	-9
Freon 113			0.5000	10	2.0000	4	5.0000	3	10.000	4	20.000	-2	50.000	-4	75.000	-6	100.00	-9
1,1-Dichloroethene			0.5000	11	2.0000	6	5.0000	-1	10.000	2	20.000	1	50.000	-4	75.000	-7	100.00	-8
Methylene Chloride			0.5000	6	2.0000	4	5.0000	0	10.000	2	20.000	7	50.000	-11	75.000	-4	100.00	-4
Carbon Disulfide			0.5000	14	2.0000	4	5.0000	1	10.000	0	20.000	3	50.000	-7	75.000	-8	100.00	-8
MTBE			0.5000	0	2.0000	6	5.0000	0	10.000	2	20.000	8	50.000	-14	75.000	-3	100.00	1
trans-1,2-Dichloroethene			0.5000	0	2.0000	7	5.0000	0	10.000	2	20.000	9	50.000	-8	75.000	-7	100.00	-4
Vinyl Acetate					2.0000	3	5.0000	-2	10.000	4	20.000	5	50.000	-13	75.000	5	100.00	-3
1,1-Dichloroethane			0.5000	13	2.0000	4	5.0000	2	10.000	4	20.000	5	50.000	-12	75.000	-10	100.00	-7
2-Butanone					2.0000	-7	5.0000	3	10.000	-4	20.000	2	50.000	8	75.000	5	100.00	-8
2,2-Dichloropropane			0.5000	17	2.0000	10	5.0000	6	10.000	-1	20.000	0	50.000	-11	75.000	-11	100.00	-11
cis-1,2-Dichloroethene			0.5000	7	2.0000	7	5.0000	0	10.000	3	20.000	4	50.000	-11	75.000	-7	100.00	-4
Chloroform			0.5000	9	2.0000	5	5.0000	3	10.000	3	20.000	3	50.000	-11	75.000	-10	100.00	-2
Bromochloromethane			0.5000	-7	2.0000	2	5.0000	7	10.000	6	20.000	7	50.000	-11	75.000	-3	100.00	-2
1,1,1-Trichloroethane			0.5000	14	2.0000	6	5.0000	-1	10.000	2	20.000	1	50.000	-8	75.000	-7	100.00	-7
1,1-Dichloropropene			0.5000	**28**	2.0000	0	5.0000	-6	10.000	1	20.000	-6	50.000	6	75.000	-8	100.00	-16
Carbon Tetrachloride			0.5000	**22**	2.0000	-4	5.0000	-5	10.000	-1	20.000	-5	50.000	7	75.000	-5	100.00	-9
1,2-Dichloroethane			0.5000	14	2.0000	-3	5.0000	-3	10.000	4	20.000	-1	50.000	-5	75.000	0	100.00	-6
Benzene			0.5000	**25**	2.0000	-2	5.0000	-1	10.000	3	20.000	-1	50.000	-3	75.000	-5	100.00	-16
Trichloroethene			0.5000	**30**	2.0000	-7	5.0000	-4	10.000	3	20.000	-4	50.000	2	75.000	-9	100.00	-11
1,2-Dichloropropane			0.5000	3	2.0000	3	5.0000	4	10.000	5	20.000	-3	50.000	-1	75.000	-4	100.00	-8
Bromodichloromethane			0.5000	3	2.0000	-4	5.0000	-4	10.000	6	20.000	1	50.000	0	75.000	-1	100.00	-2
Dibromomethane			0.5000	4	2.0000	-3	5.0000	-3	10.000	5	20.000	1	50.000	0	75.000	3	100.00	-7
4-Methyl-2-Pentanone					2.0000	-5	5.0000	-6	10.000	2	20.000	-4	50.000	13	75.000	10	100.00	-9
cis-1,3-Dichloropropene			0.5000	8	2.0000	1	5.0000	0	10.000	3	20.000	0	50.000	-4	75.000	-2	100.00	-5
Toluene			0.5000	**28**	2.0000	-4	5.0000	-6	10.000	-3	20.000	2	50.000	8	75.000	-8	100.00	-16
trans-1,3-Dichloropropene			0.5000	10	2.0000	-10	5.0000	-7	10.000	1	20.000	5	50.000	8	75.000	1	100.00	-8
1,1,2-Trichloroethane			0.5000	**25**	2.0000	-8	5.0000	-7	10.000	-2	20.000	0	50.000	7	75.000	-2	100.00	-13
2-Hexanone					2.0000	-8	5.0000	-10	10.000	-3	20.000	3	50.000	**22**	75.000	9	100.00	-13
1,3-Dichloropropane			0.5000	15	2.0000	-6	5.0000	-6	10.000	-1	20.000	4	50.000	3	75.000	1	100.00	-10
Tetrachloroethene	0.2500	10	0.5000	**27**	2.0000	-8	5.0000	-17	10.000	-8	20.000	-7	50.000	13	75.000	-11		
Dibromochloromethane			0.5000	13	2.0000	-7	5.0000	-9	10.000	-1	20.000	4	50.000	9	75.000	0	100.00	-9
1,2-Dibromoethane			0.5000	12	2.0000	-5	5.0000	-10	10.000	-1	20.000	2	50.000	12	75.000	1	100.00	-10
Chlorobenzene			0.5000	**30**	2.0000	-6	5.0000	-8	10.000	0	20.000	0	50.000	6	75.000	-8	100.00	-14
1,1,1,2-Tetrachloroethane			0.5000	**31**	2.0000	-8	5.0000	-10	10.000	-1	20.000	3	50.000	2	75.000	-6	100.00	-12
Ethylbenzene			0.5000	**31**	2.0000	-4	5.0000	-8	10.000	-2	20.000	1	50.000	9	75.000	-10	100.00	-17

Spiked Amounts / Drifts	L1	%D	L2	%D	L3	%D	L4	%D	L5	%D	L6	%D	L7	%D	L8	%D	L9	%D
m,p-Xylenes	0.5000	**-27**	1.0000	**29**	4.0000	-2	10.000	1	20.000	-2	40.000	0	100.00	0				
o-Xylene			0.5000	**24**	2.0000	-4	5.0000	-9	10.000	2	20.000	2	50.000	10	75.000	-10	100.00	-15
Styrene			0.5000	19	2.0000	-8	5.0000	-11	10.000	2	20.000	5	50.000	12	75.000	-4	100.00	-15
Bromoform			0.5000	11	2.0000	-12	5.0000	-13	10.000	-2	20.000	4	50.000	16	75.000	4	100.00	-9
Isopropylbenzene			0.5000	**31**	2.0000	-2	5.0000	-7	10.000	-5	20.000	-6	50.000	11	75.000	-8	100.00	-14
1,1,2,2-Tetrachloroethane			0.5000	20	2.0000	-6	5.0000	-11	10.000	-2	20.000	-2	50.000	7	75.000	5	100.00	-11
1,2,3-Trichloropropane			0.5000	**35**	2.0000	-2	5.0000	-10	10.000	-9	20.000	-6	50.000	1	75.000	4	100.00	-13
Propylbenzene			0.5000	**30**	2.0000	-4	5.0000	-10	10.000	-5	20.000	-9	50.000	9	75.000	-11		
Bromobenzene			0.5000	**21**	2.0000	-2	5.0000	-7	10.000	0	20.000	-2	50.000	3	75.000	-3	100.00	-10
1,3,5-Trimethylbenzene			0.5000	**29**	2.0000	-2	5.0000	-11	10.000	-4	20.000	-12	50.000	10	75.000	-10		
2-Chlorotoluene			0.5000	**32**	2.0000	0	5.0000	-8	10.000	-2	20.000	-7	50.000	9	75.000	-6	100.00	-19
4-Chlorotoluene			0.5000	**32**	2.0000	3	5.0000	-6	10.000	-5	20.000	-5	50.000	2	75.000	-6	100.00	-16
tert-Butylbenzene			0.5000	**34**	2.0000	-5	5.0000	-11	10.000	-5	20.000	-7	50.000	9	75.000	-4	100.00	-12
1,2,4-Trimethylbenzene			0.5000	**34**	2.0000	-4	5.0000	-12	10.000	-3	20.000	-5	50.000	7	75.000	-5	100.00	-13
sec-Butylbenzene			0.5000	**31**	2.0000	-2	5.0000	-12	10.000	-7	20.000	-9	50.000	8	75.000	-8		
para-Isopropyl Toluene			0.5000	**32**	2.0000	-1	5.0000	-7	10.000	-5	20.000	-7	50.000	10	75.000	-4	100.00	-18
1,3-Dichlorobenzene			0.5000	**24**	2.0000	-1	5.0000	-10	10.000	-2	20.000	-4	50.000	6	75.000	-1	100.00	-12
1,4-Dichlorobenzene			0.5000	**25**	2.0000	0	5.0000	-7	10.000	-5	20.000	-5	50.000	5	75.000	-3	100.00	-11
n-Butylbenzene	0.2500	6	0.5000	**34**	2.0000	-7	5.0000	-12	10.000	-6	20.000	-11	50.000	15	75.000	-6	100.00	-13
1,2-Dichlorobenzene			0.5000	**28**	2.0000	-3	5.0000	-10	10.000	-1	20.000	-5	50.000	3	75.000	-3	100.00	-9
1,2-Dibromo-3-Chloropropane			0.5000	4	2.0000	-11	5.0000	-12	10.000	-5	20.000	-6	50.000	**21**	75.000	16	100.00	-6
1,2,4-Trichlorobenzene			0.5000	10	2.0000	-10	5.0000	-12	10.000	-7	20.000	-4	50.000	13	75.000	8	100.00	1
Hexachlorobutadiene			0.5000	3	2.0000	-4	5.0000	-8	10.000	-5	20.000	-10	50.000	**26**	75.000	6	100.00	-7
Naphthalene			0.5000	-9	2.0000	-19	5.0000	-16	10.000	-2	20.000	1	50.000	**21**	75.000	**22**	100.00	3
1,2,3-Trichlorobenzene			0.5000	1	2.0000	-9	5.0000	-10	10.000	-4	20.000	-2	50.000	15	75.000	10	100.00	-1
Dibromofluoromethane	50.000	8	50.000	-17	50.000	8	50.000	8	50.000	6	50.000	5	50.000	-18	50.000	-3	50.000	4
1,2-Dichloroethane-d4	50.000	7	50.000	-11	50.000	4	50.000	10	50.000	7	50.000	2	50.000	-13	50.000	1	50.000	-6
Toluene-d8	50.000	0	50.000	6	50.000	-4	50.000	-6	50.000	-3	50.000	3	50.000	12	50.000	-4	50.000	-5
Bromofluorobenzene	50.000	-1	50.000	-3	50.000	0	50.000	0	50.000	-3	50.000	3	50.000	-1	50.000	1	50.000	4

DAR 12/08/15 [Iodomethane]: icv -35%

DAR 12/08/15 : For >LR samples consult "by average" for calculating dilution factors

DAR 12/08/15 [Tetrachloroethene]: only calibrated to 75 ppb

Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

Instrument amount = a0 + response * a1 + response^2 * a2; AVRG=Average response factor; QUAD=Quadratic regression

CURTIS & TOMPKINS 2ND SOURCE CALIBRATION SUMMARY FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 Name : 826GOX8
Calnum : 475492027002 Cal Date : 07-DEC-2015 Type : WATER

ICV 475492027018 (hl718 08-DEC-2015) stds: S28588 (5000X), S28123 (10000X)
ICV 475492027019 (hl719 08-DEC-2015) stds: S28588 (5000X), S28489 (10000X), S28592 (10000X), S28593 (10000X)

Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
Freon 12	475492027018	20.00	14.63	ug/L	**-27**	20	v- ***
Chloromethane	475492027018	20.00	17.32	ug/L	-13	20	
Vinyl Chloride	475492027018	20.00	17.99	ug/L	-10	20	
Bromomethane	475492027018	20.00	16.66	ug/L	-17	20	
Chloroethane	475492027018	20.00	18.12	ug/L	-9	20	
Trichlorofluoromethane	475492027018	20.00	18.45	ug/L	-8	20	
Acetone	475492027019	25.00	26.50	ug/L	6	20	
Freon 113	475492027019	25.00	22.24	ug/L	-11	20	
1,1-Dichloroethene	475492027019	25.00	25.34	ug/L	1	20	
Methylene Chloride	475492027019	25.00	26.28	ug/L	5	20	
Carbon Disulfide	475492027019	25.00	25.92	ug/L	4	20	
MTBE	475492027019	25.00	24.44	ug/L	-2	20	
trans-1,2-Dichloroethene	475492027019	25.00	24.46	ug/L	-2	20	
Vinyl Acetate	475492027019	25.00	24.18	ug/L	-3	20	
1,1-Dichloroethane	475492027019	25.00	24.32	ug/L	-3	20	
2-Butanone	475492027019	25.00	24.86	ug/L	-1	20	
2,2-Dichloropropane	475492027019	25.00	21.86	ug/L	-13	20	
cis-1,2-Dichloroethene	475492027019	25.00	25.31	ug/L	1	20	
Chloroform	475492027019	25.00	25.88	ug/L	4	20	
Bromochloromethane	475492027019	25.00	25.05	ug/L	0	20	
1,1,1-Trichloroethane	475492027019	25.00	25.27	ug/L	1	20	
1,1-Dichloropropene	475492027019	25.00	21.45	ug/L	-14	20	
Carbon Tetrachloride	475492027019	25.00	25.22	ug/L	1	20	
1,2-Dichloroethane	475492027019	25.00	25.54	ug/L	2	20	
Benzene	475492027019	25.00	24.46	ug/L	-2	20	
Trichloroethene	475492027019	25.00	24.60	ug/L	-2	20	
1,2-Dichloropropane	475492027019	25.00	23.97	ug/L	-4	20	
Bromodichloromethane	475492027019	25.00	24.67	ug/L	-1	20	
Dibromomethane	475492027019	25.00	25.33	ug/L	1	20	
4-Methyl-2-Pentanone	475492027019	25.00	23.54	ug/L	-6	20	
cis-1,3-Dichloropropene	475492027019	25.00	26.48	ug/L	6	20	
Toluene	475492027019	25.00	21.95	ug/L	-12	20	
trans-1,3-Dichloropropene	475492027019	25.00	22.84	ug/L	-9	20	
1,1,2-Trichloroethane	475492027019	25.00	22.51	ug/L	-10	20	
2-Hexanone	475492027019	25.00	23.26	ug/L	-7	20	
1,3-Dichloropropane	475492027019	25.00	23.57	ug/L	-6	20	
Tetrachloroethene	475492027019	25.00	21.49	ug/L	-14	20	
Dibromochloromethane	475492027019	25.00	22.66	ug/L	-9	20	
1,2-Dibromoethane	475492027019	25.00	22.87	ug/L	-9	20	
Chlorobenzene	475492027019	25.00	23.32	ug/L	-7	20	
1,1,1,2-Tetrachloroethane	475492027019	25.00	21.78	ug/L	-13	20	
Ethylbenzene	475492027019	25.00	21.84	ug/L	-13	20	
m,p-Xylenes	475492027019	50.00	46.46	ug/L	-7	20	
o-Xylene	475492027019	25.00	22.61	ug/L	-10	20	
Styrene	475492027019	25.00	23.00	ug/L	-8	20	
Bromoform	475492027019	25.00	23.01	ug/L	-8	20	
Isopropylbenzene	475492027019	25.00	22.03	ug/L	-12	20	

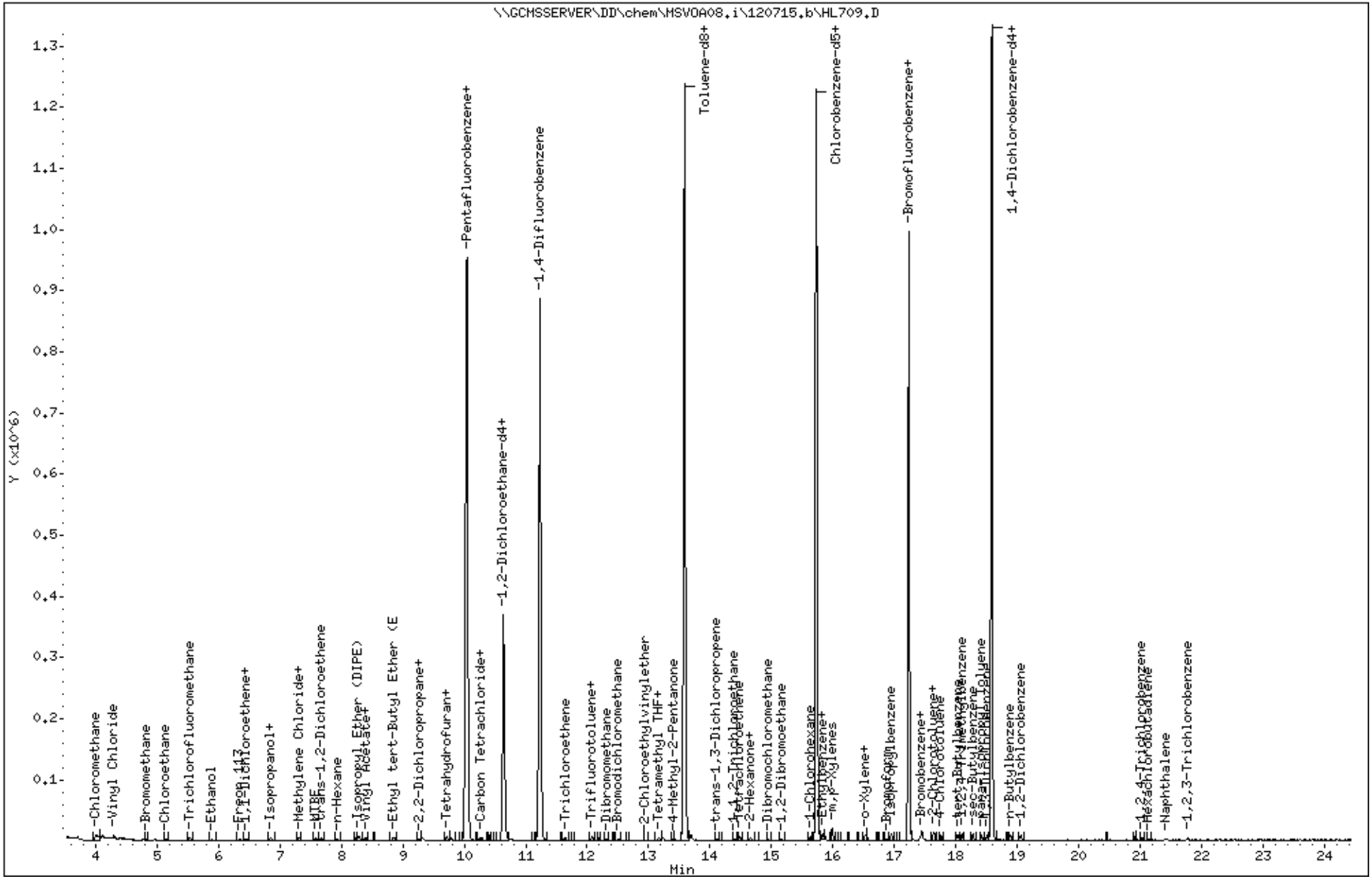
Analyte	ICV Seqnum	Spiked	Quant	Units	%D	Max	Flags
1,1,2,2-Tetrachloroethane	475492027019	25.00	23.37	ug/L	-7	20	
1,2,3-Trichloropropane	475492027019	25.00	23.74	ug/L	-5	20	
Propylbenzene	475492027019	25.00	21.78	ug/L	-13	20	
Bromobenzene	475492027019	25.00	23.32	ug/L	-7	20	
1,3,5-Trimethylbenzene	475492027019	25.00	22.63	ug/L	-9	20	
2-Chlorotoluene	475492027019	25.00	22.35	ug/L	-11	20	
4-Chlorotoluene	475492027019	25.00	22.91	ug/L	-8	20	
tert-Butylbenzene	475492027019	25.00	23.33	ug/L	-7	20	
1,2,4-Trimethylbenzene	475492027019	25.00	22.39	ug/L	-10	20	
sec-Butylbenzene	475492027019	25.00	22.47	ug/L	-10	20	
para-Isopropyl Toluene	475492027019	25.00	22.89	ug/L	-8	20	
1,3-Dichlorobenzene	475492027019	25.00	24.13	ug/L	-3	20	
1,4-Dichlorobenzene	475492027019	25.00	24.12	ug/L	-4	20	
n-Butylbenzene	475492027019	25.00	21.24	ug/L	-15	20	
1,2-Dichlorobenzene	475492027019	25.00	24.08	ug/L	-4	20	
1,2-Dibromo-3-Chloropropane	475492027019	25.00	22.49	ug/L	-10	20	
1,2,4-Trichlorobenzene	475492027019	25.00	23.98	ug/L	-4	20	
Hexachlorobutadiene	475492027019	25.00	23.05	ug/L	-8	20	
Naphthalene	475492027019	25.00	22.06	ug/L	-12	20	
1,2,3-Trichlorobenzene	475492027019	25.00	24.38	ug/L	-2	20	

475492027018: Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15
475492027019: Analyst: DAR Date: 12/08/15 Reviewer: LW Date: 12/09/15

-=low bias v=ICV

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL709.D
Date : 07-DEC-2015 21:20
Client ID: DYNA P&T
Sample Info: ICAL,s27004,.0005/1000,s28295,.0005/1000
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL709.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 07-DEC-2015 21:20 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,s27004,.0005/1000,s28295,.0005/1000
Misc Info : s28355,.0005/1000,s27081,.0005/1000,.25ppb
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 07-Dec-2015 21:57 tapsvc Quant Type: ISTD
Cal Date : 07-DEC-2015 21:20 Cal File: HL709.D
Als bottle: 11 Calibration Sample, Level: 9
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.709	3.718	(0.370)	4275	0.50000	0.4587(a)
2 Chloromethane	50	4.103	4.103	(0.409)	6013	0.50000	0.6503
3 Vinyl Chloride	62	4.299	4.310	(0.428)	4607	0.50000	0.6441
4 Bromomethane	94	4.968	4.970	(0.495)	1179	0.50000	0.3818(a)
5 Chloroethane	64	5.145	5.148	(0.513)	3477	0.50000	0.6105
6 Trichlorofluoromethane	101	5.529	5.533	(0.551)	4376	0.50000	0.3949(a)
7 Ethanol	45	5.893	5.888	(0.587)	1389	0.25000	22.9094
8 Freon 113	101	6.355	6.351	(0.633)	1631	0.25000	0.2894(a)
9 1,1-Dichloroethene	96	6.434	6.460	(0.641)	1709	0.25000	0.2976(a)
10 Acetone	43	6.601	6.598	(0.658)	591	0.25000	0.3350(a)
11 Isopropanol	45	6.739	6.726	(0.672)	945	0.25000	2.9518
13 Carbon Disulfide	76	6.847	6.854	(0.682)	6755	0.25000	0.3128(a)
14 Methylene Chloride	84	7.309	7.318	(0.728)	1882	0.25000	0.2711(a)
15 tert-Butyl Alcohol (TBA)	59	7.358	7.357	(0.733)	1018	2.50000	2.3597
16 MTBE	73	7.594	7.584	(0.757)	4002	0.25000	0.2626(a)
17 trans-1,2-Dichloroethene	96	7.673	7.673	(0.765)	1959	0.25000	0.2832(a)

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL709.D
Report Date: 07-Dec-2015 21:57

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	18 n-Hexane	57	7.939	7.939	(0.791)	1010	0.25000	0.2775(a)
	19 Isopropyl Ether (DIPE)	45	8.283	8.284	(0.826)	8750	0.25000	0.3044(a)
	20 Vinyl Acetate	43	8.381	8.383	(0.835)	3589	0.25000	0.2753(a)
	21 1,1-Dichloroethane	63	8.401	8.403	(0.837)	3540	0.25000	0.2799(a)
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.853	8.847	(0.882)	6343	0.25000	0.2833(a)
	23 2,2-Dichloropropane	77	9.266	9.281	(0.924)	2567	0.25000	0.2994(a)
	24 2-Butanone	43	9.316	9.320	(0.928)	598	0.25000	0.2357(a)
	25 cis-1,2-Dichloroethene	96	9.316	9.330	(0.928)	2095	0.25000	0.2568(a)
	26 Tetrahydrofuran	42	9.719	9.714	(0.969)	4480	0.25000	3.1630
	27 Bromochloromethane	128	9.719	9.724	(0.969)	872	0.25000	0.2292(a)
	28 Chloroform	83	9.778	9.784	(0.975)	3593	0.25000	0.2919(a)
*	29 Pentafluorobenzene	168	10.033	10.040	(1.000)	582167	50.0000	
	30 Dibromofluoromethane	113	10.043	10.050	(1.001)	334574	50.0000	49.1580
	31 1,1,1-Trichloroethane	97	10.043	10.050	(1.001)	2220	0.25000	0.2393(a)
	32 Carbon Tetrachloride	117	10.260	10.267	(0.913)	2083	0.25000	0.2669(a)
	33 1,1-Dichloropropene	75	10.299	10.306	(0.917)	2808	0.25000	0.3050(a)
	34 1,2-Dichloroethane-d4	65	10.643	10.651	(0.947)	286240	50.0000	50.4131
	35 Methyl tert-Amyl Ether (TAME)	73	10.673	10.671	(0.950)	4869	0.25000	0.2724(a)
	36 Benzene	78	10.633	10.642	(0.947)	6845	0.25000	0.2784(a)
	37 1,2-Dichloroethane	62	10.761	10.770	(0.958)	2276	0.25000	0.2874(a)
*	38 1,4-Difluorobenzene	114	11.233	11.233	(1.000)	934244	50.0000	
	39 Trichloroethene	95	11.637	11.648	(1.036)	1750	0.25000	0.2492(a)
	40 Trifluorotoluene	146	12.079	12.082	(1.075)	3245	0.25000	0.3427(a)
	41 1,2-Dichloropropane	63	12.099	12.101	(1.077)	2136	0.25000	0.2996(a)
	42 Dibromomethane	93	12.306	12.318	(1.095)	1174	0.25000	0.2659(a)
	43 Bromodichloromethane	83	12.502	12.506	(1.113)	2395	0.25000	0.2531(a)
	44 2-Chloroethylvinylether	63	12.945	12.950	(1.152)	462	0.25000	0.2575(a)
	45 Tetramethyl THF	43	13.171	13.166	(1.172)	4788	0.25000	0.3077(a)
	46 cis-1,3-Dichloropropene	75	13.230	13.236	(1.178)	2561	0.25000	0.2401(a)
	47 4-Methyl-2-Pentanone	43	13.407	13.413	(1.194)	1777	0.25000	0.3043(a)
	48 Toluene-d8	98	13.584	13.591	(0.863)	1018933	50.0000	50.6179
	49 Toluene	92	13.692	13.699	(0.870)	4517	0.25000	0.2861(a)
	50 trans-1,3-Dichloropropene	75	14.105	14.113	(0.896)	2256	0.25000	0.2691(a)
	51 1,1,2-Trichloroethane	85	14.391	14.399	(0.914)	735	0.25000	0.2490(a)
	52 Tetrachloroethene	166	14.489	14.498	(0.921)	1943	0.25000	0.3043(a)
	53 2-Hexanone	43	14.666	14.666	(0.932)	1058	0.25000	0.2657(a)
	54 1,3-Dichloropropane	76	14.666	14.666	(0.932)	2428	0.25000	0.2705(a)
	55 Dibromochloromethane	129	14.961	14.962	(0.951)	1640	0.25000	0.2413(a)
	56 1,2-Dibromoethane	107	15.168	15.169	(0.964)	1362	0.25000	0.2285(a)
	57 1-Chlorohexane	91	15.630	15.642	(0.993)	2292	0.25000	0.2531(a)
*	58 Chlorobenzene-d5	117	15.738	15.741	(1.000)	826013	50.0000	
	59 Chlorobenzene	112	15.778	15.780	(1.002)	5091	0.25000	0.2842(a)
	60 Ethylbenzene	91	15.837	15.839	(1.006)	8123	0.25000	0.2798(a)
	61 1,1,1,2-Tetrachloroethane	131	15.876	15.879	(1.009)	1816	0.25000	0.2844(a)
	62 m,p-Xylenes	106	15.994	15.997	(1.016)	6652	0.50000	0.6094
	63 o-Xylene	106	16.525	16.530	(1.050)	2967	0.25000	0.2611(a)
	64 Styrene	104	16.555	16.559	(1.052)	4899	0.25000	0.2479(a)

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL709.D
Report Date: 07-Dec-2015 21:57

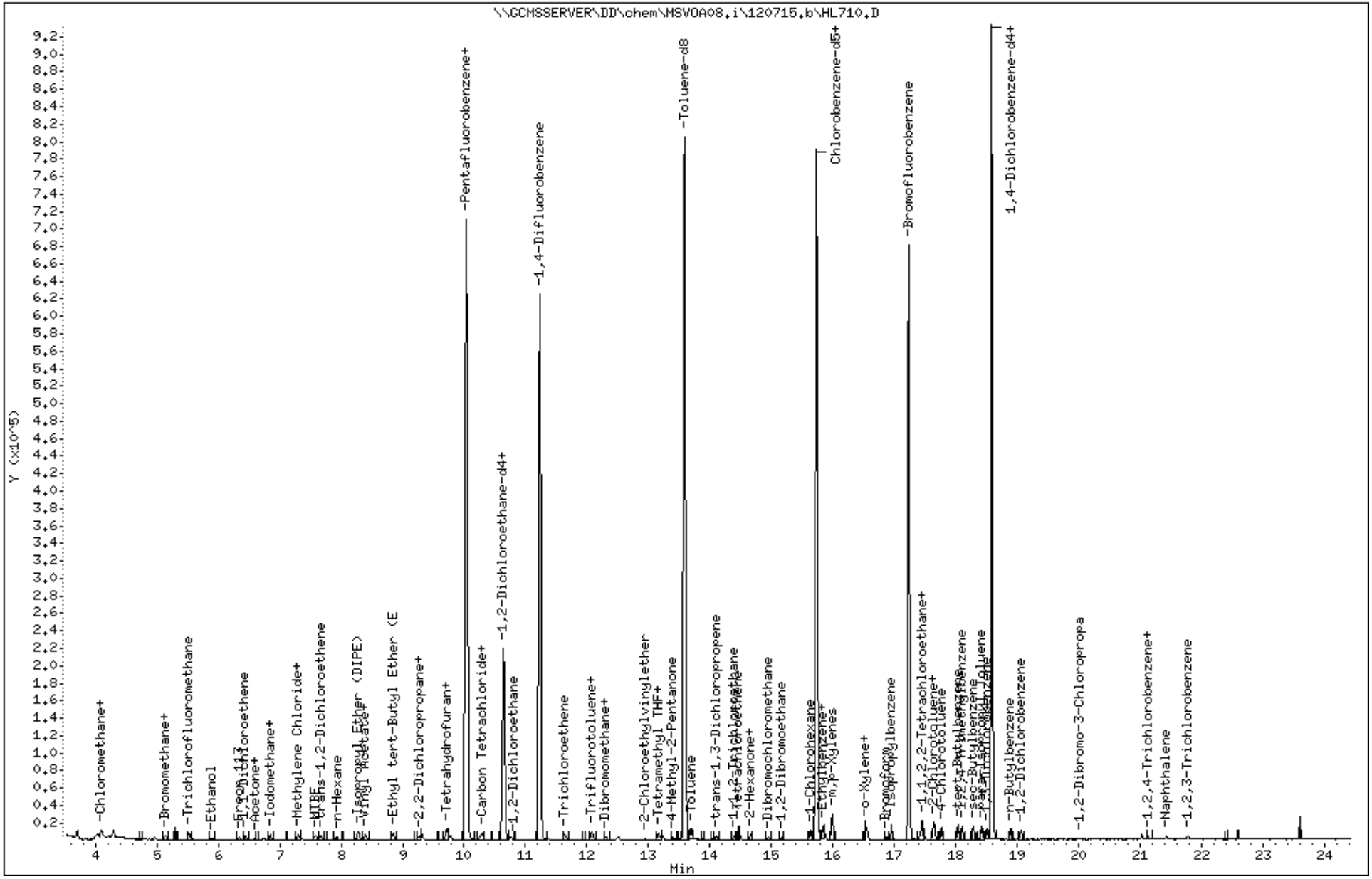
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
65 Bromoform	173	16.879	16.885	(1.072)	1306	0.25000	0.2918(a)
66 Isopropylbenzene	105	16.958	16.954	(0.912)	8012	0.25000	0.2836(a)
67 Bromofluorobenzene	95	17.233	17.240	(0.927)	383262	50.0000	44.5875
68 1,1,2,2-Tetrachloroethane	83	17.410	17.417	(0.937)	1972	0.25000	0.2953(a)
69 Bromobenzene	156	17.440	17.447	(0.938)	1987	0.25000	0.2661(a)
70 Propylbenzene	91	17.459	17.457	(0.939)	8969	0.25000	0.2756(a)
71 1,2,3-Trichloropropane	110	17.499	17.506	(0.941)	306	0.25000	0.1933(a)
72 2-Chlorotoluene	91	17.636	17.634	(0.949)	6426	0.25000	0.2835(a)
73 1,3,5-Trimethylbenzene	105	17.656	17.654	(0.950)	6156	0.25000	0.2720(a)
74 4-Chlorotoluene	91	17.764	17.772	(0.956)	6008	0.25000	0.2845(a)
75 tert-Butylbenzene	119	18.040	18.039	(0.970)	5544	0.25000	0.2809(a)
76 1,2,4-Trimethylbenzene	105	18.109	18.108	(0.974)	6099	0.25000	0.2542(a)
77 sec-Butylbenzene	105	18.286	18.285	(0.984)	7693	0.25000	0.2518(a)
78 para-Isopropyl Toluene	119	18.433	18.433	(0.992)	6300	0.25000	0.2699(a)
79 1,3-Dichlorobenzene	146	18.512	18.512	(0.996)	3785	0.25000	0.2911(a)
* 80 1,4-Dichlorobenzene-d4	152	18.591	18.591	(1.000)	413306	50.0000	
81 1,4-Dichlorobenzene	146	18.620	18.621	(1.002)	4068	0.25000	0.3188(a)
82 n-Butylbenzene	91	18.895	18.897	(1.016)	5288	0.25000	0.2484(a)
83 1,2-Dichlorobenzene	146	19.063	19.065	(1.025)	3549	0.25000	0.2792(a)
85 1,2,4-Trichlorobenzene	180	21.030	21.037	(1.131)	1738	0.25000	0.2240(a)
86 Hexachlorobutadiene	225	21.138	21.136	(1.137)	743	0.25000	0.2172(a)
87 Naphthalene	128	21.433	21.432	(1.153)	2734	0.25000	0.1903(a)
88 1,2,3-Trichlorobenzene	180	21.777	21.777	(1.171)	1441	0.25000	0.1982(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL710.D
Date : 07-DEC-2015 21:54
Client ID: DYNA P&T
Sample Info: ICAL=ICAL,2x
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL710.D
Report Date: 07-Dec-2015 22:31

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL710.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 07-DEC-2015 21:54 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL=ICAL,2x
Misc Info : .5ppb
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 07-Dec-2015 22:31 tapsvc Quant Type: ISTD
Cal Date : 07-DEC-2015 21:54 Cal File: HL710.D
Als bottle: 12 Calibration Sample, Level: 1
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.705	3.718	(0.369)	7743	1.00000	1.0482
2 Chloromethane	50	4.098	4.103	(0.409)	9373	1.00000	1.2563
3 Vinyl Chloride	62	4.295	4.310	(0.428)	6710	1.00000	1.1651
4 Bromomethane	94	4.964	4.970	(0.495)	1922	1.00000	0.7803
5 Chloroethane	64	5.141	5.148	(0.513)	5051	1.00000	1.1066
6 Trichlorofluoromethane	101	5.524	5.533	(0.551)	7756	1.00000	0.9029
7 Ethanol	45	5.879	5.888	(0.586)	2984	50.0000	62.6400
8 Freon 113	101	6.351	6.351	(0.633)	2365	0.50000	0.5210
9 1,1-Dichloroethene	96	6.439	6.460	(0.642)	2413	0.50000	0.5318
10 Acetone	43	6.597	6.598	(0.658)	1140	0.50000	0.8213
11 Isopropanol	45	6.724	6.726	(0.670)	1466	5.00000	5.8271
12 Iodomethane	142	6.764	6.775	(0.674)	489	0.50000	0.1130(a)
13 Carbon Disulfide	76	6.843	6.854	(0.682)	10077	0.50000	0.5798
14 Methylene Chloride	84	7.305	7.318	(0.728)	2715	0.50000	0.5001
15 tert-Butyl Alcohol (TBA)	59	7.364	7.357	(0.734)	2092	5.00000	6.0210
16 MTBE	73	7.580	7.584	(0.756)	5684	0.50000	0.4771(a)

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	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.669	7.673	(0.765)	2432	0.50000	0.4564(a)
	18 n-Hexane	57	7.934	7.939	(0.791)	1704	0.50000	0.5906
	19 Isopropyl Ether (DIPE)	45	8.278	8.284	(0.825)	11971	0.50000	0.5271
	20 Vinyl Acetate	43	8.377	8.383	(0.835)	5918	0.50000	0.5776
	21 1,1-Dichloroethane	63	8.396	8.403	(0.837)	5599	0.50000	0.5558
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.849	8.847	(0.882)	8694	0.50000	0.4963(a)
	23 2,2-Dichloropropane	77	9.272	9.281	(0.924)	3515	0.50000	0.5245
	24 2-Butanone	43	9.311	9.320	(0.928)	931	0.50000	0.4669(a)
	25 cis-1,2-Dichloroethene	96	9.321	9.330	(0.929)	3051	0.50000	0.4793(a)
	26 Tetrahydrofuran	42	9.714	9.714	(0.969)	7238	5.00000	6.3673
	27 Bromochloromethane	128	9.714	9.724	(0.969)	1304	0.50000	0.4360(a)
	28 Chloroform	83	9.783	9.784	(0.975)	4735	0.50000	0.4926(a)
*	29 Pentafluorobenzene	168	10.029	10.040	(1.000)	457458	50.0000	
	30 Dibromofluoromethane	113	10.049	10.050	(1.002)	202510	50.0000	38.8859
	31 1,1,1-Trichloroethane	97	10.049	10.050	(1.002)	3501	0.50000	0.4949(a)
	32 Carbon Tetrachloride	117	10.255	10.267	(0.913)	3159	0.50000	0.5694
	33 1,1-Dichloropropene	75	10.295	10.306	(0.917)	4176	0.50000	0.6371
	34 1,2-Dichloroethane-d4	65	10.639	10.651	(0.947)	165498	50.0000	42.9340
	35 Methyl tert-Amyl Ether (TAME)	73	10.669	10.671	(0.950)	7351	0.50000	0.5868
	36 Benzene	78	10.629	10.642	(0.947)	11175	0.50000	0.6434
	37 1,2-Dichloroethane	62	10.767	10.770	(0.959)	2934	0.50000	0.5344
*	38 1,4-Difluorobenzene	114	11.229	11.233	(1.000)	647959	50.0000	
	39 Trichloroethene	95	11.642	11.648	(1.037)	3012	0.50000	0.6065
	40 Trifluorotoluene	146	12.075	12.082	(1.075)	4125	0.50000	0.6033
	41 1,2-Dichloropropane	63	12.085	12.101	(1.076)	2670	0.50000	0.5406
	42 Dibromomethane	93	12.311	12.318	(1.096)	1475	0.50000	0.4858(a)
	43 Bromodichloromethane	83	12.508	12.506	(1.114)	3010	0.50000	0.4675(a)
	44 2-Chloroethylvinylether	63	12.941	12.950	(1.152)	286	1.00000	0.2297(a)
	45 Tetramethyl THF	43	13.167	13.166	(1.173)	6351	0.50000	0.5834
	46 cis-1,3-Dichloropropene	75	13.236	13.236	(1.179)	3760	0.50000	0.5106
	47 4-Methyl-2-Pentanone	43	13.403	13.413	(1.194)	2529	0.50000	0.6244
	48 Toluene-d8	98	13.590	13.591	(0.864)	660992	50.0000	52.8910
	49 Toluene	92	13.698	13.699	(0.871)	6431	0.50000	0.6409
	50 trans-1,3-Dichloropropene	75	14.111	14.113	(0.897)	2844	0.50000	0.5502
	51 1,1,2-Trichloroethane	85	14.406	14.399	(0.916)	1181	0.50000	0.6400
	52 Tetrachloroethene	166	14.485	14.498	(0.921)	2767	0.50000	0.6722
	53 2-Hexanone	43	14.662	14.666	(0.932)	2011	0.50000	0.8205
	54 1,3-Dichloropropane	76	14.662	14.666	(0.932)	3294	0.50000	0.5856
	55 Dibromochloromethane	129	14.957	14.962	(0.951)	2512	0.50000	0.5846
	56 1,2-Dibromoethane	107	15.163	15.169	(0.964)	2060	0.50000	0.5526
	57 1-Chlorohexane	91	15.636	15.642	(0.994)	4023	0.50000	0.6968
*	58 Chlorobenzene-d5	117	15.734	15.741	(1.000)	508335	50.0000	
	59 Chlorobenzene	112	15.773	15.780	(1.002)	7221	0.50000	0.6421
	60 Ethylbenzene	91	15.842	15.839	(1.007)	12193	0.50000	0.6607
	61 1,1,1,2-Tetrachloroethane	131	15.872	15.879	(1.009)	2827	0.50000	0.6839
	62 m,p-Xylenes	106	15.990	15.997	(1.016)	9875	1.00000	1.4069
	63 o-Xylene	106	16.531	16.530	(1.051)	4374	0.50000	0.6104

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL710.D
Report Date: 07-Dec-2015 22:31

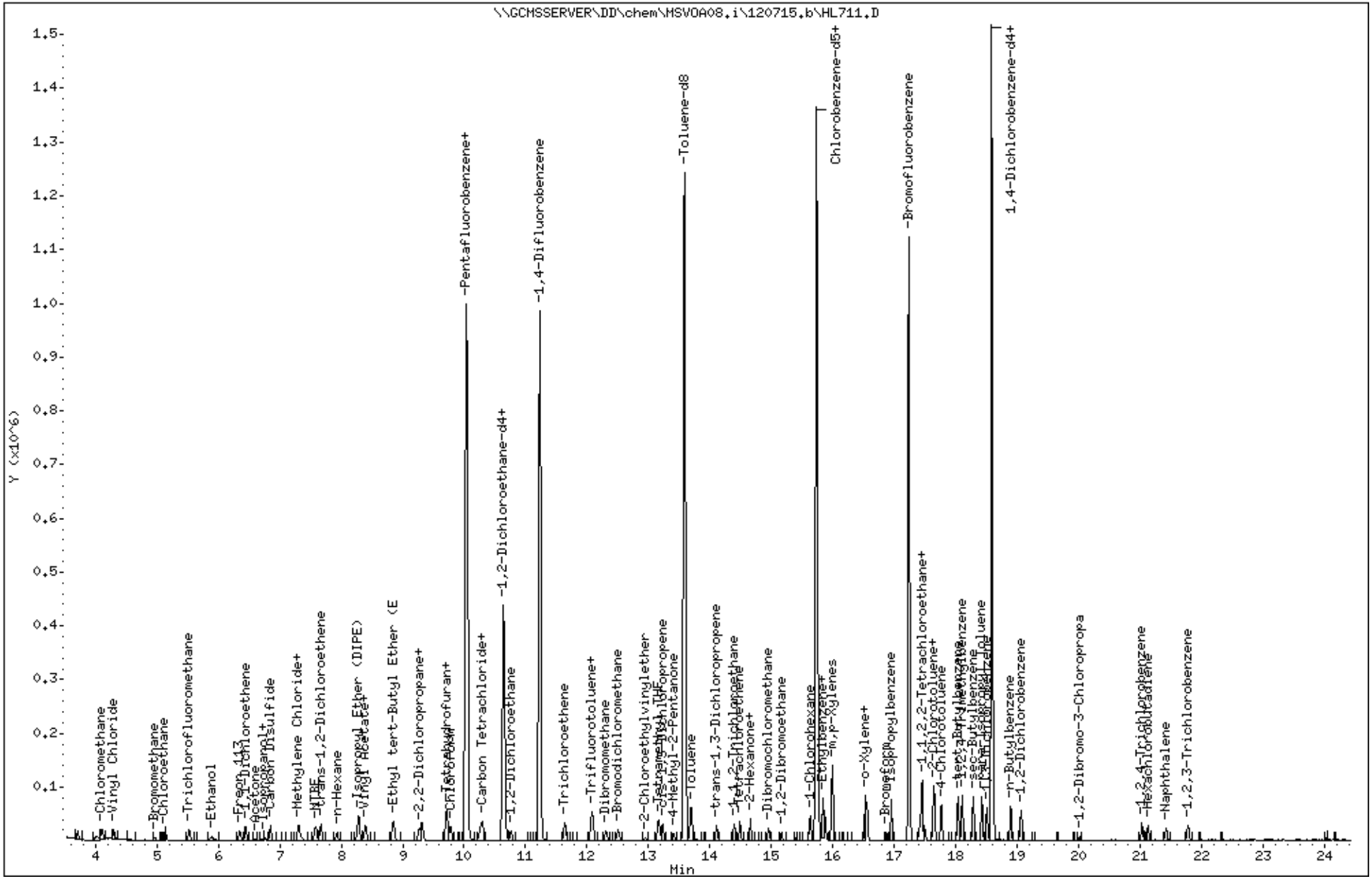
Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
64 Styrene	104	16.560	16.559	(1.053)	7044	0.50000	0.5754
65 Bromoform	173	16.875	16.885	(1.073)	1526	0.50000	0.5522
66 Isopropylbenzene	105	16.954	16.954	(0.912)	11716	0.50000	0.6246
67 Bromofluorobenzene	95	17.239	17.240	(0.927)	241666	50.0000	44.3919
68 1,1,2,2-Tetrachloroethane	83	17.416	17.417	(0.937)	2606	0.50000	0.5943
69 Bromobenzene	156	17.445	17.447	(0.939)	3013	0.50000	0.6118
70 Propylbenzene	91	17.455	17.457	(0.939)	14286	0.50000	0.6622
71 1,2,3-Trichloropropane	110	17.504	17.506	(0.942)	710	0.50000	0.6641
72 2-Chlorotoluene	91	17.632	17.634	(0.949)	9245	0.50000	0.6284
73 1,3,5-Trimethylbenzene	105	17.652	17.654	(0.950)	9586	0.50000	0.6434
74 4-Chlorotoluene	91	17.770	17.772	(0.956)	8341	0.50000	0.6106
75 tert-Butylbenzene	119	18.035	18.039	(0.970)	8625	0.50000	0.6540
76 1,2,4-Trimethylbenzene	105	18.104	18.108	(0.974)	9763	0.50000	0.6183
77 sec-Butylbenzene	105	18.281	18.285	(0.984)	13036	0.50000	0.6425
78 para-Isopropyl Toluene	119	18.429	18.433	(0.992)	9793	0.50000	0.6335
79 1,3-Dichlorobenzene	146	18.508	18.512	(0.996)	5284	0.50000	0.6195
* 80 1,4-Dichlorobenzene-d4	152	18.586	18.591	(1.000)	266697	50.0000	
81 1,4-Dichlorobenzene	146	18.616	18.621	(1.002)	5355	0.50000	0.6378
82 n-Butylbenzene	91	18.891	18.897	(1.016)	8638	0.50000	0.6208
83 1,2-Dichlorobenzene	146	19.068	19.065	(1.026)	5388	0.50000	0.6407
84 1,2-Dibromo-3-Chloropropane	75	20.022	20.011	(1.077)	318	0.50000	0.4898(a)
85 1,2,4-Trichlorobenzene	180	21.035	21.037	(1.132)	2457	0.50000	0.4898(a)
86 Hexachlorobutadiene	225	21.134	21.136	(1.137)	1167	0.50000	0.5278
87 Naphthalene	128	21.429	21.432	(1.153)	4208	0.50000	0.4515(a)
88 1,2,3-Trichlorobenzene	180	21.783	21.777	(1.172)	2157	0.50000	0.4591(a)

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL711.D
Date : 07-DEC-2015 22:28
Client ID: DYNA P&T
Sample Info: ICAL,s27004,.001/500,s28295,.002/500
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL711.D
Report Date: 07-Dec-2015 23:05

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL711.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 07-DEC-2015 22:28 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,s27004,.001/500,s28295,.002/500
Misc Info : s28355,.002/500,s27081,.002/500,2ppb
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 07-Dec-2015 23:05 tapsvc Quant Type: ISTD
Cal Date : 07-DEC-2015 22:28 Cal File: HL711.D
Als bottle: 13 Calibration Sample, Level: 2
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.715	3.718	(0.370)	18591	2.00000	1.9558
2 Chloromethane	50	4.108	4.103	(0.409)	23310	2.00000	2.3583
3 Vinyl Chloride	62	4.305	4.310	(0.429)	17822	2.00000	2.3380
4 Bromomethane	94	4.964	4.970	(0.494)	4964	2.00000	1.5793
5 Chloroethane	64	5.141	5.148	(0.512)	12405	2.00000	2.1052
6 Trichlorofluoromethane	101	5.524	5.533	(0.550)	19150	2.00000	1.7724
7 Ethanol	45	5.888	5.888	(0.587)	12232	200.000	198.9802
8 Freon 113	101	6.351	6.351	(0.633)	11460	2.00000	1.9793
9 1,1-Dichloroethene	96	6.439	6.460	(0.641)	11796	2.00000	2.0299
10 Acetone	43	6.606	6.598	(0.658)	3640	2.00000	2.0792
11 Isopropanol	45	6.734	6.726	(0.671)	6335	20.0000	19.8496
12 Iodomethane	142	6.764	6.775	(0.674)	4492	2.00000	0.8040
13 Carbon Disulfide	76	6.852	6.854	(0.683)	47643	2.00000	2.1226
14 Methylene Chloride	84	7.315	7.318	(0.729)	13734	2.00000	1.9865
15 tert-Butyl Alcohol (TBA)	59	7.354	7.357	(0.733)	8781	20.0000	19.6302
16 MTBE	73	7.580	7.584	(0.755)	31121	2.00000	2.0326

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL711.D
Report Date: 07-Dec-2015 23:05

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.669	7.673	(0.764)	13434	2.00000	1.9825
	18 n-Hexane	57	7.934	7.939	(0.790)	8251	2.00000	2.1524
	19 Isopropyl Ether (DIPE)	45	8.278	8.284	(0.825)	62381	2.00000	2.1253
	20 Vinyl Acetate	43	8.377	8.383	(0.834)	29018	2.00000	2.1645
	21 1,1-Dichloroethane	63	8.396	8.403	(0.836)	26722	2.00000	2.0609
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.849	8.847	(0.881)	45754	2.00000	2.0412
	23 2,2-Dichloropropane	77	9.282	9.281	(0.925)	16973	2.00000	1.9874
	24 2-Butanone	43	9.321	9.320	(0.928)	5005	2.00000	1.9737
	25 cis-1,2-Dichloroethene	96	9.321	9.330	(0.928)	15769	2.00000	1.9515
	26 Tetrahydrofuran	42	9.705	9.714	(0.967)	30545	20.0000	20.8758
	27 Bromochloromethane	128	9.714	9.724	(0.968)	7399	2.00000	1.9484
	28 Chloroform	83	9.783	9.784	(0.975)	23624	2.00000	1.9214
*	29 Pentafluorobenzene	168	10.039	10.040	(1.000)	590393	50.0000	
	30 Dibromofluoromethane	113	10.049	10.050	(1.001)	338802	50.0000	50.5330
	31 1,1,1-Trichloroethane	97	10.049	10.050	(1.001)	16867	2.00000	1.8778
	32 Carbon Tetrachloride	117	10.255	10.267	(0.913)	15197	2.00000	1.8173
	33 1,1-Dichloropropene	75	10.295	10.306	(0.917)	19994	2.00000	2.0094
	34 1,2-Dichloroethane-d4	65	10.639	10.651	(0.947)	293075	50.0000	49.8501
	35 Methyl tert-Amyl Ether (TAME)	73	10.669	10.671	(0.950)	37246	2.00000	1.9660
	36 Benzene	78	10.629	10.642	(0.947)	53341	2.00000	2.0102
	37 1,2-Dichloroethane	62	10.767	10.770	(0.959)	15193	2.00000	1.8416
*	38 1,4-Difluorobenzene	114	11.229	11.233	(1.000)	989100	50.0000	
	39 Trichloroethene	95	11.642	11.648	(1.037)	13134	2.00000	1.7678
	40 Trifluorotoluene	146	12.075	12.082	(1.075)	20413	2.00000	1.9699
	41 1,2-Dichloropropane	63	12.095	12.101	(1.077)	16242	2.00000	2.1423
	42 Dibromomethane	93	12.311	12.318	(1.096)	8345	2.00000	1.8244
	43 Bromodichloromethane	83	12.508	12.506	(1.114)	17168	2.00000	1.7826
	44 2-Chloroethylvinylether	63	12.941	12.950	(1.152)	2308	2.00000	1.2511
	45 Tetramethyl THF	43	13.167	13.166	(1.173)	35163	2.00000	2.0979
	46 cis-1,3-Dichloropropene	75	13.236	13.236	(1.179)	21441	2.00000	1.9279
	47 4-Methyl-2-Pentanone	43	13.403	13.413	(1.194)	12671	2.00000	2.0477
	48 Toluene-d8	98	13.590	13.591	(0.864)	1015585	50.0000	47.9959
	49 Toluene	92	13.698	13.699	(0.871)	32549	2.00000	1.9355
	50 trans-1,3-Dichloropropene	75	14.111	14.113	(0.897)	15845	2.00000	1.8303
	51 1,1,2-Trichloroethane	85	14.396	14.399	(0.915)	5862	2.00000	1.8998
	52 Tetrachloroethene	166	14.495	14.498	(0.921)	13504	2.00000	1.9461
	53 2-Hexanone	43	14.662	14.666	(0.932)	8539	2.00000	2.0725
	54 1,3-Dichloropropane	76	14.662	14.666	(0.932)	18307	2.00000	1.9307
	55 Dibromochloromethane	129	14.957	14.962	(0.951)	13981	2.00000	1.9186
	56 1,2-Dibromoethane	107	15.163	15.169	(0.964)	11824	2.00000	1.8889
	57 1-Chlorohexane	91	15.636	15.642	(0.994)	16915	2.00000	1.7375
*	58 Chlorobenzene-d5	117	15.734	15.741	(1.000)	859919	50.0000	
	59 Chlorobenzene	112	15.773	15.780	(1.002)	35594	2.00000	1.8832
	60 Ethylbenzene	91	15.842	15.839	(1.007)	60334	2.00000	1.9505
	61 1,1,1,2-Tetrachloroethane	131	15.872	15.879	(1.009)	13466	2.00000	1.9109
	62 m,p-Xylenes	106	15.990	15.997	(1.016)	44885	4.00000	3.8081
	63 o-Xylene	106	16.531	16.530	(1.051)	22922	2.00000	1.9182

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL711.D
Report Date: 07-Dec-2015 23:05

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
64 Styrene	104	16.560	16.559	(1.053)	37169	2.00000	1.8380
65 Bromoform	173	16.875	16.885	(1.073)	8216	2.00000	1.7816
66 Isopropylbenzene	105	16.954	16.954	(0.912)	56549	2.00000	1.9077
67 Bromofluorobenzene	95	17.239	17.240	(0.927)	403103	50.0000	46.5054
68 1,1,2,2-Tetrachloroethane	83	17.416	17.417	(0.937)	13201	2.00000	1.8752
69 Bromobenzene	156	17.445	17.447	(0.939)	15785	2.00000	1.9940
70 Propylbenzene	91	17.455	17.457	(0.939)	68329	2.00000	1.9834
71 1,2,3-Trichloropropane	110	17.504	17.506	(0.942)	3331	2.00000	1.9173
72 2-Chlorotoluene	91	17.632	17.634	(0.949)	45283	2.00000	1.9452
73 1,3,5-Trimethylbenzene	105	17.652	17.654	(0.950)	46850	2.00000	1.9696
74 4-Chlorotoluene	91	17.770	17.772	(0.956)	42147	2.00000	1.9383
75 tert-Butylbenzene	119	18.036	18.039	(0.970)	39460	2.00000	1.8866
76 1,2,4-Trimethylbenzene	105	18.104	18.108	(0.974)	45301	2.00000	1.8244
77 sec-Butylbenzene	105	18.281	18.285	(0.984)	63202	2.00000	1.9612
78 para-Isopropyl Toluene	119	18.429	18.433	(0.992)	47819	2.00000	1.9477
79 1,3-Dichlorobenzene	146	18.508	18.512	(0.996)	27237	2.00000	2.0070
* 80 1,4-Dichlorobenzene-d4	152	18.586	18.591	(1.000)	431180	50.0000	
81 1,4-Dichlorobenzene	146	18.616	18.621	(1.002)	27709	2.00000	2.0361
82 n-Butylbenzene	91	18.891	18.897	(1.016)	39055	2.00000	1.7769
83 1,2-Dichlorobenzene	146	19.068	19.065	(1.026)	26364	2.00000	1.9596
84 1,2-Dibromo-3-Chloropropane	75	20.013	20.011	(1.077)	1754	2.00000	1.7249
85 1,2,4-Trichlorobenzene	180	21.035	21.037	(1.132)	13039	2.00000	1.6524
86 Hexachlorobutadiene	225	21.134	21.136	(1.137)	7001	2.00000	1.9759
87 Naphthalene	128	21.429	21.432	(1.153)	24228	2.00000	1.6361
88 1,2,3-Trichlorobenzene	180	21.783	21.777	(1.172)	12463	2.00000	1.6708

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL712.D
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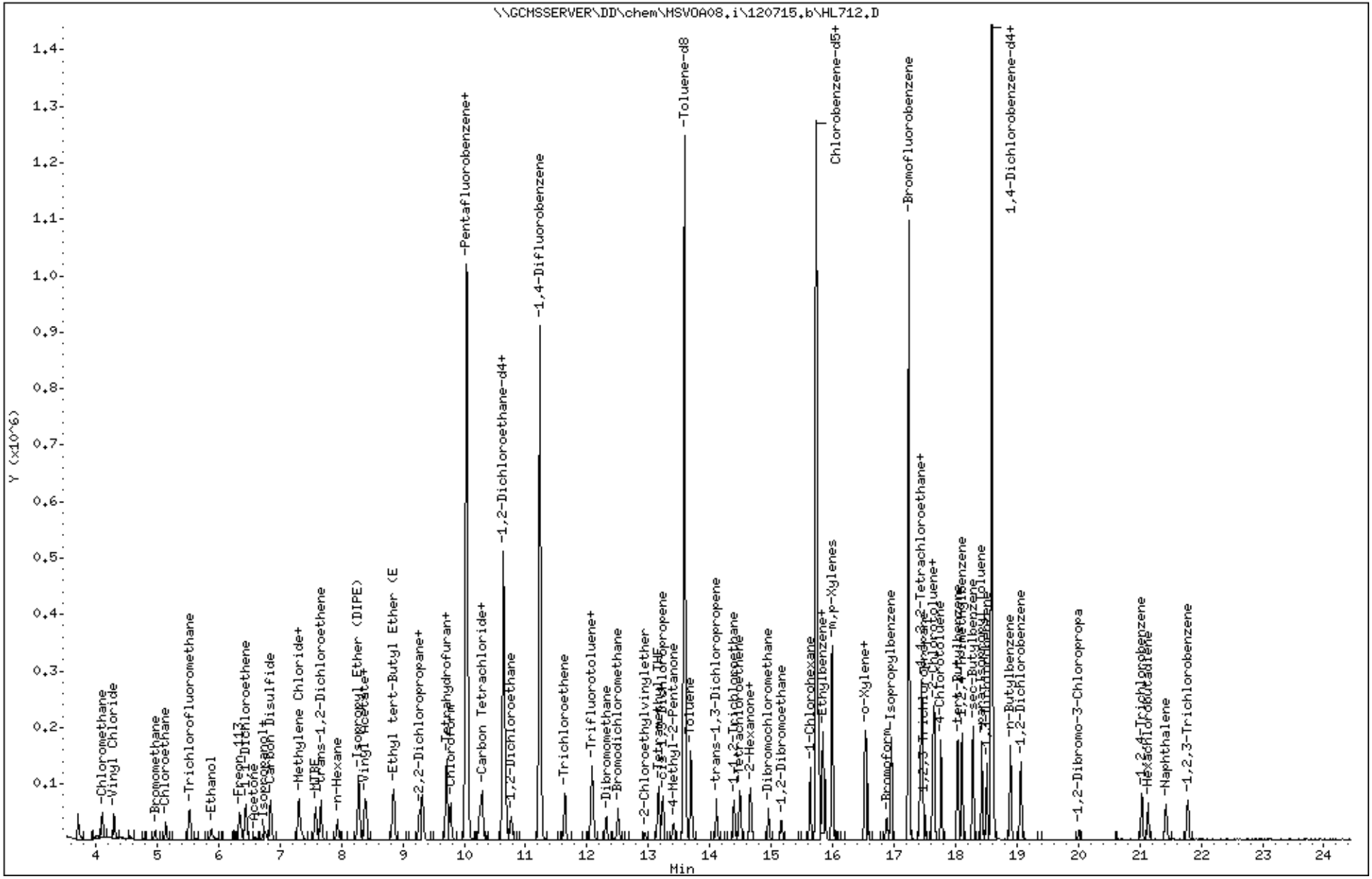
Sample Info: ICAL,=ICAL,2.5x
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



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Report Date: 07-Dec-2015 23:40

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Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL712.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 07-DEC-2015 23:03 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,=ICAL,2.5x
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Meth Date : 07-Dec-2015 23:40 tapsvc Quant Type: ISTD
Cal Date : 07-DEC-2015 23:03 Cal File: HL712.D
Als bottle: 14 Calibration Sample, Level: 3
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.711	3.718	(0.370)	48634	5.00000	5.1157
2 Chloromethane	50	4.104	4.103	(0.409)	53303	5.00000	5.2908
3 Vinyl Chloride	62	4.301	4.310	(0.429)	45288	5.00000	5.7597
4 Bromomethane	94	4.970	4.970	(0.495)	12468	5.00000	4.0064
5 Chloroethane	64	5.146	5.148	(0.513)	30231	5.00000	5.1071
6 Trichlorofluoromethane	101	5.530	5.533	(0.551)	52110	5.00000	4.8376
7 Ethanol	45	5.884	5.888	(0.586)	32215	500.000	516.9711
8 Freon 113	101	6.346	6.351	(0.632)	28664	5.00000	4.9439
9 1,1-Dichloroethene	96	6.445	6.460	(0.642)	27844	5.00000	4.7873
10 Acetone	43	6.592	6.598	(0.657)	8138	5.00000	4.6829
11 Isopropanol	45	6.730	6.726	(0.671)	15853	50.0000	49.2808
12 Iodomethane	142	6.769	6.775	(0.675)	17413	5.00000	3.0648
13 Carbon Disulfide	76	6.848	6.854	(0.682)	116192	5.00000	5.1333
14 Methylene Chloride	84	7.310	7.318	(0.728)	33174	5.00000	4.8348
15 tert-Butyl Alcohol (TBA)	59	7.360	7.357	(0.733)	21580	50.0000	48.0482
16 MTBE	73	7.586	7.584	(0.756)	73733	5.00000	4.8220

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL712.D
Report Date: 07-Dec-2015 23:40

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.665	7.673	(0.764)	31687	5.00000	4.7197
	18 n-Hexane	57	7.940	7.939	(0.791)	20009	5.00000	5.1886
	19 Isopropyl Ether (DIPE)	45	8.284	8.284	(0.826)	149358	5.00000	5.0810
	20 Vinyl Acetate	43	8.383	8.383	(0.835)	69735	5.00000	5.1583
	21 1,1-Dichloroethane	63	8.402	8.403	(0.837)	65727	5.00000	5.0670
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.845	8.847	(0.881)	113030	5.00000	5.0210
	23 2,2-Dichloropropane	77	9.277	9.281	(0.925)	41422	5.00000	4.8557
	24 2-Butanone	43	9.317	9.320	(0.928)	13888	5.00000	5.4028
	25 cis-1,2-Dichloroethene	96	9.327	9.330	(0.929)	37239	5.00000	4.6552
	26 Tetrahydrofuran	42	9.710	9.714	(0.968)	77454	50.0000	52.0093
	27 Bromochloromethane	128	9.720	9.724	(0.969)	19665	5.00000	5.1521
	28 Chloroform	83	9.779	9.784	(0.975)	57847	5.00000	4.7390
*	29 Pentafluorobenzene	168	10.035	10.040	(1.000)	594211	50.0000	
	30 Dibromofluoromethane	113	10.045	10.050	(1.001)	340951	50.0000	50.7146
	31 1,1,1-Trichloroethane	97	10.055	10.050	(1.002)	39696	5.00000	4.4754
	32 Carbon Tetrachloride	117	10.261	10.267	(0.913)	37393	5.00000	4.5588
	33 1,1-Dichloropropene	75	10.291	10.306	(0.916)	46475	5.00000	4.7540
	34 1,2-Dichloroethane-d4	65	10.645	10.651	(0.947)	306597	50.0000	52.5457
	35 Methyl tert-Amyl Ether (TAME)	73	10.674	10.671	(0.950)	95093	5.00000	5.0401
	36 Benzene	78	10.635	10.642	(0.947)	133260	5.00000	5.0614
	37 1,2-Dichloroethane	62	10.763	10.770	(0.958)	37548	5.00000	4.6439
*	38 1,4-Difluorobenzene	114	11.235	11.233	(1.000)	979125	50.0000	
	39 Trichloroethene	95	11.638	11.648	(1.036)	33582	5.00000	4.6056
	40 Trifluorotoluene	146	12.071	12.082	(1.074)	50335	5.00000	4.9610
	41 1,2-Dichloropropane	63	12.091	12.101	(1.076)	40601	5.00000	5.4044
	42 Dibromomethane	93	12.307	12.318	(1.095)	20690	5.00000	4.6450
	43 Bromodichloromethane	83	12.504	12.506	(1.113)	42408	5.00000	4.5547
	44 2-Chloroethylvinylether	63	12.946	12.950	(1.152)	6336	5.00000	3.5447
	45 Tetramethyl THF	43	13.163	13.166	(1.172)	83946	5.00000	5.0556
	46 cis-1,3-Dichloropropene	75	13.231	13.236	(1.178)	52670	5.00000	4.8369
	47 4-Methyl-2-Pentanone	43	13.409	13.413	(1.193)	31077	5.00000	5.0809
	48 Toluene-d8	98	13.586	13.591	(0.863)	1005244	50.0000	47.4036
	49 Toluene	92	13.694	13.699	(0.870)	80172	5.00000	4.7647
	50 trans-1,3-Dichloropropene	75	14.107	14.113	(0.896)	41011	5.00000	4.7450
	51 1,1,2-Trichloroethane	85	14.392	14.399	(0.914)	15019	5.00000	4.8324
	52 Tetrachloroethene	166	14.490	14.498	(0.921)	30624	5.00000	4.4411
	53 2-Hexanone	43	14.668	14.666	(0.932)	21212	5.00000	5.1038
	54 1,3-Dichloropropane	76	14.658	14.666	(0.931)	45871	5.00000	4.8438
	55 Dibromochloromethane	129	14.953	14.962	(0.950)	34492	5.00000	4.7290
	56 1,2-Dibromoethane	107	15.159	15.169	(0.963)	28484	5.00000	4.5649
	57 1-Chlorohexane	91	15.631	15.642	(0.993)	43764	5.00000	4.5299
*	58 Chlorobenzene-d5	117	15.740	15.741	(1.000)	866291	50.0000	
	59 Chlorobenzene	112	15.779	15.780	(1.002)	87447	5.00000	4.6498
	60 Ethylbenzene	91	15.838	15.839	(1.006)	145426	5.00000	4.7035
	61 1,1,1,2-Tetrachloroethane	131	15.877	15.879	(1.009)	33042	5.00000	4.6886
	62 m,p-Xylenes	106	15.995	15.997	(1.016)	112580	10.0000	9.5701
	63 o-Xylene	106	16.526	16.530	(1.050)	54692	5.00000	4.6276

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL712.D
Report Date: 07-Dec-2015 23:40

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	64 Styrene	104	16.556	16.559	(1.052)	90313	5.00000	4.5571
	65 Bromoform	173	16.881	16.885	(1.072)	20270	5.00000	4.4361
	66 Isopropylbenzene	105	16.959	16.954	(0.912)	138054	5.00000	4.6041
	67 Bromofluorobenzene	95	17.235	17.240	(0.927)	416485	50.0000	46.7184
	68 1,1,2,2-Tetrachloroethane	83	17.412	17.417	(0.937)	32459	5.00000	4.5153
	69 Bromobenzene	156	17.441	17.447	(0.938)	38944	5.00000	4.7792
	70 Propylbenzene	91	17.461	17.457	(0.939)	164641	5.00000	4.6901
	71 1,2,3-Trichloropropane	110	17.500	17.506	(0.941)	7881	5.00000	4.3788
	72 2-Chlorotoluene	91	17.638	17.634	(0.949)	107693	5.00000	4.5638
	73 1,3,5-Trimethylbenzene	105	17.658	17.654	(0.950)	110010	5.00000	4.5446
	74 4-Chlorotoluene	91	17.766	17.772	(0.956)	99583	5.00000	4.4904
	75 tert-Butylbenzene	119	18.041	18.039	(0.970)	95585	5.00000	4.5024
	76 1,2,4-Trimethylbenzene	105	18.110	18.108	(0.974)	106296	5.00000	4.2487
	77 sec-Butylbenzene	105	18.287	18.285	(0.984)	147409	5.00000	4.5162
	78 para-Isopropyl Toluene	119	18.435	18.433	(0.992)	115242	5.00000	4.5892
	79 1,3-Dichlorobenzene	146	18.513	18.512	(0.996)	64500	5.00000	4.6283
*	80 1,4-Dichlorobenzene-d4	152	18.592	18.591	(1.000)	445567	50.0000	
	81 1,4-Dichlorobenzene	146	18.612	18.621	(1.001)	66511	5.00000	4.7676
	82 n-Butylbenzene	91	18.897	18.897	(1.016)	95511	5.00000	4.2995
	83 1,2-Dichlorobenzene	146	19.064	19.065	(1.025)	62930	5.00000	4.5551
	84 1,2-Dibromo-3-Chloropropane	75	20.008	20.011	(1.076)	4522	5.00000	4.3519
	85 1,2,4-Trichlorobenzene	180	21.031	21.037	(1.131)	33117	5.00000	4.1402
	86 Hexachlorobutadiene	225	21.139	21.136	(1.137)	17249	5.00000	4.7106
	87 Naphthalene	128	21.425	21.432	(1.152)	65287	5.00000	4.3261
	88 1,2,3-Trichlorobenzene	180	21.779	21.777	(1.171)	32100	5.00000	4.2584

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL713.D
Date : 07-DEC-2015 23:37
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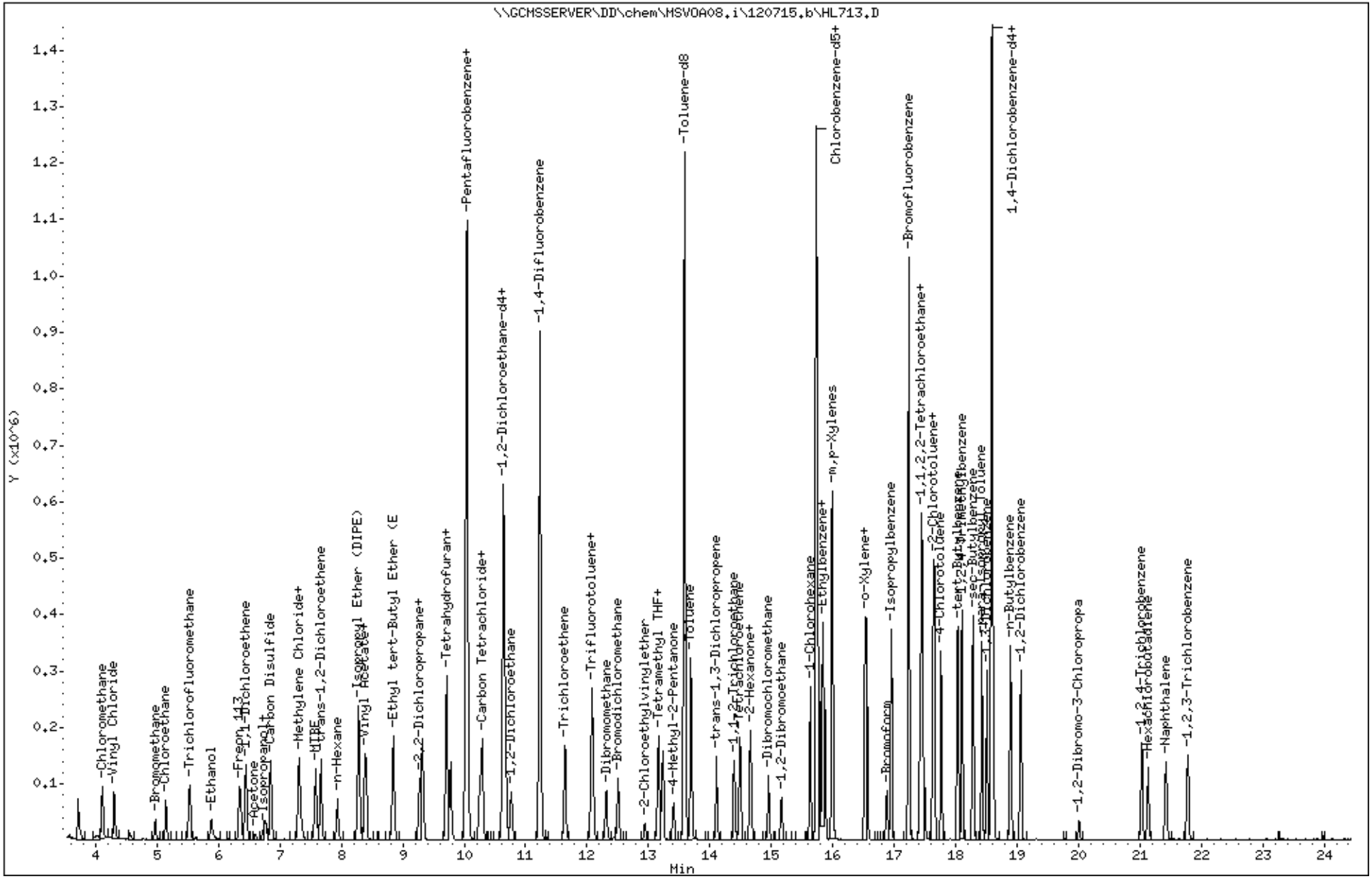
Sample Info: ICAL,=ICAL,5x
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



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Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL713.D
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Inj Date : 07-DEC-2015 23:37 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,=ICAL,5x
Misc Info : 10ppb
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Meth Date : 08-Dec-2015 00:13 tapsvc Quant Type: ISTD
Cal Date : 07-DEC-2015 23:37 Cal File: HL713.D
Als bottle: 15 Calibration Sample, Level: 4
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.710	3.718	(0.370)	83699	10.0000	8.7725
2 Chloromethane	50	4.103	4.103	(0.409)	110981	10.0000	10.5180
3 Vinyl Chloride	62	4.300	4.310	(0.429)	88432	10.0000	10.6979
4 Bromomethane	94	4.969	4.970	(0.495)	28234	10.0000	8.9799
5 Chloroethane	64	5.146	5.148	(0.513)	66590	10.0000	10.8254
6 Trichlorofluoromethane	101	5.529	5.533	(0.551)	94748	10.0000	8.8389
7 Ethanol	45	5.883	5.888	(0.586)	66250	1000.00	1034.4319
8 Freon 113	101	6.355	6.351	(0.633)	59082	10.0000	9.8576
9 1,1-Dichloroethene	96	6.444	6.460	(0.642)	58900	10.0000	9.8506
10 Acetone	43	6.591	6.598	(0.657)	16795	10.0000	9.4871
11 Isopropanol	45	6.729	6.726	(0.671)	34428	100.000	103.6005
12 Iodomethane	142	6.769	6.775	(0.675)	45310	10.0000	7.7130
13 Carbon Disulfide	76	6.847	6.854	(0.682)	235684	10.0000	10.0899
14 Methylene Chloride	84	7.309	7.318	(0.728)	69483	10.0000	9.9036
15 tert-Butyl Alcohol (TBA)	59	7.349	7.357	(0.732)	45688	100.000	98.9169
16 MTBE	73	7.585	7.584	(0.756)	154293	10.0000	9.8692

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL713.D
Report Date: 08-Dec-2015 00:14

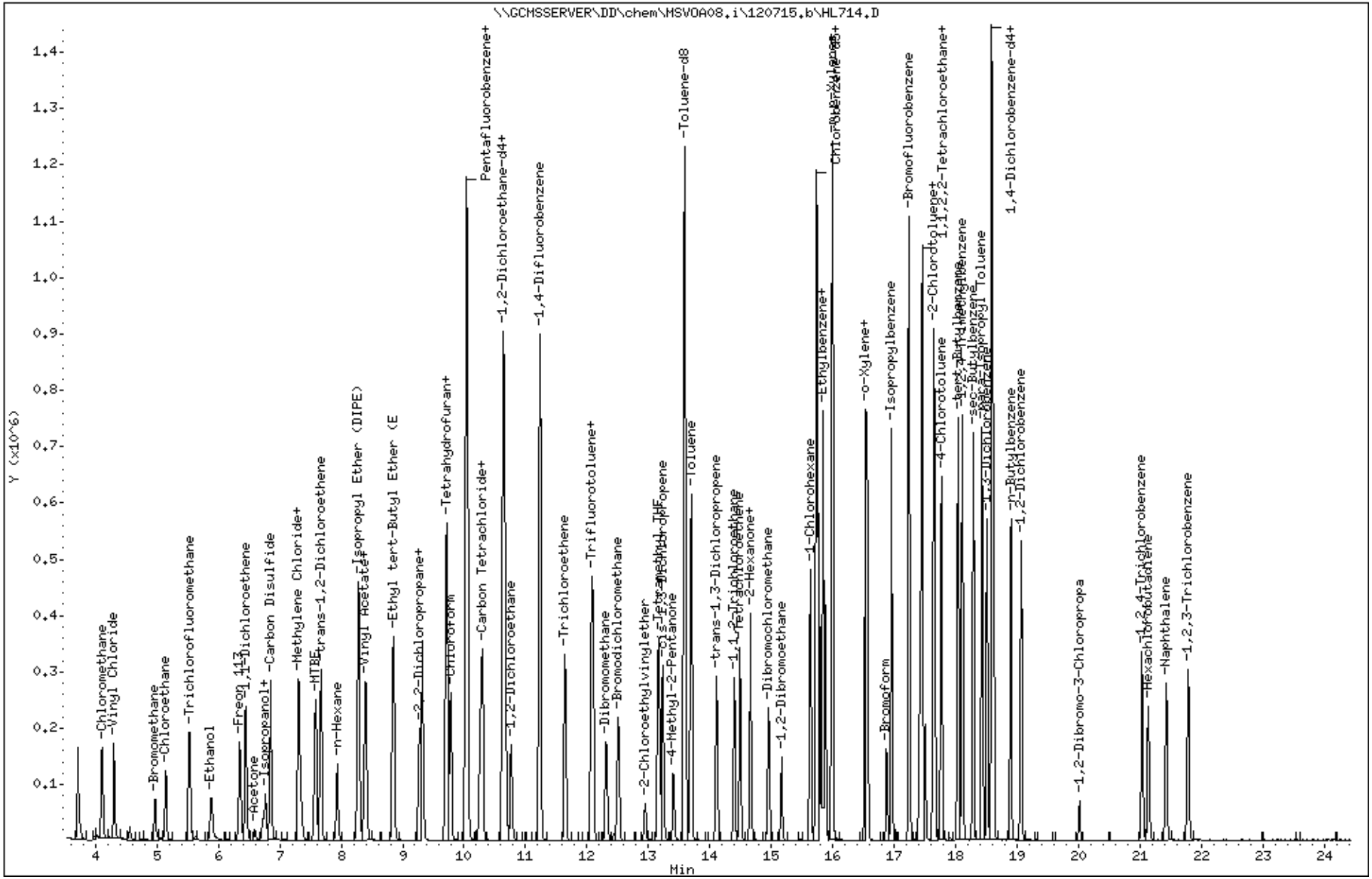
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.673	7.673	(0.765)	66198	10.0000	9.7213
	18 n-Hexane	57	7.939	7.939	(0.791)	41150	10.0000	10.2486
	19 Isopropyl Ether (DIPE)	45	8.283	8.284	(0.826)	317188	10.0000	10.3946
	20 Vinyl Acetate	43	8.382	8.383	(0.835)	151218	10.0000	10.7704
	21 1,1-Dichloroethane	63	8.401	8.403	(0.837)	136833	10.0000	10.2611
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.844	8.847	(0.881)	228603	10.0000	9.9312
	23 2,2-Dichloropropane	77	9.277	9.281	(0.925)	79185	10.0000	9.1927
	24 2-Butanone	43	9.316	9.320	(0.928)	26544	10.0000	10.0653
	25 cis-1,2-Dichloroethene	96	9.316	9.330	(0.928)	78157	10.0000	9.6317
	26 Tetrahydrofuran	42	9.709	9.714	(0.968)	155648	100.000	101.5534
	27 Bromochloromethane	128	9.719	9.724	(0.969)	39879	10.0000	10.2275
	28 Chloroform	83	9.778	9.784	(0.975)	118512	10.0000	9.5352
*	29 Pentafluorobenzene	168	10.034	10.040	(1.000)	608395	50.0000	
	30 Dibromofluoromethane	113	10.044	10.050	(1.001)	344605	50.0000	50.2433
	31 1,1,1-Trichloroethane	97	10.044	10.050	(1.001)	83737	10.0000	9.3189
	32 Carbon Tetrachloride	117	10.260	10.267	(0.913)	74891	10.0000	9.5851
	33 1,1-Dichloropropene	75	10.300	10.306	(0.917)	95582	10.0000	10.1136
	34 1,2-Dichloroethane-d4	65	10.644	10.651	(0.947)	286447	50.0000	51.4223
	35 Methyl tert-Amyl Ether (TAME)	73	10.663	10.671	(0.949)	186932	10.0000	10.3168
	36 Benzene	78	10.634	10.642	(0.947)	267166	10.0000	10.5303
	37 1,2-Dichloroethane	62	10.762	10.770	(0.958)	77521	10.0000	10.0044
*	38 1,4-Difluorobenzene	114	11.234	11.233	(1.000)	939286	50.0000	
	39 Trichloroethene	95	11.637	11.648	(1.036)	69593	10.0000	9.9309
	40 Trifluorotoluene	146	12.070	12.082	(1.074)	103687	10.0000	10.4658
	41 1,2-Dichloropropane	63	12.090	12.101	(1.076)	78720	10.0000	10.7404
	42 Dibromomethane	93	12.306	12.318	(1.095)	43110	10.0000	10.0994
	43 Bromodichloromethane	83	12.503	12.506	(1.113)	89810	10.0000	10.1131
	44 2-Chloroethylvinylether	63	12.945	12.950	(1.152)	15172	10.0000	9.0181
	45 Tetramethyl THF	43	13.162	13.166	(1.172)	166718	10.0000	10.4361
	46 cis-1,3-Dichloropropene	75	13.231	13.236	(1.178)	103854	10.0000	9.9930
	47 4-Methyl-2-Pentanone	43	13.408	13.413	(1.193)	64846	10.0000	10.8992
	48 Toluene-d8	98	13.585	13.591	(0.863)	991861	50.0000	49.0475
	49 Toluene	92	13.693	13.699	(0.870)	158748	10.0000	9.8734
	50 trans-1,3-Dichloropropene	75	14.106	14.113	(0.896)	84920	10.0000	10.2415
	51 1,1,2-Trichloroethane	85	14.391	14.399	(0.914)	30262	10.0000	10.1333
	52 Tetrachloroethene	166	14.490	14.498	(0.921)	65108	10.0000	9.8113
	53 2-Hexanone	43	14.657	14.666	(0.931)	43410	10.0000	10.7296
	54 1,3-Dichloropropane	76	14.657	14.666	(0.931)	91846	10.0000	10.0786
	55 Dibromochloromethane	129	14.952	14.962	(0.950)	72051	10.0000	10.2460
	56 1,2-Dibromoethane	107	15.168	15.169	(0.964)	59438	10.0000	9.9200
	57 1-Chlorohexane	91	15.640	15.642	(0.994)	87245	10.0000	9.4696
*	58 Chlorobenzene-d5	117	15.739	15.741	(1.000)	826661	50.0000	
	59 Chlorobenzene	112	15.778	15.780	(1.002)	180438	10.0000	10.0085
	60 Ethylbenzene	91	15.837	15.839	(1.006)	296764	10.0000	10.0149
	61 1,1,1,2-Tetrachloroethane	131	15.876	15.879	(1.009)	69290	10.0000	10.1964
	62 m,p-Xylenes	106	15.994	15.997	(1.016)	209425	20.0000	18.6720
	63 o-Xylene	106	16.526	16.530	(1.050)	117443	10.0000	10.3929

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL713.D
Report Date: 08-Dec-2015 00:14

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
64 Styrene	104	16.555	16.559	(1.052)	196783	10.0000	10.4159
65 Bromoform	173	16.880	16.885	(1.072)	43999	10.0000	10.0491
66 Isopropylbenzene	105	16.958	16.954	(0.912)	278619	10.0000	9.5506
67 Bromofluorobenzene	95	17.234	17.240	(0.927)	396536	50.0000	46.1620
68 1,1,2,2-Tetrachloroethane	83	17.411	17.417	(0.937)	69711	10.0000	9.9290
69 Bromobenzene	156	17.440	17.447	(0.938)	81594	10.0000	10.2065
70 Propylbenzene	91	17.460	17.457	(0.939)	340958	10.0000	9.9587
71 1,2,3-Trichloropropane	110	17.499	17.506	(0.941)	15712	10.0000	9.0159
72 2-Chlorotoluene	91	17.637	17.634	(0.949)	224559	10.0000	9.7385
73 1,3,5-Trimethylbenzene	105	17.657	17.654	(0.950)	233890	10.0000	9.8853
74 4-Chlorotoluene	91	17.765	17.772	(0.956)	196234	10.0000	9.1166
75 tert-Butylbenzene	119	18.040	18.039	(0.970)	200597	10.0000	9.6434
76 1,2,4-Trimethylbenzene	105	18.109	18.108	(0.974)	230821	10.0000	9.4721
77 sec-Butylbenzene	105	18.286	18.285	(0.984)	302561	10.0000	9.4863
78 para-Isopropyl Toluene	119	18.434	18.433	(0.992)	232675	10.0000	9.5301
79 1,3-Dichlorobenzene	146	18.512	18.512	(0.996)	136707	10.0000	10.0467
* 80 1,4-Dichlorobenzene-d4	152	18.591	18.591	(1.000)	436708	50.0000	
81 1,4-Dichlorobenzene	146	18.621	18.621	(1.002)	133575	10.0000	9.7751
82 n-Butylbenzene	91	18.896	18.897	(1.016)	199814	10.0000	9.2518
83 1,2-Dichlorobenzene	146	19.063	19.065	(1.025)	135900	10.0000	10.0027
84 1,2-Dibromo-3-Chloropropane	75	20.007	20.011	(1.076)	9472	10.0000	9.4326
85 1,2,4-Trichlorobenzene	180	21.030	21.037	(1.131)	68554	10.0000	8.9115
86 Hexachlorobutadiene	225	21.139	21.136	(1.137)	34932	10.0000	9.6864
87 Naphthalene	128	21.434	21.432	(1.153)	147867	10.0000	10.0291
88 1,2,3-Trichlorobenzene	180	21.788	21.777	(1.172)	66724	10.0000	9.1467

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL714.D
Date : 08-DEC-2015 00:11
Client ID: DYNA P&T
Sample Info: ICAL,=ICAL,10x
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL714.D
Report Date: 08-Dec-2015 00:48

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL714.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 08-DEC-2015 00:11 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,=ICAL,10x
Misc Info : 20ppb
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 08-Dec-2015 00:48 tapsvc Quant Type: ISTD
Cal Date : 08-DEC-2015 00:11 Cal File: HL714.D
Als bottle: 16 Calibration Sample, Level: 5
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.715	3.718	(0.370)	187982	20.0000	20.3828
2 Chloromethane	50	4.108	4.103	(0.409)	209409	20.0000	20.2128
3 Vinyl Chloride	62	4.305	4.310	(0.429)	176338	20.0000	21.5505
4 Bromomethane	94	4.964	4.970	(0.494)	63732	20.0000	21.3415
5 Chloroethane	64	5.141	5.148	(0.512)	122721	20.0000	20.5717
6 Trichlorofluoromethane	101	5.535	5.533	(0.551)	194370	20.0000	19.1141
7 Ethanol	45	5.879	5.888	(0.586)	136127	2000.00	2151.1603
8 Freon 113	101	6.351	6.351	(0.633)	108381	20.0000	18.8302
9 1,1-Dichloroethene	96	6.449	6.460	(0.642)	112703	20.0000	19.6366
10 Acetone	43	6.597	6.598	(0.657)	33705	20.0000	19.7025
11 Isopropanol	45	6.725	6.726	(0.670)	67404	200.000	208.3625
12 Iodomethane	142	6.774	6.775	(0.675)	120519	20.0000	20.8019
13 Carbon Disulfide	76	6.853	6.854	(0.683)	471120	20.0000	20.6672
14 Methylene Chloride	84	7.315	7.318	(0.729)	140437	20.0000	20.5931
15 tert-Butyl Alcohol (TBA)	59	7.354	7.357	(0.733)	90338	200.000	200.1814
16 MTBE	73	7.580	7.584	(0.755)	315633	20.0000	20.8889

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL714.D
Report Date: 08-Dec-2015 00:48

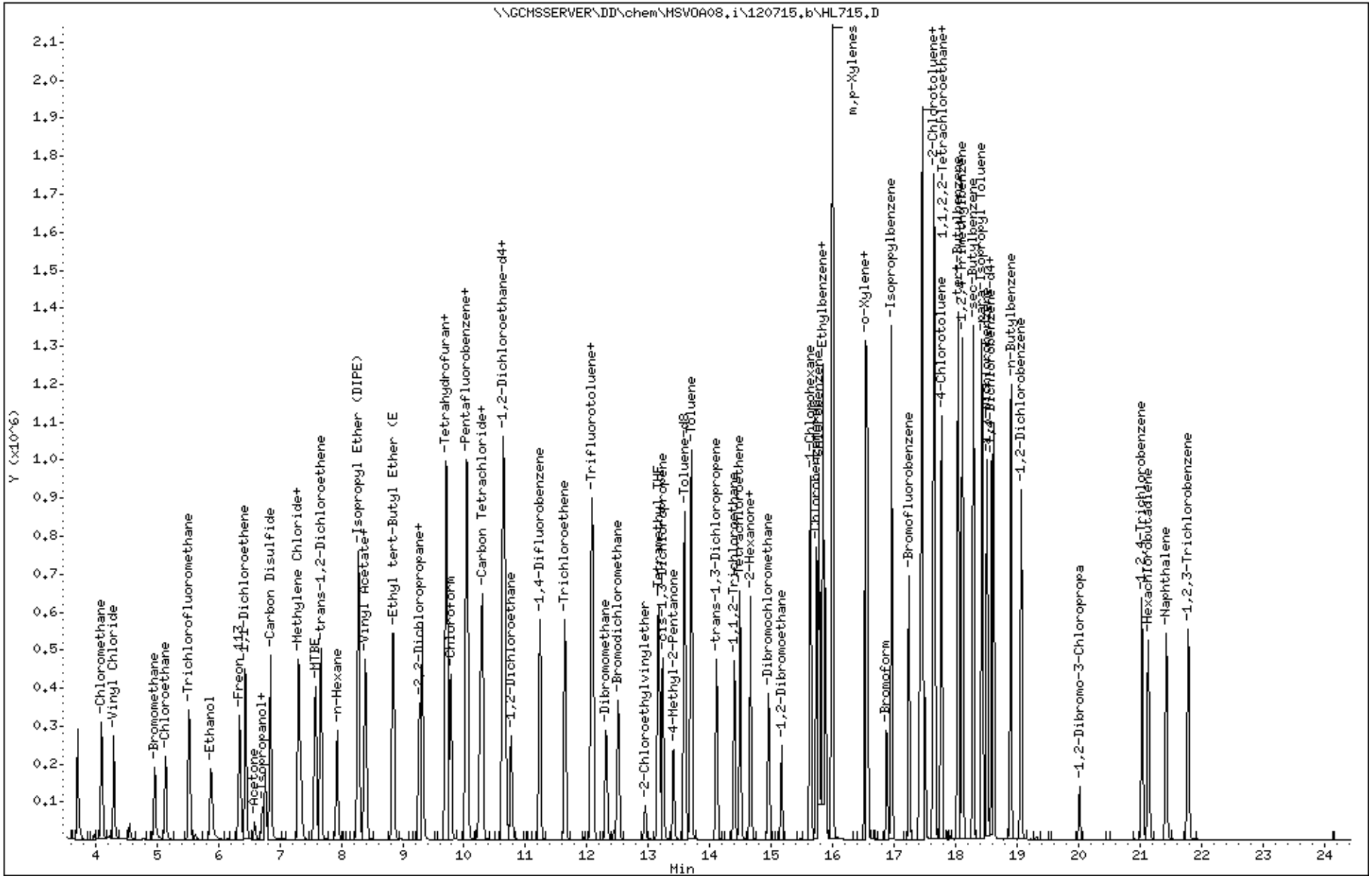
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.669	7.673	(0.764)	136339	20.0000	20.8483
	18 n-Hexane	57	7.934	7.939	(0.790)	77614	20.0000	19.8260
	19 Isopropyl Ether (DIPE)	45	8.279	8.284	(0.825)	610298	20.0000	20.6147
	20 Vinyl Acetate	43	8.377	8.383	(0.834)	295057	20.0000	21.4151
	21 1,1-Dichloroethane	63	8.407	8.403	(0.837)	267598	20.0000	20.5530
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.849	8.847	(0.881)	457614	20.0000	20.6064
	23 2,2-Dichloropropane	77	9.282	9.281	(0.925)	154225	20.0000	18.7653
	24 2-Butanone	43	9.311	9.320	(0.927)	54254	20.0000	21.2139
	25 cis-1,2-Dichloroethene	96	9.321	9.330	(0.928)	153592	20.0000	19.7929
	26 Tetrahydrofuran	42	9.705	9.714	(0.967)	316393	200.000	211.5623
	27 Bromochloromethane	128	9.725	9.724	(0.969)	77721	20.0000	20.7055
	28 Chloroform	83	9.784	9.784	(0.975)	229718	20.0000	19.3948
*	29 Pentafluorobenzene	168	10.039	10.040	(1.000)	588685	50.0000	
	30 Dibromofluoromethane	113	10.049	10.050	(1.001)	328385	50.0000	49.7475
	31 1,1,1-Trichloroethane	97	10.049	10.050	(1.001)	160419	20.0000	18.7476
	32 Carbon Tetrachloride	117	10.256	10.267	(0.912)	147162	20.0000	18.4750
	33 1,1-Dichloropropene	75	10.295	10.306	(0.916)	183177	20.0000	18.8163
	34 1,2-Dichloroethane-d4	65	10.639	10.651	(0.947)	280714	50.0000	49.2862
	35 Methyl tert-Amyl Ether (TAME)	73	10.669	10.671	(0.949)	362470	20.0000	19.4745
	36 Benzene	78	10.629	10.642	(0.946)	528168	20.0000	20.1068
	37 1,2-Dichloroethane	62	10.767	10.770	(0.958)	151438	20.0000	19.1300
*	38 1,4-Difluorobenzene	114	11.239	11.233	(1.000)	966267	50.0000	
	39 Trichloroethene	95	11.643	11.648	(1.036)	132629	20.0000	18.5185
	40 Trifluorotoluene	146	12.075	12.082	(1.074)	186072	20.0000	18.3163
	41 1,2-Dichloropropane	63	12.095	12.101	(1.076)	149617	20.0000	19.7296
	42 Dibromomethane	93	12.311	12.318	(1.095)	85182	20.0000	19.4886
	43 Bromodichloromethane	83	12.508	12.506	(1.113)	175017	20.0000	19.3376
	44 2-Chloroethylvinylether	63	12.951	12.950	(1.152)	34384	20.0000	20.0231
	45 Tetramethyl THF	43	13.167	13.166	(1.172)	317072	20.0000	19.2755
	46 cis-1,3-Dichloropropene	75	13.236	13.236	(1.178)	207320	20.0000	19.4252
	47 4-Methyl-2-Pentanone	43	13.403	13.413	(1.193)	124978	20.0000	20.2865
	48 Toluene-d8	98	13.590	13.591	(0.864)	995047	50.0000	51.8028
	49 Toluene	92	13.698	13.699	(0.871)	315526	20.0000	20.6099
	50 trans-1,3-Dichloropropene	75	14.111	14.113	(0.897)	167609	20.0000	21.1943
	51 1,1,2-Trichloroethane	85	14.397	14.399	(0.915)	58281	20.0000	20.4930
	52 Tetrachloroethene	166	14.495	14.498	(0.921)	124780	20.0000	19.7624
	53 2-Hexanone	43	14.662	14.666	(0.932)	87605	20.0000	22.4098
	54 1,3-Dichloropropane	76	14.662	14.666	(0.932)	183738	20.0000	21.1206
	55 Dibromochloromethane	129	14.957	14.962	(0.951)	142812	20.0000	21.2412
	56 1,2-Dibromoethane	107	15.164	15.169	(0.964)	115967	20.0000	20.4882
	57 1-Chlorohexane	91	15.636	15.642	(0.994)	162229	20.0000	18.7420
*	58 Chlorobenzene-d5	117	15.734	15.741	(1.000)	782308	50.0000	
	59 Chlorobenzene	112	15.774	15.780	(1.002)	343144	20.0000	20.0907
	60 Ethylbenzene	91	15.842	15.839	(1.007)	575676	20.0000	20.5265
	61 1,1,1,2-Tetrachloroethane	131	15.882	15.879	(1.009)	137428	20.0000	21.1158
	62 m,p-Xylenes	106	15.990	15.997	(1.016)	416797	40.0000	39.2890
	63 o-Xylene	106	16.531	16.530	(1.051)	220565	20.0000	20.5664

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL714.D
Report Date: 08-Dec-2015 00:48

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
64 Styrene	104	16.560	16.559	(1.053)	382259	20.0000	21.3661
65 Bromoform	173	16.875	16.885	(1.073)	87671	20.0000	21.1029
66 Isopropylbenzene	105	16.954	16.954	(0.912)	532901	20.0000	19.0121
67 Bromofluorobenzene	95	17.239	17.240	(0.927)	404930	50.0000	49.1846
68 1,1,2,2-Tetrachloroethane	83	17.416	17.417	(0.937)	135191	20.0000	19.8824
69 Bromobenzene	156	17.446	17.447	(0.939)	154720	20.0000	19.9020
70 Propylbenzene	91	17.455	17.457	(0.939)	632700	20.0000	19.1619
71 1,2,3-Trichloropropane	110	17.505	17.506	(0.942)	31370	20.0000	18.6799
72 2-Chlorotoluene	91	17.632	17.634	(0.949)	409766	20.0000	18.5915
73 1,3,5-Trimethylbenzene	105	17.652	17.654	(0.950)	414553	20.0000	18.3431
74 4-Chlorotoluene	91	17.770	17.772	(0.956)	380863	20.0000	18.4615
75 tert-Butylbenzene	119	18.036	18.039	(0.970)	377619	20.0000	18.9366
76 1,2,4-Trimethylbenzene	105	18.105	18.108	(0.974)	435468	20.0000	18.7423
77 sec-Butylbenzene	105	18.291	18.285	(0.984)	571938	20.0000	18.7042
78 para-Isopropyl Toluene	119	18.429	18.433	(0.992)	435888	20.0000	18.5802
79 1,3-Dichlorobenzene	146	18.508	18.512	(0.996)	258544	20.0000	19.5942
* 80 1,4-Dichlorobenzene-d4	152	18.587	18.591	(1.000)	421825	50.0000	
81 1,4-Dichlorobenzene	146	18.616	18.621	(1.002)	256796	20.0000	19.4387
82 n-Butylbenzene	91	18.901	18.897	(1.017)	365404	20.0000	17.8071
83 1,2-Dichlorobenzene	146	19.068	19.065	(1.026)	253927	20.0000	19.2707
84 1,2-Dibromo-3-Chloropropane	75	20.013	20.011	(1.077)	18123	20.0000	18.9040
85 1,2,4-Trichlorobenzene	180	21.036	21.037	(1.132)	136452	20.0000	18.5755
86 Hexachlorobutadiene	225	21.134	21.136	(1.137)	64132	20.0000	18.4704
87 Naphthalene	128	21.429	21.432	(1.153)	294588	20.0000	20.5983
88 1,2,3-Trichlorobenzene	180	21.783	21.777	(1.172)	131382	20.0000	18.8904

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL715.D
Date : 08-DEC-2015 00:45
Client ID: DYNA P&T
Sample Info: ICAL,=ICAL,25x
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL715.D
Report Date: 08-Dec-2015 01:22

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL715.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 08-DEC-2015 00:45 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,=ICAL,25x
Misc Info : 50ppb
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 08-Dec-2015 01:22 tapsvc Quant Type: ISTD
Cal Date : 08-DEC-2015 00:45 Cal File: HL715.D
Als bottle: 17 Calibration Sample, Level: 6
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.704	3.718	(0.369)	328761	50.0000	45.9072
2 Chloromethane	50	4.098	4.103	(0.408)	366606	50.0000	44.5824
3 Vinyl Chloride	62	4.305	4.310	(0.429)	312101	50.0000	47.8695
4 Bromomethane	94	4.963	4.970	(0.494)	167426	50.0000	72.6299
5 Chloroethane	64	5.141	5.148	(0.512)	217078	50.0000	46.4172
6 Trichlorofluoromethane	101	5.524	5.533	(0.550)	336231	50.0000	43.3763
7 Ethanol	45	5.878	5.888	(0.586)	325934	5000.00	6241.2658
8 Freon 113	101	6.350	6.351	(0.633)	208615	50.0000	46.7238
9 1,1-Dichloroethene	96	6.439	6.460	(0.641)	209733	50.0000	46.9405
10 Acetone	43	6.586	6.598	(0.656)	76560	50.0000	55.8811
11 Isopropanol	45	6.724	6.726	(0.670)	156354	500.000	596.9512
12 Iodomethane	142	6.763	6.775	(0.674)	262264	50.0000	58.0190
13 Carbon Disulfide	76	6.852	6.854	(0.683)	835520	50.0000	46.6235
14 Methylene Chloride	84	7.304	7.318	(0.728)	230329	50.0000	43.7832
15 tert-Butyl Alcohol (TBA)	59	7.354	7.357	(0.733)	212968	500.000	582.2976
16 MTBE	73	7.580	7.584	(0.755)	496713	50.0000	42.7281

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL715.D
Report Date: 08-Dec-2015 01:22

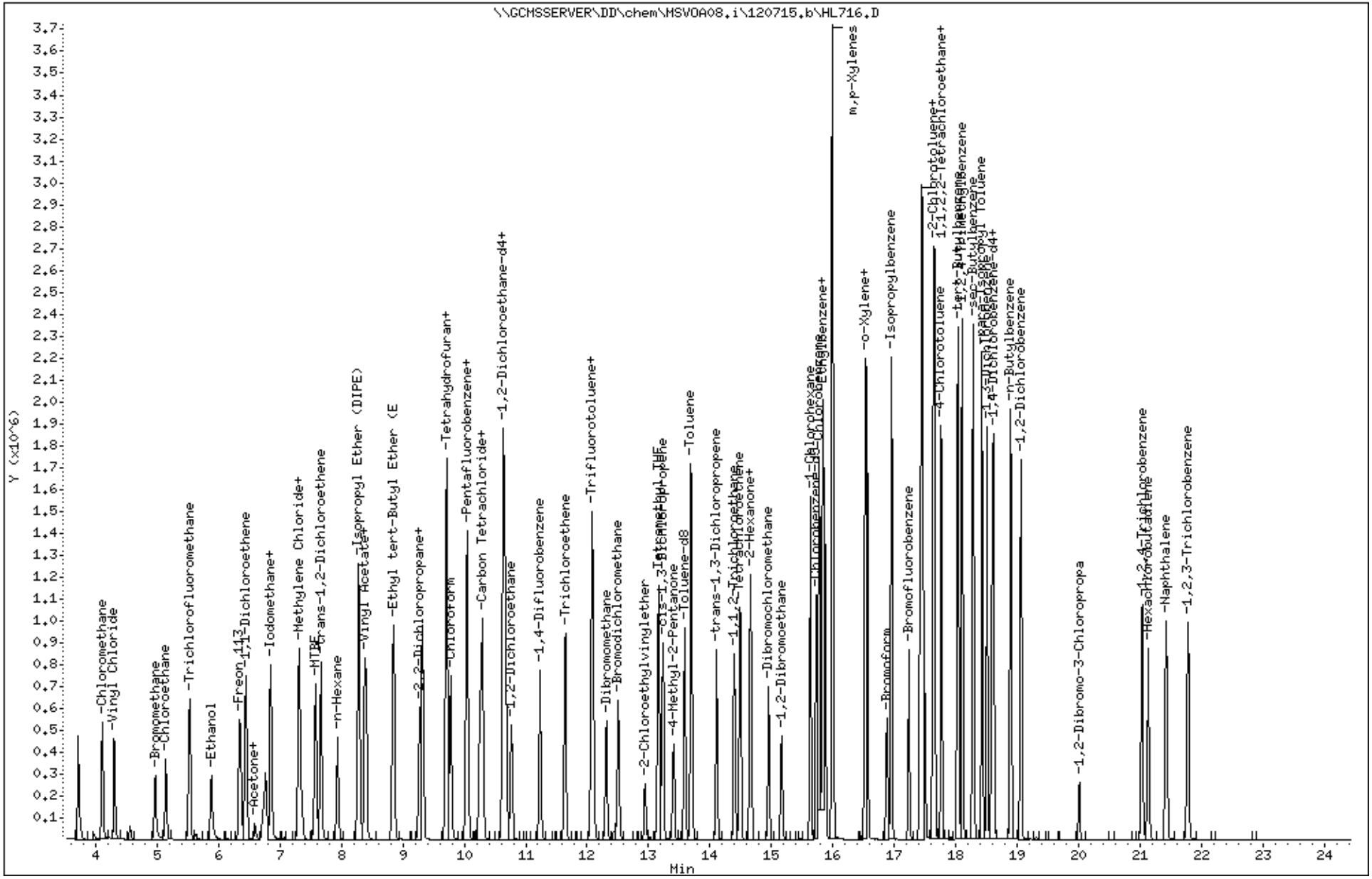
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.668	7.673	(0.764)	226490	50.0000	44.9373
	18 n-Hexane	57	7.934	7.939	(0.790)	162161	50.0000	51.5351
	19 Isopropyl Ether (DIPE)	45	8.278	8.284	(0.825)	979968	50.0000	42.7715
	20 Vinyl Acetate	43	8.377	8.383	(0.834)	482300	50.0000	44.8950
	21 1,1-Dichloroethane	63	8.396	8.403	(0.836)	442836	50.0000	43.6724
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.849	8.847	(0.881)	723013	50.0000	42.3423
	23 2,2-Dichloropropane	77	9.271	9.281	(0.924)	270291	50.0000	42.9937
	24 2-Butanone	43	9.311	9.320	(0.927)	113854	50.0000	55.5781
	25 cis-1,2-Dichloroethene	96	9.321	9.330	(0.928)	257450	50.0000	43.3206
	26 Tetrahydrofuran	42	9.704	9.714	(0.967)	621827	500.000	518.5556
	27 Bromochloromethane	128	9.724	9.724	(0.969)	126960	50.0000	43.8912
	28 Chloroform	83	9.783	9.784	(0.975)	392590	50.0000	43.2429
*	29 Pentafluorobenzene	168	10.039	10.040	(1.000)	462693	50.0000	
	30 Dibromofluoromethane	113	10.049	10.050	(1.001)	201359	50.0000	39.9869
	31 1,1,1-Trichloroethane	97	10.049	10.050	(1.001)	285052	50.0000	43.5427
	32 Carbon Tetrachloride	117	10.255	10.267	(0.912)	274130	50.0000	52.0989
	33 1,1-Dichloropropene	75	10.294	10.306	(0.916)	341141	50.0000	52.5288
	34 1,2-Dichloroethane-d4	65	10.639	10.651	(0.947)	157846	50.0000	42.8211
	35 Methyl tert-Amyl Ether (TAME)	73	10.668	10.671	(0.949)	576025	50.0000	47.1027
	36 Benzene	78	10.629	10.642	(0.946)	856881	50.0000	49.0126
	37 1,2-Dichloroethane	62	10.767	10.770	(0.958)	241517	50.0000	46.9340
*	38 1,4-Difluorobenzene	114	11.239	11.233	(1.000)	638581	50.0000	
	39 Trichloroethene	95	11.642	11.648	(1.036)	233841	50.0000	49.7026
	40 Trifluorotoluene	146	12.075	12.082	(1.074)	378155	50.0000	55.5230
	41 1,2-Dichloropropane	63	12.094	12.101	(1.076)	252540	50.0000	50.3463
	42 Dibromomethane	93	12.311	12.318	(1.095)	139777	50.0000	49.1631
	43 Bromodichloromethane	83	12.507	12.506	(1.113)	287816	50.0000	49.0382
	44 2-Chloroethylvinylether	63	12.940	12.950	(1.151)	48400	50.0000	45.0820
	45 Tetramethyl THF	43	13.166	13.166	(1.172)	540377	50.0000	49.7613
	46 cis-1,3-Dichloropropene	75	13.235	13.236	(1.178)	328124	50.0000	47.2161
	47 4-Methyl-2-Pentanone	43	13.412	13.413	(1.193)	244741	50.0000	58.4011
	48 Toluene-d8	98	13.589	13.591	(0.864)	684420	50.0000	55.5290
	49 Toluene	92	13.698	13.699	(0.871)	532587	50.0000	53.9468
	50 trans-1,3-Dichloropropene	75	14.111	14.113	(0.897)	274174	50.0000	53.8929
	51 1,1,2-Trichloroethane	85	14.396	14.399	(0.915)	98673	50.0000	53.8043
	52 Tetrachloroethene	166	14.494	14.498	(0.921)	240880	50.0000	58.7975
	53 2-Hexanone	43	14.662	14.666	(0.932)	163619	50.0000	62.9228
	54 1,3-Dichloropropane	76	14.662	14.666	(0.932)	288582	50.0000	51.9266
	55 Dibromochloromethane	129	14.957	14.962	(0.951)	238039	50.0000	54.9613
	56 1,2-Dibromoethane	107	15.163	15.169	(0.964)	201916	50.0000	55.5555
	57 1-Chlorohexane	91	15.635	15.642	(0.994)	335679	50.0000	59.4725
*	58 Chlorobenzene-d5	117	15.734	15.741	(1.000)	497147	50.0000	
	59 Chlorobenzene	112	15.773	15.780	(1.002)	576042	50.0000	52.6663
	60 Ethylbenzene	91	15.842	15.839	(1.007)	988449	50.0000	54.7942
	61 1,1,1,2-Tetrachloroethane	131	15.881	15.879	(1.009)	216264	50.0000	51.7984
	62 m,p-Xylenes	106	15.999	15.997	(1.017)	753715	100.000	109.7268
	63 o-Xylene	106	16.530	16.530	(1.051)	379761	50.0000	55.0425

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL715.D
Report Date: 08-Dec-2015 01:22

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
64 Styrene	104	16.560	16.559	(1.053)	651225	50.0000	56.6479
65 Bromoform	173	16.884	16.885	(1.073)	156052	50.0000	58.0312
66 Isopropylbenzene	105	16.953	16.954	(0.912)	1002761	50.0000	54.6412
67 Bromofluorobenzene	95	17.238	17.240	(0.927)	248893	50.0000	47.7760
68 1,1,2,2-Tetrachloroethane	83	17.416	17.417	(0.937)	236476	50.0000	53.3149
69 Bromobenzene	156	17.445	17.447	(0.939)	261389	50.0000	51.7117
70 Propylbenzene	91	17.455	17.457	(0.939)	1220189	50.0000	56.2337
71 1,2,3-Trichloropropane	110	17.504	17.506	(0.942)	53707	50.0000	49.7905
72 2-Chlorotoluene	91	17.632	17.634	(0.949)	777193	50.0000	54.3432
73 1,3,5-Trimethylbenzene	105	17.661	17.654	(0.950)	825086	50.0000	56.0159
74 4-Chlorotoluene	91	17.770	17.772	(0.956)	654769	50.0000	49.7424
75 tert-Butylbenzene	119	18.035	18.039	(0.970)	711153	50.0000	54.7037
76 1,2,4-Trimethylbenzene	105	18.104	18.108	(0.974)	792388	50.0000	52.9706
77 sec-Butylbenzene	105	18.291	18.285	(0.984)	1089899	50.0000	54.7061
78 para-Isopropyl Toluene	119	18.429	18.433	(0.992)	827925	50.0000	54.2704
79 1,3-Dichlorobenzene	146	18.507	18.512	(0.996)	460247	50.0000	53.2984
* 80 1,4-Dichlorobenzene-d4	152	18.586	18.591	(1.000)	270725	50.0000	
81 1,4-Dichlorobenzene	146	18.615	18.621	(1.002)	455136	50.0000	52.9339
82 n-Butylbenzene	91	18.901	18.897	(1.017)	752508	50.0000	56.4196
83 1,2-Dichlorobenzene	146	19.068	19.065	(1.026)	441867	50.0000	51.7602
84 1,2-Dibromo-3-Chloropropane	75	20.012	20.011	(1.077)	37497	50.0000	59.6339
85 1,2,4-Trichlorobenzene	180	21.035	21.037	(1.132)	257793	50.0000	54.7879
86 Hexachlorobutadiene	225	21.143	21.136	(1.138)	143745	50.0000	62.3106
87 Naphthalene	128	21.428	21.432	(1.153)	566620	50.0000	60.5408
88 1,2,3-Trichlorobenzene	180	21.783	21.777	(1.172)	249211	50.0000	55.8141

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL716.D
Date : 08-DEC-2015 01:20
Client ID: DYNA P&T
Sample Info: ICAL,=ICAL,37.5x
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL716.D
Report Date: 08-Dec-2015 01:57

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL716.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 08-DEC-2015 01:20 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,=ICAL,37.5x
Misc Info : 75ppb
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 08-Dec-2015 01:57 tapsvc Quant Type: ISTD
Cal Date : 08-DEC-2015 01:20 Cal File: HL716.D
Als bottle: 18 Calibration Sample, Level: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.709	3.718	(0.370)	561727	75.0000	69.9594
2 Chloromethane	50	4.103	4.103	(0.409)	646804	75.0000	68.8997
3 Vinyl Chloride	62	4.299	4.310	(0.428)	528231	75.0000	70.8273
4 Bromomethane	94	4.968	4.970	(0.495)	286623	75.0000	110.5519
5 Chloroethane	64	5.145	5.148	(0.513)	380124	75.0000	71.6657
6 Trichlorofluoromethane	101	5.529	5.533	(0.551)	622077	75.0000	72.5510
7 Ethanol	45	5.883	5.888	(0.586)	499161	7500.00	8220.7422
8 Freon 113	101	6.345	6.351	(0.632)	345447	75.0000	69.4154
9 1,1-Dichloroethene	96	6.443	6.460	(0.642)	342760	75.0000	68.6832
10 Acetone	43	6.591	6.598	(0.657)	117718	75.0000	75.7726
11 Isopropanol	45	6.719	6.726	(0.670)	243924	750.000	806.7073
12 Iodomethane	142	6.768	6.775	(0.675)	453077	75.0000	89.1366
13 Carbon Disulfide	76	6.847	6.854	(0.682)	1390179	75.0000	69.0690
14 Methylene Chloride	84	7.309	7.318	(0.728)	417098	75.0000	71.0551
15 tert-Butyl Alcohol (TBA)	59	7.348	7.357	(0.732)	326439	750.000	780.9700
16 MTBE	73	7.584	7.584	(0.756)	939023	75.0000	72.2521

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL716.D
Report Date: 08-Dec-2015 01:57

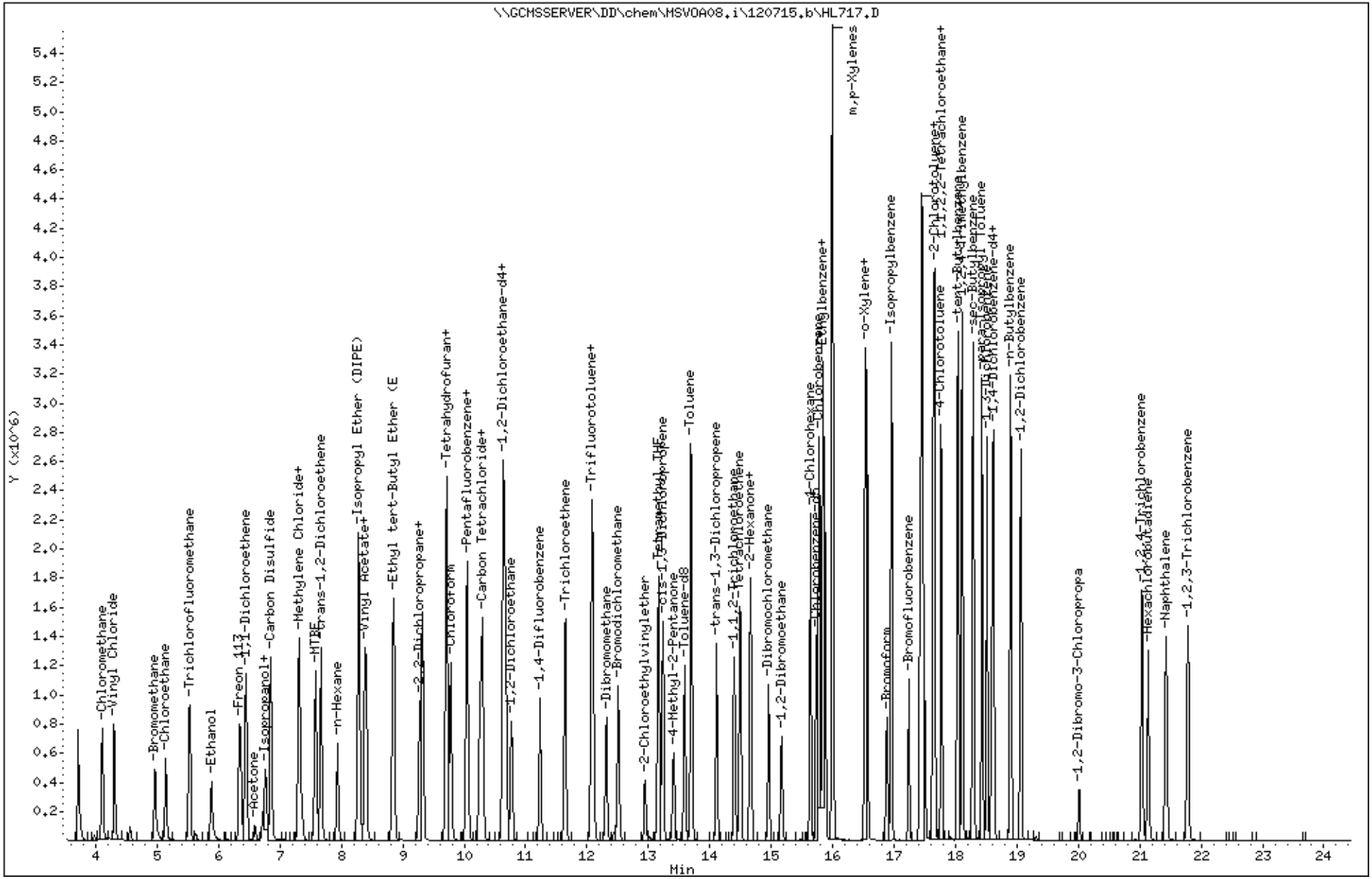
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.673	7.673	(0.765)	384655	75.0000	68.8544
	18 n-Hexane	57	7.938	7.939	(0.791)	265735	75.0000	74.5676
	19 Isopropyl Ether (DIPE)	45	8.283	8.284	(0.826)	1747958	75.0000	68.2610
	20 Vinyl Acetate	43	8.381	8.383	(0.835)	977131	75.0000	79.0284
	21 1,1-Dichloroethane	63	8.401	8.403	(0.837)	760285	75.0000	67.0656
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.843	8.847	(0.881)	1268947	75.0000	66.6824
	23 2,2-Dichloropropane	77	9.276	9.281	(0.925)	453875	75.0000	65.4125
	24 2-Butanone	43	9.306	9.320	(0.927)	186405	75.0000	79.0037
	25 cis-1,2-Dichloroethene	96	9.325	9.330	(0.929)	455670	75.0000	69.2260
	26 Tetrahydrofuran	42	9.709	9.714	(0.968)	1043495	750.000	755.1318
	27 Bromochloromethane	128	9.719	9.724	(0.969)	233580	75.0000	72.2062
	28 Chloroform	83	9.778	9.784	(0.975)	668419	75.0000	66.5575
*	29 Pentafluorobenzene	168	10.033	10.040	(1.000)	520390	50.0000	
	30 Dibromofluoromethane	113	10.053	10.050	(1.002)	268480	50.0000	48.0328
	31 1,1,1-Trichloroethane	97	10.053	10.050	(1.002)	486334	75.0000	67.5538
	32 Carbon Tetrachloride	117	10.260	10.267	(0.913)	453854	75.0000	69.5809
	33 1,1-Dichloropropene	75	10.299	10.306	(0.917)	556704	75.0000	68.5237
	34 1,2-Dichloroethane-d4	65	10.643	10.651	(0.947)	229995	50.0000	50.0897
	35 Methyl tert-Amyl Ether (TAME)	73	10.673	10.671	(0.950)	1146326	75.0000	74.3476
	36 Benzene	78	10.633	10.642	(0.947)	1573533	75.0000	71.3999
	37 1,2-Dichloroethane	62	10.771	10.770	(0.959)	472908	75.0000	73.8570
*	38 1,4-Difluorobenzene	114	11.233	11.233	(1.000)	798563	50.0000	
	39 Trichloroethene	95	11.637	11.648	(1.036)	392240	75.0000	67.3525
	40 Trifluorotoluene	146	12.079	12.082	(1.075)	618343	75.0000	72.0300
	41 1,2-Dichloropropane	63	12.099	12.101	(1.077)	459605	75.0000	72.3765
	42 Dibromomethane	93	12.315	12.318	(1.096)	268246	75.0000	75.6695
	43 Bromodichloromethane	83	12.512	12.506	(1.114)	530824	75.0000	72.9809
	44 2-Chloroethylvinylether	63	12.945	12.950	(1.152)	131219	75.0000	97.4630
	45 Tetramethyl THF	43	13.161	13.166	(1.172)	1031168	75.0000	74.7684
	46 cis-1,3-Dichloropropene	75	13.240	13.236	(1.179)	634095	75.0000	73.1069
	47 4-Methyl-2-Pentanone	43	13.407	13.413	(1.194)	446159	75.0000	82.3982
	48 Toluene-d8	98	13.594	13.591	(0.864)	813158	50.0000	47.9607
	49 Toluene	92	13.692	13.699	(0.870)	932546	75.0000	68.1121
	50 trans-1,3-Dichloropropene	75	14.105	14.113	(0.896)	528694	75.0000	74.8116
	51 1,1,2-Trichloroethane	85	14.401	14.399	(0.915)	188137	75.0000	73.1315
	52 Tetrachloroethene	166	14.499	14.498	(0.921)	393558	75.0000	69.1496
	53 2-Hexanone	43	14.656	14.666	(0.931)	303053	75.0000	81.5387
	54 1,3-Dichloropropane	76	14.666	14.666	(0.932)	587299	75.0000	75.6351
	55 Dibromochloromethane	129	14.961	14.962	(0.951)	448709	75.0000	74.2094
	56 1,2-Dibromoethane	107	15.168	15.169	(0.964)	377566	75.0000	74.6549
	57 1-Chlorohexane	91	15.640	15.642	(0.994)	551116	75.0000	70.2380
*	58 Chlorobenzene-d5	117	15.738	15.741	(1.000)	686051	50.0000	
	59 Chlorobenzene	112	15.778	15.780	(1.002)	1035551	75.0000	68.3664
	60 Ethylbenzene	91	15.837	15.839	(1.006)	1695477	75.0000	67.6560
	61 1,1,1,2-Tetrachloroethane	131	15.876	15.879	(1.009)	410586	75.0000	70.4330
	62 m,p-Xylenes	106	15.994	15.997	(1.016)	1261857	150.000	131.4782
	63 o-Xylene	106	16.535	16.530	(1.051)	644226	75.0000	67.4875

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL716.D
Report Date: 08-Dec-2015 01:57

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
64 Styrene	104	16.564	16.559	(1.052)	1158342	75.0000	72.3972
65 Bromoform	173	16.879	16.885	(1.072)	289652	75.0000	77.3395
66 Isopropylbenzene	105	16.958	16.954	(0.912)	1610552	75.0000	68.3255
67 Bromofluorobenzene	95	17.243	17.240	(0.928)	329151	50.0000	49.7359
68 1,1,2,2-Tetrachloroethane	83	17.410	17.417	(0.937)	449951	75.0000	77.8988
69 Bromobenzene	156	17.450	17.447	(0.939)	473502	75.0000	72.2648
70 Propylbenzene	91	17.459	17.457	(0.939)	1915821	75.0000	68.1296
71 1,2,3-Trichloropropane	110	17.499	17.506	(0.941)	107643	75.0000	76.6727
72 2-Chlorotoluene	91	17.636	17.634	(0.949)	1294571	75.0000	69.7866
73 1,3,5-Trimethylbenzene	105	17.656	17.654	(0.950)	1312729	75.0000	68.6857
74 4-Chlorotoluene	91	17.764	17.772	(0.956)	1166512	75.0000	69.0848
75 tert-Butylbenzene	119	18.040	18.039	(0.970)	1208877	75.0000	71.7027
76 1,2,4-Trimethylbenzene	105	18.109	18.108	(0.974)	1354571	75.0000	70.1946
77 sec-Butylbenzene	105	18.286	18.285	(0.984)	1811592	75.0000	70.3934
78 para-Isopropyl Toluene	119	18.433	18.433	(0.992)	1408369	75.0000	71.3935
79 1,3-Dichlorobenzene	146	18.512	18.512	(0.996)	833939	75.0000	74.1373
* 80 1,4-Dichlorobenzene-d4	152	18.591	18.591	(1.000)	349124	50.0000	
81 1,4-Dichlorobenzene	146	18.620	18.621	(1.002)	817807	75.0000	72.9967
82 n-Butylbenzene	91	18.895	18.897	(1.016)	1192460	75.0000	69.9307
83 1,2-Dichlorobenzene	146	19.063	19.065	(1.025)	802968	75.0000	72.4308
84 1,2-Dibromo-3-Chloropropane	75	20.017	20.011	(1.077)	69762	75.0000	85.0782
85 1,2,4-Trichlorobenzene	180	21.040	21.037	(1.132)	476684	75.0000	79.4539
86 Hexachlorobutadiene	225	21.138	21.136	(1.137)	234321	75.0000	78.2126
87 Naphthalene	128	21.433	21.432	(1.153)	1107234	75.0000	90.3665
88 1,2,3-Trichlorobenzene	180	21.787	21.777	(1.172)	459518	75.0000	80.4568

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL717.D
Date : 08-DEC-2015 01:54
Client ID: DYNA P&T
Sample Info: ICAL,=ICAL,50x
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL717.D
Report Date: 08-Dec-2015 02:30

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL717.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 08-DEC-2015 01:54 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ICAL,=ICAL,50x
Misc Info : 100ppb
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 08-Dec-2015 02:30 tapsvc Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 19 Calibration Sample, Level: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
1 Freon 12	85	3.711	3.718	(0.370)	908933	100.000	97.2904
2 Chloromethane	50	4.104	4.103	(0.409)	972393	100.000	87.7112
3 Vinyl Chloride	62	4.301	4.310	(0.429)	893363	100.000	99.6316
4 Bromomethane	94	4.960	4.970	(0.494)	506240	100.000	166.1783
5 Chloroethane	64	5.147	5.148	(0.513)	601578	100.000	95.9236
6 Trichlorofluoromethane	101	5.530	5.533	(0.551)	961428	100.000	97.5177
7 Ethanol	45	5.884	5.888	(0.586)	680731	10000.0	9542.7564
8 Freon 113	101	6.346	6.351	(0.632)	520968	100.000	90.8835
9 1,1-Dichloroethene	96	6.445	6.460	(0.642)	531407	100.000	91.8403
10 Acetone	43	6.592	6.598	(0.657)	162249	100.000	90.9435
11 Isopropanol	45	6.720	6.726	(0.670)	333975	1000.00	942.7639
12 Iodomethane	142	6.769	6.775	(0.675)	746369	100.000	124.7753
13 Carbon Disulfide	76	6.848	6.854	(0.682)	2174705	100.000	91.9112
14 Methylene Chloride	84	7.310	7.318	(0.728)	659566	100.000	96.4769
15 tert-Butyl Alcohol (TBA)	59	7.350	7.357	(0.732)	453583	1000.00	927.0214
16 MTBE	73	7.586	7.584	(0.756)	1526426	100.000	100.5148

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL717.D
Report Date: 08-Dec-2015 02:30

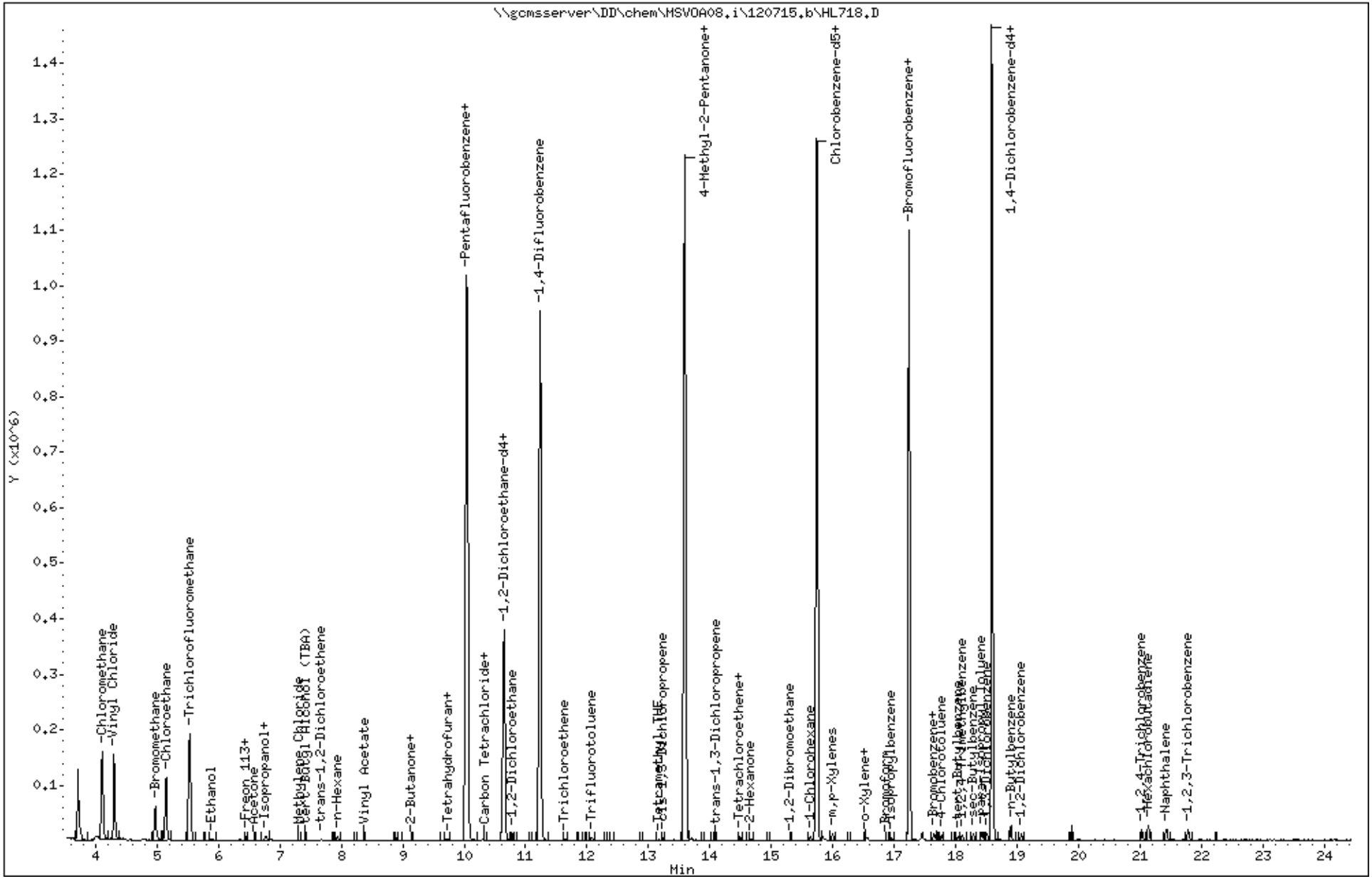
	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
	17 trans-1,2-Dichloroethene	96	7.674	7.673	(0.765)	626967	100.000	96.4648
	18 n-Hexane	57	7.940	7.939	(0.791)	371499	100.000	89.3116
	19 Isopropyl Ether (DIPE)	45	8.284	8.284	(0.826)	2891927	100.000	96.0681
	20 Vinyl Acetate	43	8.383	8.383	(0.835)	1417659	100.000	97.1640
	21 1,1-Dichloroethane	63	8.402	8.403	(0.837)	1237136	100.000	93.3960
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.845	8.847	(0.881)	2153694	100.000	97.0869
	23 2,2-Dichloropropane	77	9.278	9.281	(0.925)	714554	100.000	89.2092
	24 2-Butanone	43	9.307	9.320	(0.927)	256330	100.000	92.3556
	25 cis-1,2-Dichloroethene	96	9.327	9.330	(0.929)	733486	100.000	96.0437
	26 Tetrahydrofuran	42	9.710	9.714	(0.968)	1432555	1000.00	879.6043
	27 Bromochloromethane	128	9.720	9.724	(0.969)	370566	100.000	98.3921
	28 Chloroform	83	9.779	9.784	(0.975)	1133751	100.000	97.7122
*	29 Pentafluorobenzene	168	10.035	10.040	(1.000)	611459	50.0000	
	30 Dibromofluoromethane	113	10.055	10.050	(1.002)	339687	50.0000	52.1257
	31 1,1,1-Trichloroethane	97	10.055	10.050	(1.002)	765142	100.000	93.0050
	32 Carbon Tetrachloride	117	10.261	10.267	(0.913)	733822	100.000	91.0065
	33 1,1-Dichloropropene	75	10.301	10.306	(0.917)	855678	100.000	84.3856
	34 1,2-Dichloroethane-d4	65	10.645	10.651	(0.947)	268564	50.0000	46.7609
	35 Methyl tert-Amyl Ether (TAME)	73	10.674	10.671	(0.950)	1718121	100.000	88.7942
	36 Benzene	78	10.635	10.642	(0.947)	2331305	100.000	83.9811
	37 1,2-Dichloroethane	62	10.773	10.770	(0.959)	753228	100.000	94.4055
*	38 1,4-Difluorobenzene	114	11.235	11.233	(1.000)	1006098	50.0000	
	39 Trichloroethene	95	11.648	11.648	(1.037)	637836	100.000	88.5425
	40 Trifluorotoluene	146	12.071	12.082	(1.074)	983457	100.000	90.9901
	41 1,2-Dichloropropane	63	12.100	12.101	(1.077)	742385	100.000	92.4812
	42 Dibromomethane	93	12.317	12.318	(1.096)	407792	100.000	92.8978
	43 Bromodichloromethane	83	12.504	12.506	(1.113)	888063	100.000	98.1388
	44 2-Chloroethylvinylether	63	12.946	12.950	(1.152)	218874	100.000	129.7390
	45 Tetramethyl THF	43	13.163	13.166	(1.172)	1569869	100.000	90.1763
	46 cis-1,3-Dichloropropene	75	13.232	13.236	(1.178)	1027362	100.000	94.9200
	47 4-Methyl-2-Pentanone	43	13.409	13.413	(1.193)	616306	100.000	90.5323
	48 Toluene-d8	98	13.595	13.591	(0.864)	1034954	50.0000	47.7003
	49 Toluene	92	13.694	13.699	(0.870)	1467529	100.000	84.1846
	50 trans-1,3-Dichloropropene	75	14.107	14.113	(0.896)	823628	100.000	91.7672
	51 1,1,2-Trichloroethane	85	14.402	14.399	(0.915)	285859	100.000	87.1788
	52 Tetrachloroethene	166	14.500	14.498	(0.921)	612376	100.000	84.3277
	53 2-Hexanone	43	14.658	14.666	(0.931)	417092	100.000	87.4073
	54 1,3-Dichloropropane	76	14.668	14.666	(0.932)	894871	100.000	90.0693
	55 Dibromochloromethane	129	14.963	14.962	(0.951)	701620	100.000	90.9231
	56 1,2-Dibromoethane	107	15.169	15.169	(0.964)	575065	100.000	89.8173
	57 1-Chlorohexane	91	15.641	15.642	(0.994)	822320	100.000	82.7588
*	58 Chlorobenzene-d5	117	15.740	15.741	(1.000)	880882	50.0000	
	59 Chlorobenzene	112	15.779	15.780	(1.002)	1669272	100.000	86.4783
	60 Ethylbenzene	91	15.848	15.839	(1.007)	2657152	100.000	82.5859
	61 1,1,1,2-Tetrachloroethane	131	15.877	15.879	(1.009)	660100	100.000	88.2644
	62 m,p-Xylenes	106	15.995	15.997	(1.016)	1934414	200.000	156.8986
	63 o-Xylene	106	16.536	16.530	(1.051)	1037434	100.000	84.8479

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\120715.b\HL717.D
Report Date: 08-Dec-2015 02:30

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	AMOUNTS CAL-AMT (ug/L)	AMOUNTS ON-COL (ug/L)
64 Styrene	104	16.566	16.559	(1.052)	1744133	100.000	84.7400
65 Bromoform	173	16.881	16.885	(1.072)	434859	100.000	91.3545
66 Isopropylbenzene	105	16.959	16.954	(0.912)	2544735	100.000	86.1019
67 Bromofluorobenzene	95	17.245	17.240	(0.928)	426728	50.0000	51.7864
68 1,1,2,2-Tetrachloroethane	83	17.412	17.417	(0.937)	643824	100.000	89.3066
69 Bromobenzene	156	17.441	17.447	(0.938)	746503	100.000	90.3652
70 Propylbenzene	91	17.461	17.457	(0.939)	2882522	100.000	81.3742
71 1,2,3-Trichloropropane	110	17.500	17.506	(0.941)	151131	100.000	86.8290
72 2-Chlorotoluene	91	17.638	17.634	(0.949)	1881632	100.000	81.2564
73 1,3,5-Trimethylbenzene	105	17.658	17.654	(0.950)	1920577	100.000	80.4030
74 4-Chlorotoluene	91	17.766	17.772	(0.956)	1763900	100.000	84.3243
75 tert-Butylbenzene	119	18.041	18.039	(0.970)	1858626	100.000	87.5222
76 1,2,4-Trimethylbenzene	105	18.110	18.108	(0.974)	2102347	100.000	87.4188
77 sec-Butylbenzene	105	18.287	18.285	(0.984)	2690437	100.000	83.3535
78 para-Isopropyl Toluene	119	18.435	18.433	(0.992)	2028629	100.000	82.3424
79 1,3-Dichlorobenzene	146	18.513	18.512	(0.996)	1244044	100.000	88.0170
* 80 1,4-Dichlorobenzene-d4	152	18.592	18.591	(1.000)	441445	50.0000	
81 1,4-Dichlorobenzene	146	18.622	18.621	(1.002)	1259047	100.000	88.9381
82 n-Butylbenzene	91	18.897	18.897	(1.016)	1863143	100.000	87.6215
83 1,2-Dichlorobenzene	146	19.064	19.065	(1.025)	1265510	100.000	90.8565
84 1,2-Dibromo-3-Chloropropane	75	20.008	20.011	(1.076)	95265	100.000	94.0420
85 1,2,4-Trichlorobenzene	180	21.041	21.037	(1.132)	745968	100.000	100.5623
86 Hexachlorobutadiene	225	21.139	21.136	(1.137)	349095	100.000	93.4624
87 Naphthalene	128	21.435	21.432	(1.153)	1571871	100.000	102.6565
88 1,2,3-Trichlorobenzene	180	21.789	21.777	(1.172)	699303	100.000	99.2481

Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL718.D
Date : 08-DEC-2015 02:28
Client ID: DYNA P&T
Sample Info: icv
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL718.D
Report Date: 08-Dec-2015 14:18

Curtis & Tompkins, Ltd.

Data file : \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL718.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 08-DEC-2015 02:28 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : icv
Misc Info : gas
Comment :
Method : \\gcmsserver\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 08-Dec-2015 14:17 target Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 20
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.10
Processing Host: PC_MSVOA_WK01

Concentration Formula: Amt * DF * Uf/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
1 Freon 12	85	3.712	3.717	(0.370)	138671	14.6343	14.6343
2 Chloromethane	50	4.106	4.102	(0.409)	194712	17.3163	17.3163
3 Vinyl Chloride	62	4.302	4.309	(0.429)	163617	17.9906	17.9906
4 Bromomethane	94	4.971	4.970	(0.495)	53531	16.6606	16.6606
5 Chloroethane	64	5.148	5.147	(0.513)	115251	18.1187	18.1187
6 Trichlorofluoromethane	101	5.532	5.532	(0.551)	184540	18.4547	18.4546
7 Ethanol	45	5.886	5.887	(0.586)	4296	59.3761	59.3761(A)
8 Freon 113	101	6.358	6.351	(0.634)	842	0.14482	0.1448(a)
9 1,1-Dichloroethene	96	6.447	6.459	(0.642)	267	0.04550	0.0454(a)
10 Acetone	43	6.594	6.597	(0.657)	679	0.37524	0.3752(a)
11 Isopropanol	45	6.732	6.726	(0.671)	1277	3.55409	3.5540(A)
12 Iodomethane	142	6.771	6.775	(0.675)	13648	4.65419	4.6541(A)
13 Carbon Disulfide	76	6.860	6.854	(0.683)	2947	0.12280	0.1227(a)
14 Methylene Chloride	84	7.312	7.317	(0.729)	318	0.04586	0.0458(a)
15 tert-Butyl Alcohol (TBA)	59	7.371	7.357	(0.734)	1099	2.21452	2.2145(A)
17 trans-1,2-Dichloroethene	96	7.666	7.672	(0.764)	649	0.09845	0.0984(a)
18 n-Hexane	57	7.942	7.939	(0.791)	3694	0.87558	0.8755(A)
20 Vinyl Acetate	43	8.384	8.382	(0.835)	821	0.05548	0.0554(a)
24 2-Butanone	43	9.309	9.319	(0.927)	338	0.12007	0.1200(a)
25 cis-1,2-Dichloroethene	96	9.328	9.329	(0.929)	277	0.03576	0.0357(a)
26 Tetrahydrofuran	42	9.712	9.714	(0.968)	2666	1.61393	1.6139(A)
28 Chloroform	83	9.781	9.783	(0.975)	536	0.04555	0.0455(a)

Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL718.D
Report Date: 08-Dec-2015 14:18

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
* 29 Pentafluorobenzene	168	10.037	10.039	(1.000)	620181	50.0000	
30 Dibromofluoromethane	113	10.046	10.049	(1.001)	347420	52.5625	52.5625
32 Carbon Tetrachloride	117	10.253	10.266	(0.912)	316	0.03945	0.0394(a)
33 1,1-Dichloropropene	75	10.292	10.306	(0.916)	1219	0.12103	0.1210(a)
34 1,2-Dichloroethane-d4	65	10.646	10.651	(0.947)	296821	52.0287	52.0286
36 Benzene	78	10.637	10.641	(0.947)	1471	0.05335	0.0533(a)
37 1,2-Dichloroethane	62	10.764	10.769	(0.958)	253	0.03192	0.0319(a)
* 38 1,4-Difluorobenzene	114	11.237	11.233	(1.000)	999370	50.0000	
39 Trichloroethene	95	11.650	11.647	(1.037)	926	0.12941	0.1294(a)
40 Trifluorotoluene	146	12.073	12.081	(1.074)	3164	0.29471	0.2947(aA)
45 Tetramethyl THF	43	13.174	13.166	(1.172)	1049	0.06066	0.0606(aA)
46 cis-1,3-Dichloropropene	75	13.223	13.235	(1.177)	399	0.03711	0.0371(a)
47 4-Methyl-2-Pentanone	43	13.410	13.413	(1.193)	1276	0.18870	0.1886(a)
48 Toluene-d8	98	13.587	13.590	(0.863)	998451	47.8329	47.8329
49 Toluene	92	13.696	13.699	(0.870)	1586	0.09457	0.0945(a)
50 trans-1,3-Dichloropropene	75	14.118	14.113	(0.897)	460	0.05327	0.0532(a)
52 Tetrachloroethene	166	14.492	14.498	(0.921)	2027	0.27972	0.2797(a)
53 2-Hexanone	43	14.669	14.665	(0.932)	1901	0.41409	0.4140(a)
55 Dibromochloromethane	129	14.492	14.961	(0.921)	1370	0.18454	0.1845(a)
56 1,2-Dibromoethane	107	15.171	15.168	(0.964)	409	0.06640	0.0663(a)
57 1-Chlorohexane	91	15.633	15.642	(0.993)	2752	0.04586	0.0458(aA)
* 58 Chlorobenzene-d5	117	15.741	15.740	(1.000)	847458	50.0000	
59 Chlorobenzene	112	15.781	15.780	(1.002)	2606	0.14033	0.1403(a)
60 Ethylbenzene	91	15.840	15.839	(1.006)	4812	0.15546	0.1554(a)
62 m,p-Xylenes	106	15.997	15.997	(1.016)	4308	0.12553	0.1255(a)
63 o-Xylene	106	16.528	16.529	(1.050)	1612	0.13704	0.1370(a)
64 Styrene	104	16.568	16.559	(1.052)	3081	0.15560	0.1555(a)
65 Bromoform	173	16.882	16.884	(1.072)	456	0.09957	0.0995(a)
66 Isopropylbenzene	105	16.961	16.953	(0.913)	4507	0.15339	0.1533(a)
67 Bromofluorobenzene	95	17.236	17.239	(0.927)	408924	49.9177	49.9176
68 1,1,2,2-Tetrachloroethane	83	17.413	17.417	(0.937)	832	0.11609	0.1160(a)
69 Bromobenzene	156	17.453	17.446	(0.939)	1661	0.20225	0.2022(a)
70 Propylbenzene	91	17.463	17.457	(0.940)	10598	0.29314	0.2931(a)
72 2-Chlorotoluene	91	17.640	17.634	(0.949)	5575	0.24217	0.2421(a)
73 1,3,5-Trimethylbenzene	105	17.659	17.654	(0.950)	5838	0.23914	0.2391(a)
74 4-Chlorotoluene	91	17.768	17.772	(0.956)	6907	0.33214	0.3321(a)
75 tert-Butylbenzene	119	18.033	18.038	(0.970)	4067	0.19264	0.1926(a)
76 1,2,4-Trimethylbenzene	105	18.112	18.107	(0.975)	6971	0.29157	0.2915(a)
77 sec-Butylbenzene	105	18.289	18.285	(0.984)	10708	0.32595	0.3259(a)
78 para-Isopropyl Toluene	119	18.436	18.433	(0.992)	10818	0.44169	0.4416(a)
79 1,3-Dichlorobenzene	146	18.515	18.512	(0.996)	5876	0.41818	0.4181(a)
* 80 1,4-Dichlorobenzene-d4	152	18.584	18.591	(1.000)	438864	50.0000	
81 1,4-Dichlorobenzene	146	18.613	18.620	(1.002)	6506	0.46228	0.4622(a)
82 n-Butylbenzene	91	18.899	18.897	(1.017)	17095	0.79464	0.7946
83 1,2-Dichlorobenzene	146	19.066	19.064	(1.026)	4869	0.35162	0.3516(a)
85 1,2,4-Trichlorobenzene	180	21.033	21.037	(1.132)	8452	1.14610	1.1460
86 Hexachlorobutadiene	225	21.141	21.135	(1.138)	7620	2.05208	2.0520
87 Naphthalene	128	21.426	21.431	(1.153)	24140	1.58582	1.5858
88 1,2,3-Trichlorobenzene	180	21.780	21.776	(1.172)	8949	1.27755	1.2775

QC Flag Legend

a - Target compound detected but, quantitated amount
Below Limit Of Quantitation(BLOQ).

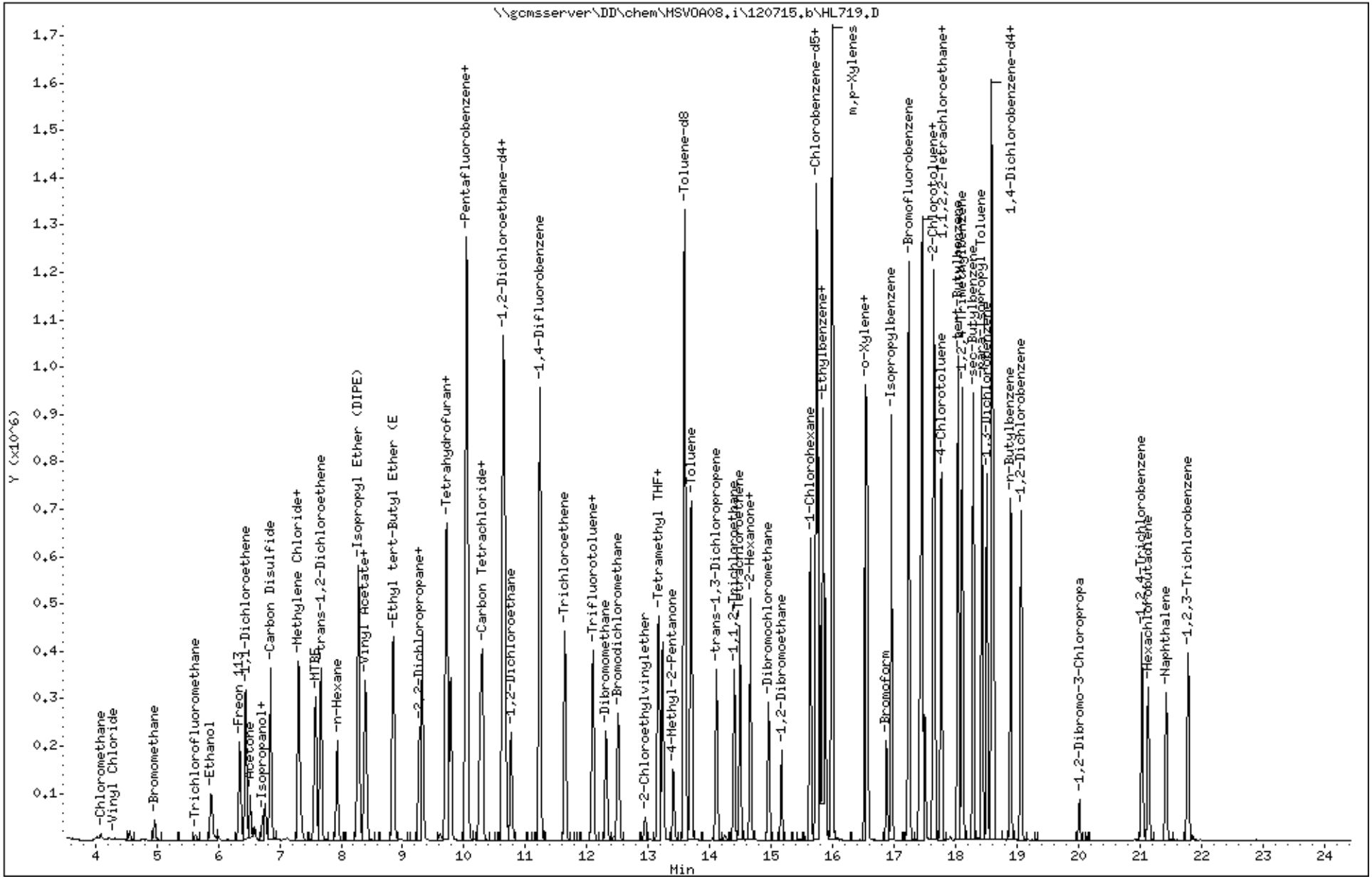
Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL718.D
Report Date: 08-Dec-2015 14:18

QC Flag Legend

A - Target compound detected but, quantitated amount
    exceeded maximum amount.

Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL719.D
Date : 08-DEC-2015 03:02
Client ID: DYNA P&T
Sample Info: icv
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL719.D
Report Date: 08-Dec-2015 14:20

Laboratory Name

Data file : \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL719.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 08-DEC-2015 03:02 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : icv
Misc Info : mix
Comment :
Method : \\gcmsserver\DD\chem\MSVOA08.i\120715.b\826GOX8.m
Meth Date : 08-Dec-2015 14:20 target Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 21
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.10
Processing Host: PC_MSVOA10

Concentration Formula: Amt * DF * Uf/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor
Cpnd Variable		Local Compound Variable

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
1 Freon 12	85	3.716	3.717	(0.370)	474	0.04996	0.0499(a)
2 Chloromethane	50	4.089	4.102	(0.407)	10936	0.97139	0.9713
3 Vinyl Chloride	62	4.306	4.309	(0.429)	378	0.04151	0.0415(a)
4 Bromomethane	94	4.965	4.970	(0.495)	31857	10.3906	10.3906
6 Trichlorofluoromethane	101	5.525	5.532	(0.550)	405	0.04045	0.0404(a)
7 Ethanol	45	5.880	5.887	(0.586)	169667	2342.17	2342.1670(A)
8 Freon 113	101	6.352	6.351	(0.633)	129449	22.2379	22.2379
9 1,1-Dichloroethene	96	6.450	6.459	(0.642)	148907	25.3421	25.3421
10 Acetone	43	6.588	6.597	(0.656)	48016	26.5032	26.5031
11 Isopropanol	45	6.725	6.726	(0.670)	85089	236.528	236.5284(A)
12 Iodomethane	142	6.765	6.775	(0.674)	97488	16.3722	16.3721(A)
13 Carbon Disulfide	76	6.853	6.854	(0.683)	622813	25.9208	25.9207
14 Methylene Chloride	84	7.316	7.317	(0.729)	182460	26.2818	26.2817
15 tert-Butyl Alcohol (TBA)	59	7.355	7.357	(0.733)	60008	120.771	120.7712(A)
16 MTBE	73	7.581	7.584	(0.755)	376862	24.4376	24.4376
17 trans-1,2-Dichloroethene	96	7.670	7.672	(0.764)	161458	24.4628	24.4627
18 n-Hexane	57	7.935	7.939	(0.790)	118507	28.0554	28.0553(A)
19 Isopropyl Ether (DIPE)	45	8.279	8.284	(0.825)	770921	25.2188	25.2187(A)
20 Vinyl Acetate	43	8.378	8.382	(0.834)	358218	24.1771	24.1770
21 1,1-Dichloroethane	63	8.407	8.402	(0.837)	327139	24.3201	24.3200
22 Ethyl tert-Butyl Ether (ETBE)	59	8.850	8.846	(0.881)	554252	24.6040	24.6040(A)
23 2,2-Dichloropropane	77	9.273	9.280	(0.924)	177829	21.8625	21.8624

Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL719.D
Report Date: 08-Dec-2015 14:20

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
24 2-Butanone	43	9.312	9.319	(0.927)	70058	24.8567	24.8566
25 cis-1,2-Dichloroethene	96	9.322	9.329	(0.928)	196279	25.3089	25.3088
26 Tetrahydrofuran	42	9.706	9.714	(0.967)	377118	228.021	228.0212(A)
27 Bromochloromethane	128	9.715	9.724	(0.968)	95788	25.0454	25.0454
28 Chloroform	83	9.784	9.783	(0.975)	304995	25.8849	25.8848
* 29 Pentafluorobenzene	168	10.040	10.039	(1.000)	620934	50.0000	
30 Dibromofluoromethane	113	10.050	10.049	(1.001)	351444	53.1069	53.1068
31 1,1,1-Trichloroethane	97	10.050	10.049	(1.001)	211156	25.2749	25.2749
32 Carbon Tetrachloride	117	10.256	10.266	(0.913)	201808	25.2175	25.2175
33 1,1-Dichloropropene	75	10.296	10.306	(0.917)	215911	21.4544	21.4543
34 1,2-Dichloroethane-d4	65	10.640	10.651	(0.947)	302760	53.1148	53.1147
35 Methyl tert-Amyl Ether (TAME)	73	10.670	10.671	(0.950)	461302	24.0215	24.0214(A)
36 Benzene	78	10.630	10.641	(0.947)	673832	24.4578	24.4577
37 1,2-Dichloroethane	62	10.768	10.769	(0.959)	202275	25.5444	25.5444
* 38 1,4-Difluorobenzene	114	11.230	11.233	(1.000)	998522	50.0000	
39 Trichloroethene	95	11.643	11.647	(1.037)	175850	24.5962	24.5961
40 Trifluorotoluene	146	12.076	12.081	(1.075)	1399	0.13042	0.1304(aA)
41 1,2-Dichloropropane	63	12.096	12.101	(1.077)	190987	23.9724	23.9723
42 Dibromomethane	93	12.312	12.318	(1.096)	110342	25.3273	25.3273
43 Bromodichloromethane	83	12.509	12.505	(1.114)	221559	24.6700	24.6699
44 2-Chloroethylvinylether	63	12.942	12.950	(1.152)	27304	17.3880	17.3879
45 Tetramethyl THF	43	13.168	13.166	(1.173)	411833	23.8360	23.8359(A)
46 cis-1,3-Dichloropropene	75	13.237	13.235	(1.179)	284486	26.4837	26.4836
47 4-Methyl-2-Pentanone	43	13.404	13.413	(1.194)	159042	23.5397	23.5397
48 Toluene-d8	98	13.591	13.590	(0.864)	1075968	48.7300	48.7300
49 Toluene	92	13.699	13.699	(0.871)	389425	21.9516	21.9516
50 trans-1,3-Dichloropropene	75	14.112	14.113	(0.897)	208586	22.8370	22.8369
51 1,1,2-Trichloroethane	85	14.397	14.399	(0.915)	75105	22.5073	22.5073
52 Tetrachloroethene	166	14.496	14.498	(0.921)	164744	21.4917	21.4917
53 2-Hexanone	43	14.663	14.665	(0.932)	112940	23.2574	23.2573
54 1,3-Dichloropropane	76	14.663	14.665	(0.932)	238297	23.5685	23.5684
55 Dibromochloromethane	129	14.958	14.961	(0.951)	177927	22.6574	22.6574
56 1,2-Dibromoethane	107	15.164	15.168	(0.964)	149002	22.8682	22.8681
57 1-Chlorohexane	91	15.637	15.642	(0.994)	217097	22.7401	22.7401(A)
* 58 Chlorobenzene-d5	117	15.735	15.740	(1.000)	896440	50.0000	
59 Chlorobenzene	112	15.774	15.780	(1.002)	458144	23.3227	23.3227
60 Ethylbenzene	91	15.843	15.839	(1.007)	715145	21.8414	21.8414
61 1,1,1,2-Tetrachloroethane	131	15.873	15.878	(1.009)	165780	21.7824	21.7823
62 m,p-Xylenes	106	15.991	15.997	(1.016)	558392	46.4563	46.4562
63 o-Xylene	106	16.532	16.529	(1.051)	281338	22.6103	22.6102
64 Styrene	104	16.561	16.559	(1.053)	481757	23.0003	23.0003
65 Bromoform	173	16.876	16.884	(1.073)	111484	23.0139	23.0139
66 Isopropylbenzene	105	16.955	16.953	(0.912)	661101	22.0309	22.0309
67 Bromofluorobenzene	95	17.240	17.239	(0.927)	430943	51.5085	51.5085
68 1,1,2,2-Tetrachloroethane	83	17.417	17.417	(0.937)	171032	23.3662	23.3662
69 Bromobenzene	156	17.446	17.446	(0.939)	195603	23.3206	23.3206
70 Propylbenzene	91	17.456	17.457	(0.939)	804326	21.7839	21.7839
71 1,2,3-Trichloropropane	110	17.505	17.506	(0.942)	41956	23.7410	23.7410
72 2-Chlorotoluene	91	17.633	17.634	(0.949)	525446	22.3484	22.3483
73 1,3,5-Trimethylbenzene	105	17.653	17.654	(0.950)	564159	22.6280	22.6279
74 4-Chlorotoluene	91	17.771	17.772	(0.956)	486654	22.9137	22.9136
75 tert-Butylbenzene	119	18.036	18.038	(0.970)	503023	23.3297	23.3296
76 1,2,4-Trimethylbenzene	105	18.105	18.107	(0.974)	546634	22.3868	22.3868
77 sec-Butylbenzene	105	18.282	18.285	(0.984)	753994	22.4728	22.4727

Data File: \\gcmsserver\DD\chem\MSVOA08.i\120715.b\HL719.D
Report Date: 08-Dec-2015 14:20

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
78	para-Isopropyl Toluene	119	18.430	18.433	(0.992)	572689	22.8947	22.8946
79	1,3-Dichlorobenzene	146	18.509	18.512	(0.996)	346313	24.1321	24.1320
* 80	1,4-Dichlorobenzene-d4	152	18.587	18.591	(1.000)	448211	50.0000	
81	1,4-Dichlorobenzene	146	18.617	18.620	(1.002)	346752	24.1246	24.1245
82	n-Butylbenzene	91	18.892	18.897	(1.016)	461699	21.2380	21.2380
83	1,2-Dichlorobenzene	146	19.069	19.064	(1.026)	340501	24.0771	24.0770
84	1,2-Dibromo-3-Chloropropane	75	20.013	20.011	(1.077)	23127	22.4855	22.4854
85	1,2,4-Trichlorobenzene	180	21.036	21.037	(1.132)	180628	23.9825	23.9825
86	Hexachlorobutadiene	225	21.135	21.135	(1.137)	87413	23.0496	23.0496
87	Naphthalene	128	21.430	21.431	(1.153)	343007	22.0631	22.0631
88	1,2,3-Trichlorobenzene	180	21.784	21.776	(1.172)	174423	24.3812	24.3812

QC Flag Legend

a - Target compound detected but, quantitated amount Below Limit Of Quantitation(BLOQ).
A - Target compound detected but, quantitated amount exceeded maximum amount.

Continuing Calibration Verification Raw Data

CURTIS & TOMPKINS CONTINUING CALIBRATION FOR 272486 MSVOA Water
EPA 8260C

Inst : MSVOA08 IDF : 1.0
Seqnum : 475507613010.1 File : hli10 Time : 18-DEC-2015 16:49
Cal : 475492027002 Caldate : 07-DEC-2015 Caltype : WATER
Standards: S27004 (20000X), S28693 (20000X), S28355 (20000X), S27081 (20000X), S28588 (5000X)

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
Freon 12	0.7639	0.8019	25.00	26.24	ug/L	5	20	0.1000	v- ***
Chloromethane	0.9065	0.9183	25.00	25.32	ug/L	1	20	0.1000	
Vinyl Chloride	0.7332	0.8402	25.00	28.65	ug/L	15	20	0.1000	
Bromomethane	0.2425	0.3968	25.00	33.64	ug/L	**35**	20	0.1000	c+ ***
Chloroethane	0.5128	0.5458	25.00	26.61	ug/L	6	20	0.1000	
Trichlorofluoromethane	0.8062	0.9158	25.00	28.40	ug/L	14	20	0.1000	
Acetone	0.1459	0.1291	25.00	22.13	ug/L	-11	20	0.1000	
Freon 113	0.4687	0.4734	25.00	25.25	ug/L	1	20	0.1000	
1,1-Dichloroethene	0.4731	0.4469	25.00	23.61	ug/L	-6	20	0.1000	
Methylene Chloride	0.5590	0.5939	25.00	26.56	ug/L	6	20	0.1000	
Carbon Disulfide	1.9348	1.8419	25.00	23.80	ug/L	-5	20	0.1000	
MTBE	1.2418	1.2385	25.00	24.93	ug/L	0	20	0.1000	
trans-1,2-Dichloroethene	0.5315	0.5708	25.00	26.85	ug/L	7	20	0.1000	
Vinyl Acetate	1.1931	1.2317	25.00	25.81	ug/L	3	20	0.0500	
1,1-Dichloroethane	1.0832	1.1941	25.00	27.56	ug/L	10	20	0.2000	
2-Butanone	0.2270	0.2025	25.00	22.31	ug/L	-11	20	0.1000	
2,2-Dichloropropane	0.6550	0.8937	25.00	34.11	ug/L	**36**	20	0.0500	c+ ***
cis-1,2-Dichloroethene	0.6245	0.6821	25.00	27.31	ug/L	9	20	0.1000	
Chloroform	0.9488	1.1191	25.00	29.49	ug/L	18	20	0.2000	
Bromochloromethane	0.3080	0.3440	25.00	27.93	ug/L	12	20	0.0500	
1,1,1-Trichloroethane	0.6727	0.7888	25.00	29.32	ug/L	17	20	0.1000	
1,1-Dichloropropene	0.5039	0.5337	25.00	26.48	ug/L	6	20	0.0500	
Carbon Tetrachloride	0.4007	0.4372	25.00	27.28	ug/L	9	20	0.1000	
1,2-Dichloroethane	0.3965	0.4915	25.00	30.99	ug/L	**24**	20	0.1000	c+ ***
Benzene	1.3796	1.5128	25.00	27.41	ug/L	10	20	0.5000	
Trichloroethene	0.3580	0.3957	25.00	27.63	ug/L	11	20	0.2000	
1,2-Dichloropropane	0.3989	0.4649	25.00	29.14	ug/L	17	20	0.1000	
Bromodichloromethane	0.4497	0.5415	25.00	30.10	ug/L	20	20	0.2000	
Dibromomethane	0.2182	0.2333	25.00	26.74	ug/L	7	20	0.0500	
4-Methyl-2-Pentanone	0.3383	0.3015	25.00	22.28	ug/L	-11	20	0.1000	
cis-1,3-Dichloropropene	0.5379	0.6626	25.00	30.80	ug/L	**23**	20	0.2000	c+ ***
Toluene	0.9895	1.0066	25.00	25.43	ug/L	2	20	0.4000	
trans-1,3-Dichloropropene	0.5094	0.5751	25.00	28.22	ug/L	13	20	0.1000	
1,1,2-Trichloroethane	0.1861	0.1729	25.00	23.22	ug/L	-7	20	0.1000	
2-Hexanone	0.2709	0.2304	25.00	21.27	ug/L	-15	20	0.1000	
1,3-Dichloropropane	0.5639	0.5816	25.00	25.78	ug/L	3	20	0.0500	
Tetrachloroethene	0.4276	0.4279	25.00	25.02	ug/L	0	20	0.2000	
Dibromochloromethane	0.4380	0.4431	25.00	25.29	ug/L	1	20	0.1000	
1,2-Dibromoethane	0.3634	0.3453	25.00	23.76	ug/L	-5	20	0.1000	
Chlorobenzene	1.0956	1.1196	25.00	25.55	ug/L	2	20	0.5000	
1,1,1,2-Tetrachloroethane	0.4245	0.4569	25.00	26.91	ug/L	8	20	0.0500	
Ethylbenzene	1.8263	1.9105	25.00	26.15	ug/L	5	20	0.1000	
m,p-Xylenes	0.7337	0.7026	50.00	51.88	ug/L	4	20	0.1000	
o-Xylene	0.6940	0.7553	25.00	27.21	ug/L	9	20	0.3000	
Styrene	1.1683	1.2837	25.00	27.47	ug/L	10	20	0.3000	
Bromoform	0.2702	0.2541	25.00	23.51	ug/L	-6	20	0.1000	
Isopropylbenzene	3.3475	3.4343	25.00	25.65	ug/L	3	20	0.1000	

Analyte	Avg RF/CF	RF/CF	Spiked	Quant	Units	%D	Max %D	Min RF	Flags
1,1,2,2-Tetrachloroethane	0.8165	0.6913	25.00	21.16	ug/L	-15	20	0.3000	
1,2,3-Trichloropropane	0.1971	0.1735	25.00	22.00	ug/L	-12	20	0.0500	
Propylbenzene	4.1189	4.2395	25.00	25.73	ug/L	3	20	0.0500	
Bromobenzene	0.9357	1.0012	25.00	26.75	ug/L	7	20	0.0500	
1,3,5-Trimethylbenzene	2.7813	2.8008	25.00	25.18	ug/L	1	20	0.0500	
2-Chlorotoluene	2.6228	2.7988	25.00	26.68	ug/L	7	20	0.0500	
4-Chlorotoluene	2.3693	2.5013	25.00	26.39	ug/L	6	20	0.0500	
tert-Butylbenzene	2.4053	2.5145	25.00	26.13	ug/L	5	20	0.0500	
1,2,4-Trimethylbenzene	2.7239	2.9312	25.00	26.90	ug/L	8	20	0.0500	
sec-Butylbenzene	3.7428	3.7399	25.00	24.98	ug/L	0	20	0.0500	
para-Isopropyl Toluene	2.7904	3.0751	25.00	27.55	ug/L	10	20	0.0500	
1,3-Dichlorobenzene	1.6009	1.8380	25.00	28.70	ug/L	15	20	0.6000	
1,4-Dichlorobenzene	1.6034	1.7597	25.00	27.44	ug/L	10	20	0.5000	
n-Butylbenzene	2.4251	2.7842	25.00	28.70	ug/L	15	20	0.0500	
1,2-Dichlorobenzene	1.5776	1.6976	25.00	26.90	ug/L	8	20	0.4000	
1,2-Dibromo-3-Chloropropane	0.1147	0.1000	25.00	21.80	ug/L	-13	20	0.0500	
1,2,4-Trichlorobenzene	0.8402	0.9544	25.00	28.40	ug/L	14	20	0.2000	
Hexachlorobutadiene	0.4231	0.4775	25.00	28.22	ug/L	13	20	0.0500	
Naphthalene	1.7343	1.6790	25.00	24.20	ug/L	-3	20	0.0500	
1,2,3-Trichlorobenzene	0.7981	0.8497	25.00	26.62	ug/L	6	20	0.0500	
Dibromofluoromethane	0.5329	0.5276	50.00	49.51	ug/L	-1	20	0.0500	
1,2-Dichloroethane-d4	0.2854	0.3106	50.00	54.41	ug/L	9	20	0.0500	
Toluene-d8	1.2315	1.1819	50.00	47.99	ug/L	-4	20	0.0500	
Bromofluorobenzene	0.9333	0.9044	50.00	48.45	ug/L	-3	20	0.0500	

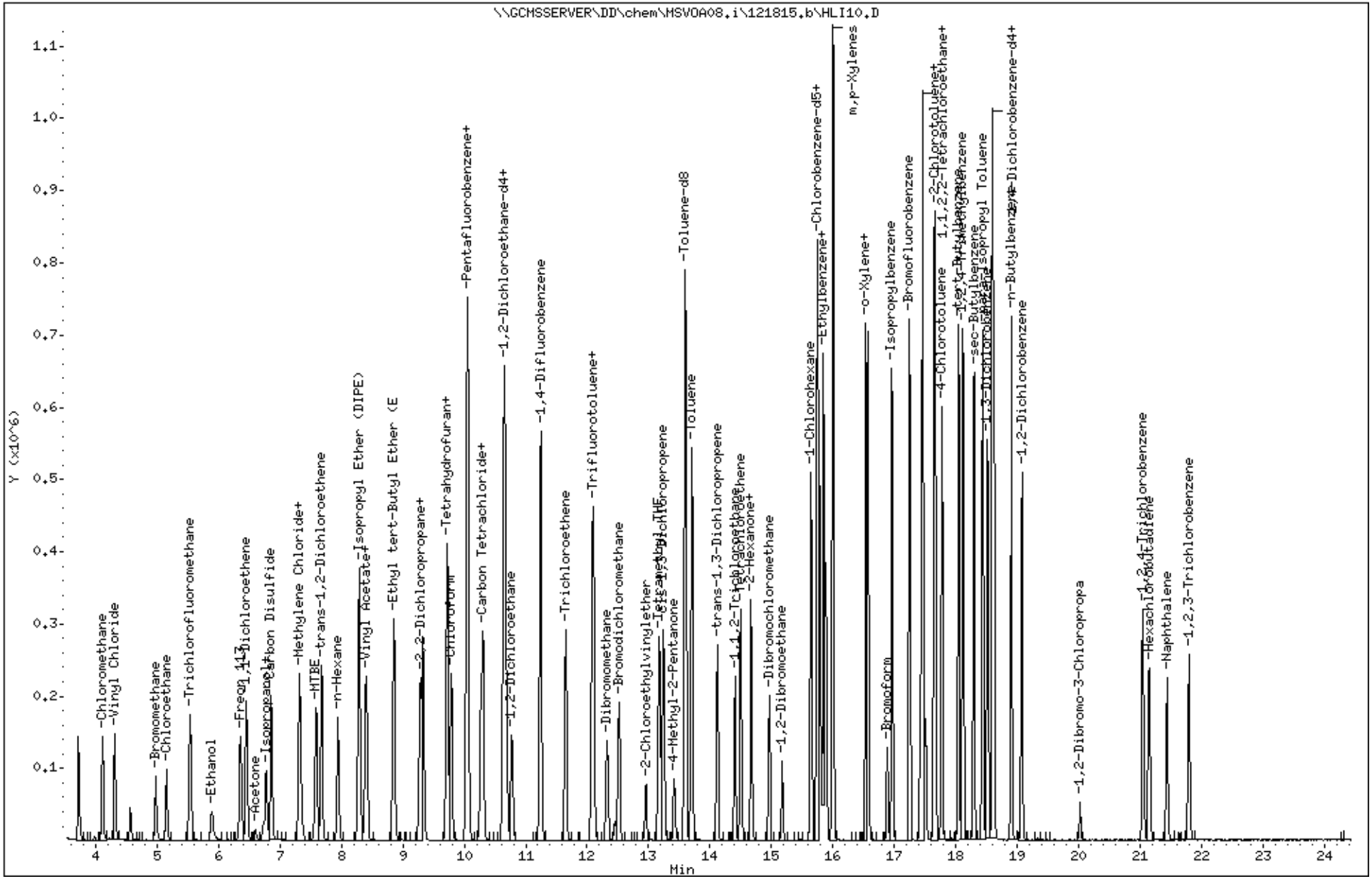
ISTD (ICAL hl715)	ICAL Area	Area	%Drift	ICAL RT	RT	Drift
Pentafluorobenzene	462693	360943	-21.99	10.04	10.05	0.01
1,4-Difluorobenzene	638581	563472	-11.76	11.24	11.25	0.01
Chlorobenzene-d5	497147	529083	6.42	15.73	15.74	0.01
1,4-Dichlorobenzene-d4	270725	279401	3.20	18.59	18.59	0.00

Analyst: DAR Date: 12/21/15 Reviewer: LW Date: 12/23/15

+=high bias -=low bias c=CCV v=ICV

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI10.D
Date : 18-DEC-2015 16:49
Client ID: DYNA P&T
Sample Info: ccv,s27004,.005/100,s28693,.005/100
Purge Volume: 5.0
Column phase: RTX 624

Instrument: MSVOA08.i
Operator: VOC
Column diameter: 0.25



Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI10.D
Report Date: 18-Dec-2015 17:27

Curtis & Tompkins, Ltd.

Data file : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI10.D
Lab Smp Id: Client Smp ID: DYNA P&T
Inj Date : 18-DEC-2015 16:49 MS Autotune Date: 04-DEC-2015 15:31
Operator : VOC Inst ID: MSVOA08.i
Smp Info : ccv,s27004,.005/100,s28693,.005/100
Misc Info : s28355,.005/100,s27081,.005/100,
Comment :
Method : \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\826GOX8.m
Meth Date : 08-Dec-2015 14:20 Quant Type: ISTD
Cal Date : 08-DEC-2015 01:54 Cal File: HL717.D
Als bottle: 14
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: 4.03
Processing Host: GCMSSERVER

Concentration Formula: Amt * DF * Uf/Vo

Name	Value	Description
DF	1.000	Dilution Factor
Vo	5.000	Sample Volume purged (mL)
Uf	5.000	ng unit correction factor

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
1 Freon 12	85	3.723	3.718	(0.371)	144721	26.2421	26.2420
2 Chloromethane	50	4.106	4.103	(0.409)	165729	25.3246	25.3245
3 Vinyl Chloride	62	4.313	4.310	(0.429)	151637	28.6486	28.6485
4 Bromomethane	94	4.981	4.970	(0.496)	71609	33.6449	33.6448
5 Chloroethane	64	5.159	5.148	(0.513)	98502	26.6079	26.6079
6 Trichlorofluoromethane	101	5.542	5.533	(0.552)	165277	28.3993	28.3993
7 Ethanol	45	5.886	5.888	(0.586)	78552	1865.46	1865.4592
8 Freon 113	101	6.359	6.351	(0.633)	85429	25.2469	25.2468
9 1,1-Dichloroethene	96	6.457	6.460	(0.643)	80656	23.6142	23.6142
10 Acetone	43	6.604	6.598	(0.657)	23307	22.1316	22.1316
11 Isopropanol	45	6.732	6.726	(0.670)	37945	181.456	181.4561
12 Iodomethane	142	6.782	6.775	(0.675)	143960	36.7605	36.7604
13 Carbon Disulfide	76	6.860	6.854	(0.683)	332415	23.8000	23.8000
14 Methylene Chloride	84	7.322	7.318	(0.729)	107179	26.5585	26.5585
15 tert-Butyl Alcohol (TBA)	59	7.362	7.357	(0.733)	49847	172.587	172.5867
16 MTBE	73	7.588	7.584	(0.755)	223508	24.9332	24.9331

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI10.D
Report Date: 18-Dec-2015 17:27

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
	17 trans-1,2-Dichloroethene	96	7.676	7.673	(0.764)	103019	26.8518	26.8518
	18 n-Hexane	57	7.952	7.939	(0.791)	93602	38.1213	38.1212
	19 Isopropyl Ether (DIPE)	45	8.286	8.284	(0.825)	497801	28.0141	28.0141
	20 Vinyl Acetate	43	8.385	8.383	(0.835)	222287	25.8094	25.8093
	21 1,1-Dichloroethane	63	8.414	8.403	(0.837)	215492	27.5595	27.5595
	22 Ethyl tert-Butyl Ether (ETBE)	59	8.857	8.847	(0.882)	369684	28.2317	28.2316
	23 2,2-Dichloropropane	77	9.290	9.281	(0.925)	161294	34.1131	34.1131
	24 2-Butanone	43	9.319	9.320	(0.928)	36552	22.3107	22.3107
	25 cis-1,2-Dichloroethene	96	9.329	9.330	(0.929)	123094	27.3052	27.3051
	26 Tetrahydrofuran	42	9.713	9.714	(0.967)	205662	213.924	213.9238
	27 Bromochloromethane	128	9.732	9.724	(0.969)	62088	27.9279	27.9278
	28 Chloroform	83	9.791	9.784	(0.975)	201962	29.4869	29.4869
*	29 Pentafluorobenzene	168	10.047	10.040	(1.000)	360943	50.0000	
	30 Dibromofluoromethane	113	10.057	10.050	(1.001)	190443	49.5072	49.5071
	31 1,1,1-Trichloroethane	97	10.057	10.050	(1.001)	142364	29.3153	29.3152
	32 Carbon Tetrachloride	117	10.273	10.267	(0.913)	123173	27.2752	27.2751
	33 1,1-Dichloropropene	75	10.313	10.306	(0.917)	150370	26.4781	26.4781
	34 1,2-Dichloroethane-d4	65	10.657	10.651	(0.948)	175004	54.4065	54.4065
	35 Methyl tert-Amyl Ether (TAME)	73	10.676	10.671	(0.949)	282218	26.0426	26.0426
	36 Benzene	78	10.647	10.642	(0.947)	426222	27.4149	27.4149
	37 1,2-Dichloroethane	62	10.775	10.770	(0.958)	138469	30.9879	30.9879
*	38 1,4-Difluorobenzene	114	11.247	11.233	(1.000)	563472	50.0000	
	39 Trichloroethene	95	11.650	11.648	(1.036)	111483	27.6325	27.6324
	40 Trifluorotoluene	146	12.083	12.082	(1.074)	181058	29.9106	29.9105
	41 1,2-Dichloropropane	63	12.103	12.101	(1.076)	130991	29.1364	29.1364
	42 Dibromomethane	93	12.329	12.318	(1.096)	65727	26.7352	26.7351
	43 Bromodichloromethane	83	12.516	12.506	(1.113)	152569	30.1046	30.1045
	44 2-Chloroethylvinylether	63	12.958	12.950	(1.152)	39923	41.0562	41.0562
	45 Tetramethyl THF	43	13.175	13.166	(1.171)	241718	24.7917	24.7916
	46 cis-1,3-Dichloropropene	75	13.244	13.236	(1.178)	186678	30.7961	30.7961
	47 4-Methyl-2-Pentanone	43	13.421	13.413	(1.193)	84938	22.2782	22.2782
	48 Toluene-d8	98	13.598	13.591	(0.864)	625348	47.9863	47.9862
	49 Toluene	92	13.706	13.699	(0.871)	266285	25.4324	25.4323
	50 trans-1,3-Dichloropropene	75	14.119	14.113	(0.897)	152135	28.2216	28.2216
	51 1,1,2-Trichloroethane	85	14.404	14.399	(0.915)	45736	23.2227	23.2227
	52 Tetrachloroethene	166	14.503	14.498	(0.921)	113201	25.0214	25.0214
	53 2-Hexanone	43	14.670	14.666	(0.932)	60958	21.2687	21.2687
	54 1,3-Dichloropropane	76	14.670	14.666	(0.932)	153849	25.7813	25.7813
	55 Dibromochloromethane	129	14.965	14.962	(0.951)	117216	25.2904	25.2904
	56 1,2-Dibromoethane	107	15.171	15.169	(0.964)	91353	23.7554	23.7554
	57 1-Chlorohexane	91	15.643	15.642	(0.994)	164317	28.2352	28.2351
*	58 Chlorobenzene-d5	117	15.742	15.741	(1.000)	529083	50.0000	
	59 Chlorobenzene	112	15.791	15.780	(1.003)	296187	25.5471	25.5470
	60 Ethylbenzene	91	15.850	15.839	(1.007)	505414	26.1536	26.1535
	61 1,1,1,2-Tetrachloroethane	131	15.889	15.879	(1.009)	120878	26.9104	26.9104
	62 m,p-Xylenes	106	16.007	15.997	(1.017)	371709	51.8760	51.8760
	63 o-Xylene	106	16.539	16.530	(1.051)	199795	27.2058	27.2057

Data File: \\GCMSSERVER\DD\chem\MSVOA08.i\121815.b\HLI10.D
Report Date: 18-Dec-2015 17:27

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (UG/L)
64 Styrene	104	16.568	16.559	(1.052)	339602	27.4710	27.4709
65 Bromoform	173	16.893	16.885	(1.073)	67220	23.5112	23.5111
66 Isopropylbenzene	105	16.961	16.954	(0.912)	479780	25.6485	25.6485
67 Bromofluorobenzene	95	17.247	17.240	(0.928)	252700	48.4529	48.4528
68 1,1,2,2-Tetrachloroethane	83	17.424	17.417	(0.937)	96569	21.1644	21.1644
69 Bromobenzene	156	17.453	17.447	(0.939)	139872	26.7516	26.7516
70 Propylbenzene	91	17.463	17.457	(0.939)	592263	25.7320	25.7319
71 1,2,3-Trichloropropane	110	17.512	17.506	(0.942)	24240	22.0040	22.0040
72 2-Chlorotoluene	91	17.640	17.634	(0.949)	390989	26.6770	26.6770
73 1,3,5-Trimethylbenzene	105	17.670	17.654	(0.950)	391277	25.1758	25.1758
74 4-Chlorotoluene	91	17.778	17.772	(0.956)	349427	26.3928	26.3927
75 tert-Butylbenzene	119	18.043	18.039	(0.970)	351270	26.1347	26.1346
76 1,2,4-Trimethylbenzene	105	18.112	18.108	(0.974)	409487	26.9024	26.9023
77 sec-Butylbenzene	105	18.299	18.285	(0.984)	522465	24.9805	24.9805
78 para-Isopropyl Toluene	119	18.437	18.433	(0.992)	429599	27.5508	27.5507
79 1,3-Dichlorobenzene	146	18.515	18.512	(0.996)	256767	28.7025	28.7025
* 80 1,4-Dichlorobenzene-d4	152	18.594	18.591	(1.000)	279401	50.0000	
81 1,4-Dichlorobenzene	146	18.624	18.621	(1.002)	245832	27.4369	27.4369
82 n-Butylbenzene	91	18.909	18.897	(1.017)	388951	28.7015	28.7014
83 1,2-Dichlorobenzene	146	19.076	19.065	(1.026)	237150	26.9007	26.9007
84 1,2-Dibromo-3-Chloropropane	75	20.020	20.011	(1.077)	13977	21.8003	21.8002
85 1,2,4-Trichlorobenzene	180	21.043	21.037	(1.132)	133329	28.3983	28.3982
86 Hexachlorobutadiene	225	21.151	21.136	(1.138)	66701	28.2150	28.2149
87 Naphthalene	128	21.437	21.432	(1.153)	234562	24.2034	24.2034
88 1,2,3-Trichlorobenzene	180	21.801	21.777	(1.172)	118710	26.6192	26.6191

Appendix C2. Data Validation Reports

LABORATORY DATA CONSULTANTS, INC.
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

Versar, Inc.
100 Hartsfield Centre Pkwy, Suite 610
Atlanta, GA 30354-1390
ATTN: Ms. Margaret Mandell

January 25, 2016

SUBJECT: Mare Island, BGMP, Data Validation

Dear Ms. Mandell,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on January 4, 2016. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #35657:

SDG #	Fraction
272485, 272486	Volatiles, Dissolved Metals

The data validation was performed under EPA Level III & IV guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment at Former Mare Island Naval Shipyard, Vallejo, California, July 2014, and Addendum 1, August 2014
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.0, July 2013
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, June 2008
- USEPA Contract Laboratory National Functional Guidelines for Inorganic Superfund Data Review, January 2010
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996; update IIIA, April 1998; IIIB, November 2004; update IV, February 2007

Please feel free to contact us if you have any questions.

Sincerely,

Christina Rink
Project Manager/Chemist

317 pages-EM

Attachment 1

EDD/NIRIS

LDC #35657 (Versar, Atlanta, GA / Mare Island, BGMP)

LDC	SDG#	DATE REC'D	(3) DATE DUE	VOA (8260C)		Diss.As Fe,Mn (6010C)																																	
Matrix:	Water/Soil			W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	272485	01/04/16	01/25/16	10	0	5	0																																
B	272486	01/04/16	01/25/16	1	0	-	-																																
Total	A/CR			11	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16

Shaded cells indicate Level IV validation (all other cells are Level III validation). These sample counts do not include MS/MSD, and DUPs

L:\Versar\Mare Island\35657ST_BGMP.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Mare Island, BGMP

LDC Report Date: January 11, 2016

Parameters: Volatiles

Validation Level: Level III

Laboratory: Curtis & Tompkins, LTD.

Sample Delivery Group (SDG): 272485

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
D1C85W01R-121515	272485-001	Water	12/15/15
D1C85W06-121515	272485-002	Water	12/15/15
D1C85W07-121515	272485-003	Water	12/15/15
D1C85W07-121515X	272485-004	Water	12/15/15
D1C85W02RA-121515	272485-005	Water	12/15/15
D1C85W03-121615	272485-006	Water	12/16/15
TB-121515	272485-007	Water	12/15/15
ER-121515	272485-008	Water	12/15/15
ER-121615	272485-009	Water	12/16/15
SB-121615	272485-010	Water	12/16/15
D1C85W06-121515MS	272485-002MS	Water	12/15/15
D1C85W06-121515MSD	272485-002MSD	Water	12/15/15

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment at Former Mare Island Naval Shipyard, Vallejo, California (July 2014) and Addendum 1 (August 2014), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria with the following exceptions:

Sample	Compound	Finding	Criteria	Flag	A or P
D1C85W01R-121515	Freon 12 1,3-Dichlorobenzene	A headspace of >1 ml was apparent in the sample containers.	There should be no headspace in the sample containers.	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 15.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/07/15	Freon 12	27	D1C85W06-121515 D1C85W07-121515 D1C85W07-121515X D1C85W02RA-121515 D1C85W03-121615 TB-121515 ER-121515 ER-121615 SB-121615	UJ (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/17/15	Bromomethane 2,2-Dichloropropane	28 27	D1C85W03-121615 TB-121515 ER-121515 ER-121615 SB-121615	UJ (all non-detects) UJ (all non-detects)	A
12/18/15	Bromomethane 2,2-Dichloropropane 1,2-Dichloroethane cis-1,3-Dichloropropene	35 36 24 23	D1C85W01R-121515 D1C85W06-121515 D1C85W07-121515 D1C85W07-121515X D1C85W02RA-121515	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TB-121515 was identified as a trip blank. No contaminants were found.

Samples ER-121515 and ER-121615 were identified as equipment rinsates. No contaminants were found.

Sample SB-121615 was identified as a source blank. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits with the following exceptions:

Sample	Surrogate	%R (Limits)	Affected Compound	Flag	A or P
D1C85W01R-121515	Dibromofluoromethane 1,2-Dichloroethane-d4	116 (85-115) 125 (70-120)	All TCL compounds	J (all detects)	A
SB-121615	1,2-Dichloroethane-d4	122 (70-120)	All TCL compounds	NA	-

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
D1C85W06-121515MS/MSD (D1C85W06-121515)	Bromodichloromethane	123 (75-120)	122 (75-120)	NA	-

Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
230360-LCS/D (D1C85W03-121615 TB-121515 ER-121515 ER-121615 SB-121615)	Bromomethane 2,2-Dichloropropane Bromodichloromethane cis-1,2-Dichloroethene cis-1,3-Dichloropropene	163 (30-145) 143 (70-135) 121 (75-120) - -	172 (30-145) 145 (70-135) 124 (75-120) 128 (70-125) 133 (70-130)	NA	-
230541-LCS/D (D1C85W01R-121515 D1C85W06-121515 D1C85W07-121515 D1C85W07-121515X D1C85W02RA-121515)	Bromomethane 2,2-Dichloropropane 1,1,1-Trichloroethane Bromodichloromethane	182 (30-145) 142 (70-135) 132 (65-130) 123 (75-120)	154 (30-145) - - -	NA	-
230541-LCS/D (D1C85W02RA-121515)	1,3-Dichlorobenzene	127 (75-125)	-	NA	-

Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples D1C85W07-121515 and D1C85W07-121515X were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Compound	Concentration (ug/L)		RPD (Limits)
	D1C85W07-121515	D1C85W07-121515X	
Vinyl chloride	0.4	1.0U	200 (≤25)
cis-1,2-Dichloroethene	0.4	1.0U	200 (≤25)
Chlorobenzene	2.7	2.6	4 (≤25)
1,3-Dichlorobenzene	4.2	4.2	0 (≤25)
1,4-Dichlorobenzene	20	21	5 (≤25)
1,2-Dichlorobenzene	2.1	2.3	9 (≤25)

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

Raw data were not reviewed for Level III validation.

XIII. Target Compound Identifications

Raw data were not reviewed for Level III validation.

XIV. System Performance

Raw data were not reviewed for Level III validation.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to head space, ICV %D, continuing calibration %D, and surrogate %R, data were qualified as estimated in ten samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Mare Island, BGMP
Volatiles - Data Qualification Summary - SDG 272485

Sample	Compound	Flag	A or P	Reason
D1C85W01R-121515	Freon 12 1,3-Dichlorobenzene	J (all detects) UJ (all non-detects) J (all detects) UJ (all non-detects)	A	Sample condition (headspace)
D1C85W06-121515 D1C85W07-121515 D1C85W07-121515X D1C85W02RA-121515 D1C85W03-121615 TB-121515 ER-121515 ER-121615 SB-121615	Freon 12	UJ (all non-detects)	A	Initial calibration verification (%D)
D1C85W03-121615 TB-121515 ER-121515 ER-121615 SB-121615	Bromomethane 2,2-Dichloropropane	UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D)
D1C85W01R-121515 D1C85W06-121515 D1C85W07-121515 D1C85W07-121515X D1C85W02RA-121515	Bromomethane 2,2-Dichloropropane 1,2-Dichloroethane cis-1,3-Dichloropropene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D)
D1C85W01R-121515	All TCL compounds	J (all detects)	A	Surrogate spikes (%R)

Mare Island, BGMP
Volatiles - Laboratory Blank Data Qualification Summary - SDG 272485

No Sample Data Qualified in this SDG

Mare Island, BGMP
Volatiles - Field Blank Data Qualification Summary - SDG 272485

No Sample Data Qualified in this SDG

1/11/16

LDC #: 35657A1 **VALIDATION COMPLETENESS WORKSHEET** Date: ~~356~~

SDG #: 272485 Level III Page: 1 of 2

Laboratory: Curtis & Tompkins, LTD. Reviewer: FT

2nd Reviewer: ✓

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	SW, A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, SW	% RSD ≤15, r² ICV ≤ 20
IV.	Continuing calibration	SW	CCV ≤ 20
V.	Laboratory Blanks	A	
VI.	Field blanks	ND	TB = 7 ER = 8, 9 SB = 10
VII.	Surrogate spikes	SW	
VIII.	Matrix spike/Matrix spike duplicates	SW	
IX.	Laboratory control samples	SW	LCS
X.	Field duplicates	SW	D = 3, 4
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	N	
XIII.	Target compound identification	N	
XIV.	System performance	N	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	2 = ~~B~~1, FFF D1C85W01R-121515	272485-001	Water	12/15/15
2	3 = FFF D1C85W06-121515	272485-002	Water	12/15/15
3	3 = FFF D1C85W07-121515	272485-003	Water	12/15/15
4	3 = FFF D1C85W07-121515X	272485-004	Water	12/15/15
5	D1C85W02RA-121515	272485-005	Water	12/15/15
6	4 ~~3~~ D1C85W03-121615	272485-006	Water	12/16/15
7	4 ~~3~~ TB-121515	272485-007	Water	12/15/15
8	4 ~~3~~ ER-121515	272485-008	Water	12/15/15
9	4 ~~3~~ ER-121615	272485-009	Water	12/16/15
10	4 ~~3~~ SB-121615	272485-010	Water	12/16/15
11	1 D1C85W06-121515MS	272485-002MS	Water	12/15/15
12	1 D1C85W06-121515MSD	272485-002MSD	Water	12/15/15
13				

LDC #: 35657A1

VALIDATION COMPLETENESS WORKSHEET

Level III

SDG #: 272485

Laboratory: Curtis & Tompkins, LTD.

Date: 1/11/16

Page: 2 of 2

Reviewer: FZ

2nd Reviewer: [illegible]

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260C)

	Client ID	Lab ID	Matrix	Date
14				
15				
16				

Notes:

1	230541						
2	230759						
3	230760						
4	230360						

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1. 2-Methylnaphthalene
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1. Methanol
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1. 1,2,3-Trimethylbenzene
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 35657A 1

VALIDATION FINDINGS WORKSHEET
Technical Holding Times

Reviewer: FT
2nd Reviewer: [illegible]

All circled dates have exceeded the technical holding times.
Y N N/A Were all cooler temperatures within validation criteria?
Y N N/A Were air bubbles > 1/4 inch or was headspace present in the vials?

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Sample ID	Matrix	Preserved	Sampling Date	Extraction date	Analysis date	Total # of Days	Qualifier
1	W	VOA	contained	Headspace			J/UJ/A
						qual	F1, FFF
							(ND+ Det)

TECHNICAL HOLDING TIME CRITERIA

Water unpreserved:	Aromatic within 7 days, non-aromatic within 14 days of sample collection.
Water preserved:	Within 14 days of sample collection.
Soil:	Within 14 days of sample collection.

LDC #: 35657 A1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: 9

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was an initial calibration verification standard analyzed after each ICAL for each instrument?

Y N N/A Were all %D within the validation criteria of ≤20 %D?

#	Date	Standard ID	Compound	Finding %D (Limit: ~~<30.0~~%) F1 20	Associated Samples	Qualifications
-	12/7/15	ICV - 08	F1	27	2 → 5, 230541-MB 6 → 12, 230360-MB	J/UJ/A (ND)

ICVvoa.wpd

LDC #: 35657A1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: CL

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	12/17/15	h1h03	B	28		6 → 10,	J/UJ/A (ND)
	12:35		~~BB~~	27		230360-MB	↓
	12/18/15	h1i10	B	35		1 → 5, 11, 12,	J/UJ/A ND
	16:49		~~BB~~	36		230541-MB	
			L	24		↓	↓
			R	23			

CONCAL.wpd

LDC #: 35657A1

VALIDATION FINDINGS WORKSHEET
Surrogate Spikes

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all surrogate %R within QC limits?

Y N N/A If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R out of outside of criteria?

#	Sample ID	Surrogate	%Recovery (Limits)	Qualifications
	1	DFM	116 (85-115)	Jdet /A all TCL (ND+Det)
		DCE	125 (70-120)	↓
			( )	
	10	DCE	122 (70-120)	Jdet /P all TCL (ND)
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	
			( )	

	QC Limits (Soil)	QC Limits (Water)
SMC1 (TOL) = Toluene-d8	85-115	85-120
SMC2 (BFB) = Bromofluorobenzene	85-120	75-120
SMC3 (DCE) = 1,2-Dichloroethane-d4	60-120	70-120
SMC4 (DFM) = Dibromofluoromethane	75-125	85-115

LDC #: 35657A1

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates

Page: 1 of 1
Reviewer: [illegible]
2nd Reviewer: [illegible]

METHOD : GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.

Y N N/A Was a MS/MSD analyzed every 20 samples of each matrix?

Y N N/A Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		11 + 12	P	123 (75-129	122 (75-129	( )	2	Jdet / A (ND)
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		
				( )	( )	( )		

LDC #: 35657A 1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Was a LCS required?
Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	F1 → 3		( )	( )	( )		
	230360-LCS/D	B	163 (30-145)	172 (30-145)	( )	6 → 10, 230360-MB	Jdet /P (ND)
		BB	143 (70-135)	145 (70-135)	( )	↓	↓
	230360	P	121 (75-120)	124 (75-120)	( )	↓	↓
		QQQ	( )	128 (70-125)	( )	↓	↓
		R	( )	133 (70-130)	( )	↓	↓
			( )	( )	( )		
			( )	( )	( )		
	230541-LCS/D	B	182 (30-145)	154 (30-145)	( )	1 → 5, 230541-MB	Jdet /P (ND)
		BB	142 (70-135)	( )	( )	↓	↓
		N	132 (65-130)	( )	( )	↓	↓
		P	123 (75-120)	( )	( )	↓	↓
			( )	( )	( )		
			( )	( )	( )		
	230541-LCS/D	FFF	127 (75-125)	( )	( )	5, 230541-MB	Jdet /P (ND)
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC#: 35657A1

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Page: 1 of 1
Reviewer: FT
2nd Reviewer: GW

METHOD: GCMS VOA (EPA SW 846 Method 8260B)

Compound	Concentration (ug/L)		(≤25)
	3	4	RPD
C	0.4	1.0U	200
QQQ	0.4	1.0U	200
DD	2.7	2.6	4
FFF	4.2	4.2	0
HHH	20	21	5
JJJ	2.1	2.3	9

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Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Mare Island, BGMP

LDC Report Date: January 11, 2016

Parameters: Dissolved Metals

Validation Level: Level III

Laboratory: Curtis & Tompkins, LTD.

Sample Delivery Group (SDG): 272485

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
D1C85W06-121515	272485-002	Water	12/15/15
D1C85W07-121515	272485-003	Water	12/15/15
D1C85W07-121515X	272485-004	Water	12/15/15
ER-121515	272485-008	Water	12/15/15
SB-121615	272485-010	Water	12/16/15
D1C85W06-121515MS	272485-002MS	Water	12/15/15
D1C85W06-121515MSD	272485-002MSD	Water	12/15/15

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment at Former Mare Island Naval Shipyard, Vallejo, California (July 2014) and Addendum 1 (August 2014), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (January 2010). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Dissolved Arsenic, Iron, and Manganese by Environmental Protection Agency (EPA) SW 846 Method 6010C

All sample results were subjected to Level III data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition.

All technical holding time requirements were met.

II. Instrument Calibration

Initial and continuing calibrations were performed as required by the method.

The initial calibration verification (ICV) and continuing calibration verification (CCV) standards were within QC limits.

III. ICP Interference Check Sample Analysis

The frequency of interference check sample (ICS) analysis was met. All criteria were within QC limits.

IV. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

V. Field Blanks

Sample ER-121515 was identified as an equipment blank. No contaminants were found.

Sample SB-121615 was identified as a source blank. No contaminants were found.

VI. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For D1C85W06-121515MS/MSD, no data were qualified for Manganese percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration. Relative percent differences (RPD) were within QC limits.

VII. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VIII. Serial Dilution

Serial dilution analysis was performed on an associated project sample. The analysis criteria were met.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

Samples D1C85W07-121515 and D1C85W07-121515X were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD (Limits)
	D1C85W07-121515	D1C85W07-121515X	
Arsenic	4.6	4.7	2 (≤25)
Iron	380	250	41 (≤25)
Manganese	1700	1700	0 (≤25)

XI. Sample Result Verification

Raw data were not reviewed for Level III validation.

XII. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Mare Island, BGMP
Dissolved Metals - Data Qualification Summary - SDG 272485

No Sample Data Qualified in this SDG

Mare Island, BGMP
Dissolved Metals - Laboratory Blank Data Qualification Summary - SDG 272485

No Sample Data Qualified in this SDG

Mare Island, BGMP
Dissolved Metals - Field Blank Data Qualification Summary - SDG 272485

No Sample Data Qualified in this SDG

LDC #: 35657A4b

SDG #: 272485

Laboratory: Curtis & Tompkins, Ltd.

VALIDATION COMPLETENESS WORKSHEET

Level III

Date: 1/7/16

Page: 1 of 1

Reviewer: CR

2nd Reviewer: [illegible]

METHOD: Dissolved Metals (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	Instrument Calibration	A	
III.	ICP Interference Check Sample (ICS) Analysis	A	
IV.	Laboratory Blanks	A	
V.	Field Blanks	ND	ER=4 SB=5
VI.	Matrix Spike/Matrix Spike Duplicates	A	MS/D (Mn >4x)
VII.	Duplicate sample analysis	N	
VIII.	ICP Serial Dilution	A	
IX.	Laboratory control samples	A	LCS/D
X.	Field Duplicates	SW	(2,3)
XI.	Sample Result Verification	N	
XII.	Overall Assessment of Data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	D1C85W06-121515	272485-002	Water	12/15/15
2	D1C85W07-121515	272485-003	Water	12/15/15
3	D1C85W07-121515X	272485-004	Water	12/15/15
4	ER-121515	272485-008	Water	12/15/15
5	SB-121615	272485-010	Water	12/16/15
6	D1C85W06-121515MS	272485-002MS	Water	12/15/15
7	D1C85W06-121515MSD	272485-002MSD	Water	12/15/15
8				
9				
10				
11				

Notes:

LDC #: 35657A4b

VALIDATION FINDINGS WORKSHEET
Sample Specific Element Reference

Page: 1 of 1
Reviewer: a
2nd reviewer: m

All circled elements are applicable to each sample.

Sample ID	Matrix	Target Analyte List (TAL)
1-5		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
QC 6,7		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
Analysis Method		
ICP		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
ICP-MS		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti, ___
GFAA		Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Ni, K, Se, Ag, Na, Tl, V, Zn, Mo, B, Sn, Ti,

Comments: Mercury by CVAA if performed

LDC#: 35657A4b

VALIDATION FINDINGS WORKSHEET
Field Duplicates

Reviewer:
2nd Reviewer:

METHOD: Metals (EPA Method 6010B/7000)

Analyte	Concentration (ug/L)		RPD (≤25)
	2	3	
Arsenic	4.6	4.7	2
Iron	380	250	41
Manganese	1700	1700	0

\\LDCFILESERVER\Validation\FIELD DUPLICATES\FD_inorganic\35657A4b.wpd

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Mare Island, BGMP

LDC Report Date: January 11, 2016

Parameters: Volatiles

Validation Level: Level IV

Laboratory: Curtis & Tompkins, LTD.

Sample Delivery Group (SDG): 272486

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
D1C85W04-121615	272486-001	Water	12/16/15

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Sampling and Analysis Plan for Basewide Groundwater Sampling, Well Installation, and Well Abandonment at Former Mare Island Naval Shipyard, Vallejo, California (July 2014) and Addendum 1 (August 2014), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (July 2013), and a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (June 2008). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Volatile Organic Compounds (VOCs) by Environmental Protection Agency (EPA) SW 846 Method 8260C

All sample results were subjected to Level IV data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.

U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).

UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.

R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.

NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. GC/MS Instrument Performance Check

A bromofluorobenzene (BFB) tune was performed at 12 hour intervals.

All ion abundance requirements were met.

III. Initial Calibration and Initial Calibration Verification

An initial calibration was performed as required by the method.

For compounds where average relative response factors (RRFs) were utilized, percent relative standard deviations (%RSD) were less than or equal to 15.0%.

In the case where the laboratory used a calibration curve to evaluate the compounds, all coefficients of determination (r^2) were greater than or equal to 0.990.

Average relative response factors (RRF) for all compounds were within validation criteria.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/07/15	Freon 12	27	All samples in SDG 272486	UJ (all non-detects)	A

IV. Continuing Calibration

Continuing calibration was performed at the required frequencies.

The percent differences (%D) were less than or equal to 20.0% for all compounds with the following exceptions:

Date	Compound	%D	Associated Samples	Flag	A or P
12/18/15	Bromomethane 2,2-Dichloropropane 1,2-Dichloroethane cis-1,3-Dichloropropene	35 36 24 23	All samples in SDG 272486	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A

All of the continuing calibration relative response factors (RRF) were within validation criteria.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample TB-121515 (from SDG 272485) was identified as a trip blank. No contaminants were found.

Sample ER-121615 (from SDG 272485) was identified as an equipment rinsate. No contaminants were found.

VII. Surrogates

Surrogates were added to all samples as required by the method. All surrogate recoveries (%R) were within QC limits.

VIII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were not within QC limits. No data were qualified since there were no associated samples in this SDG. Relative percent differences (RPD) were within QC limits.

IX. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits with the following exceptions:

LCS ID (Associated Samples)	Compound	LCS %R (Limits)	LCSD %R (Limits)	Flag	A or P
230541-LCS/D (All samples in SDG 272486)	Bromomethane	182 (30-145)	154 (30-145)	NA	-
	2,2-Dichloropropane	142 (70-135)	-		
	1,1,1-Trichloroethane	132 (65-130)	-		
	Bromodichloromethane	123 (75-120)	-		
	1,3-Dichlorobenzene	127 (75-125)	-		

Relative percent differences (RPD) were within QC limits.

X. Field Duplicates

No field duplicates were identified in this SDG.

XI. Internal Standards

All internal standard areas and retention times were within QC limits.

XII. Compound Quantitation

All compound quantitations met validation criteria.

XIII. Target Compound Identifications

All target compound identifications met validation criteria.

XIV. System Performance

The system performance was acceptable.

XV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to ICV %D and continuing calibration %D, data were qualified as estimated in one sample.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Mare Island, BGMP
Volatiles - Data Qualification Summary - SDG 272486

Sample	Compound	Flag	A or P	Reason
D1C85W04-121615	Freon 12	UJ (all non-detects)	A	Initial calibration verification (%D)
D1C85W04-121615	Bromomethane 2,2-Dichloropropane 1,2-Dichloroethane cis-1,3-Dichloropropene	UJ (all non-detects) UJ (all non-detects) UJ (all non-detects) UJ (all non-detects)	A	Continuing calibration (%D)

Mare Island, BGMP
Volatiles - Laboratory Blank Data Qualification Summary - SDG 272486

No Sample Data Qualified in this SDG

Mare Island, BGMP
Volatiles - Field Blank Data Qualification Summary - SDG 272486

No Sample Data Qualified in this SDG

LDC #: 35657B1

SDG #: 272486

Laboratory: Curtis & Tompkins, LTD.

VALIDATION COMPLETENESS WORKSHEET

Level IV

Date: 1/11/16

Page: 1 of 1

Reviewer:

2nd Reviewer:

METHOD: GC/MS Volatiles (EPA SW 846 Method 8260C)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A, A	
II.	GC/MS Instrument performance check	A	
III.	Initial calibration/ICV	A, SW	% RSD ≤ 15, r² ICV ≤ 20
IV.	Continuing calibration	SW	CCV ≤ 20
V.	Laboratory Blanks	A	SDG# 272485
VI.	Field blanks	ND	TB- TB-121515, ER- ER-121615, ~~SB- SB-121615~~
VII.	Surrogate spikes	A	
VIII.	Matrix spike/Matrix spike duplicates	SW	272485-002 MS/D (%R, no assoc. sample)
IX.	Laboratory control samples	SW	LCS/D
X.	Field duplicates	N	
XI.	Internal standards	A	
XII.	Compound quantitation RL/LOQ/LODs	A	
XIII.	Target compound identification	A	
XIV.	System performance	A	
XV.	Overall assessment of data	A	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

	Client ID	Lab ID	Matrix	Date
1	D1C85W04-121615	272486-001	Water	12/16/15
2				
3				
4				
5				
6				
7				
8				

Notes:

	230541-MB						

LDC #: 35657B1

VALIDATION FINDINGS CHECKLIST

Page: 1 of 2
Reviewer: FT
2nd Reviewer: CA

Method: Volatiles (EPA SW 846 Method 8260C)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
Were all technical holding times met?	✓			
Was cooler temperature criteria met?	✓			
II. GC/MS Instrument performance check				
Were the BFB performance results reviewed and found to be within the specified criteria?	✓			
Were all samples analyzed within the 12 hour clock criteria?	✓			
IIIa. Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?	✓			
Were all percent relative standard deviations (%RSD) ≤ ~~20~~% 15 FT and relative response factors (RRF) within method criteria?	✓			
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit acceptance criteria of ≥ 0.990?	✓			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	✓			
Were all percent differences (%D) ≤ ~~30~~% 20 FT or percent recoveries (%R) ~~70-130~~% 80-120 FT?	~~✓~~	✓		
IV. Continuing calibration				
Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?	✓			
Were all percent differences (%D) ≤ 20% and relative response factors (RRF) within method criteria?		✓		
V. Laboratory Blanks				
Was a laboratory blank associated with every sample in this SDG?	✓			
Was a laboratory blank analyzed at least once every 12 hours for each matrix and concentration?	✓			
Was there contamination in the laboratory blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
VI. Field blanks				
Were field blanks were identified in this SDG?	✓			
Were target compounds detected in the field blanks?		✓		
VII. Surrogate spikes				
Were all surrogate percent recovery (%R) within QC limits?	✓			
If the percent recovery (%R) for one or more surrogates was out of QC limits, was a reanalysis performed to confirm samples with %R outside of criteria?			✓	
VIII. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and matrix spike duplicate (MSD) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD. Soil / Water.	✓			
Was a MS/MSD analyzed every 20 samples of each matrix?	✓			

LDC #: 35657B

VALIDATION FINDINGS CHECKLIST

Reviewer: FT
2nd Reviewer: [illegible]

Validation Area	Yes	No	NA	Findings/Comments
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		✓		
IX. Laboratory control samples				
Was an LCS analyzed for this SDG?	✓			
Was an LCS analyzed per analytical batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?		✓		
X. Field duplicates				
Were field duplicate pairs identified in this SDG?		✓		
Were target compounds detected in the field duplicates?			✓	
XI. Internal standards				
Were internal standard area counts within -50% to +100% of the associated calibration standard?	✓			
Were retention times within ± 30 seconds of the associated calibration standard?	✓			
XII. Compound quantitation				
Were the correct internal standard (IS), quantitation ion and relative response factor (RRF) used to quantitate the compound?	✓			
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?	✓			
XIII. Target compound identification				
Were relative retention times (RRT's) within ± 0.06 RRT units of the standard?	✓			
Did compound spectra meet specified EPA "Functional Guidelines" criteria?	✓			
Were chromatogram peaks verified and accounted for?	✓			
XIV. System performance				
System performance was found to be acceptable.	✓			
XV. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			

TARGET COMPOUND WORKSHEET

METHOD: VOA

A. Chloromethane	AA. Tetrachloroethene	AAA. 1,3,5-Trimethylbenzene	AAAA. Ethyl tert-butyl ether	A1. 1,-3-Butadiene
B. Bromomethane	BB. 1,1,2,2-Tetrachloroethane	BBB. 4-Chlorotoluene	BBBB. tert-Amyl methyl ether	B1. Hexane
C. Vinyl choride	CC. Toluene	CCC. tert-Butylbenzene	CCCC. 1-Chlorohexane	C1. Heptane
D. Chloroethane	DD. Chlorobenzene	DDD. 1,2,4-Trimethylbenzene	DDDD. Isopropyl alcohol	D1. Propylene
E. Methylene chloride	EE. Ethylbenzene	EEE. sec-Butylbenzene	EEEE. Acetonitrile	E1. Freon 11
F. Acetone	FF. Styrene	FFF. 1,3-Dichlorobenzene	FFFF. Acrolein	F1. Freon 12
G. Carbon disulfide	GG. Xylenes, total	GGG. p-Isopropyltoluene	GGGG. Acrylonitrile	G1. Freon 113
H. 1,1-Dichloroethene	HH. Vinyl acetate	HHH. 1,4-Dichlorobenzene	HHHH. 1,4-Dioxane	H1. Freon 114
I. 1,1-Dichloroethane	II. 2-Chloroethylvinyl ether	III. n-Butylbenzene	IIII. Isobutyl alcohol	I1. 2-Nitropropane
J. 1,2-Dichloroethene, total	JJ. Dichlorodifluoromethane	JJJ. 1,2-Dichlorobenzene	JJJJ. Methacrylonitrile	J1. Dimethyl disulfide
K. Chloroform	KK. Trichlorofluoromethane	KKK. 1,2,4-Trichlorobenzene	KKKK. Propionitrile	K1. 2,3-Dimethyl pentane
L. 1,2-Dichloroethane	LL. Methyl-tert-butyl ether	LLL. Hexachlorobutadiene	LLLL. Ethyl ether	L1. 2,4-Dimethyl pentane
M. 2-Butanone	MM. 1,2-Dibromo-3-chloropropane	MMM. Naphthalene	MMMM. Benzyl chloride	M1. 3,3-Dimethyl pentane
N. 1,1,1-Trichloroethane	NN. Methyl ethyl ketone	NNN. 1,2,3-Trichlorobenzene	NNNN. Iodomethane	N1. 2-Methylpentane
O. Carbon tetrachloride	OO. 2,2-Dichloropropane	OOO. 1,3,5-Trichlorobenzene	OOOO.1,1-Difluoroethane	O1. 3-Methylpentane
P. Bromodichloromethane	PP. Bromochloromethane	PPP. trans-1,2-Dichloroethene	PPPP. Tetrahydrofuran	P1. 3-Ethylpentane
Q. 1,2-Dichloropropane	QQ. 1,1-Dichloropropene	QQQ. cis-1,2-Dichloroethene	QQQQ. Methyl acetate	Q1. 2,2-Dimethylpentane
R. cis-1,3-Dichloropropene	RR. Dibromomethane	RRR. m,p-Xylenes	RRRR. Ethyl acetate	R1. 2,2,3- Trimethylbutane
S. Trichloroethene	SS. 1,3-Dichloropropane	SSS. o-Xylene	SSSS. Cyclohexane	S1. 2,2,4-Trimethylpentane
T. Dibromochloromethane	TT. 1,2-Dibromoethane	TTT. 1,1,2-Trichloro-1,2,2-trifluoroethane	TTTT. Methyl cyclohexane	T1. 2-Methylhexane
U. 1,1,2-Trichloroethane	UU. 1,1,1,2-Tetrachloroethane	UUU. 1,2-Dichlorotetrafluoroethane	UUUU. Allyl chloride	U1. Nonanal
V. Benzene	VV. Isopropylbenzene	VVV. 4-Ethyltoluene	VVVV. Methyl methacrylate	V1.
W. trans-1,3-Dichloropropene	WW. Bromobenzene	WWW. Ethanol	WWWW. Ethyl methacrylate	W1.
X. Bromoform	XX. 1,2,3-Trichloropropane	XXX. Di-isopropyl ether	XXXX. cis-1,4-Dichloro-2-butene	X1.
Y. 4-Methyl-2-pentanone	YY. n-Propylbenzene	YYY. tert-Butanol	YYYY. trans-1,4-Dichloro-2-butene	Y1.
Z. 2-Hexanone	ZZ. 2-Chlorotoluene	ZZZ. tert-Butyl alcohol	ZZZZ. Pentachloroethane	Z1.

LDC #: 35657B1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Verification

Reviewer: FT
2nd Reviewer: CL

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".
Y N N/A Was an initial calibration verification standard analyzed after each ICAL for each instrument?
Y N N/A Were all %D within the validation criteria of ≤20 %D?

#	Date	Standard ID	Compound	Finding %D (Limit: ~~≤30.0%~~) 20	Associated Samples	Qualifications
	12/7/15	ICV-08	P1	27	all	J/UJ/A (ND)

ICVvoa.wpd

LDC #: 35657B /

VALIDATION FINDINGS WORKSHEET
Continuing Calibration

Page: 1 of 1
Reviewer: FT
2nd Reviewer: 02

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a continuing calibration standard analyzed at least once every 12 hours for each instrument?
Y N N/A Were percent differences (%D) and relative response factors (RRF) within method criteria for all CCC's and SPCC's ?
Y N N/A Were all %D and RRFs within the validation criteria of ≤20 %D and ≥0.05 RRF ?

#	Date	Standard ID	Compound	Finding %D (Limit: ≤20.0%)	Finding RRF (Limit: ≥0.05)	Associated Samples	Qualifications
	12/18/15	h1i1D-CCV	B	35		all	J/UJ/A (ND)
	↓ FT		DD	36		↓	↓
	12/18/15		L	24			
			R	23			

CONCAL.wpd

LDC #: 35657B

VALIDATION FINDINGS WORKSHEET
Laboratory Control Samples (LCS)

Page: 1 of 1
Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Was a LCS required?

Y N N/A Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?

#	LCS/LCSD ID	Compound	LCS %R (Limits)	LCSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
	230541-	B	182 (30-145)	154 (30-145)	( )	all	Jdet /P (ND)
	LCS/D	~~BB~~	142 (70-135)	( )	( )		
		N	132 (65-130)	( )	( )		
		P	123 (75-120)	( )	( )		
		FFF	127 (75-125)	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
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			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		
			( )	( )	( )		

LDC #: 35657B1

VALIDATION FINDINGS WORKSHEET
Initial Calibration Calculation Verification

Reviewer: FT
2nd Reviewer: a

METHOD: GCMS 8260B

The calibration factors (RRFF), average RRFF, and relative standard deviation (%RSD) were recalculated for compounds identified below using the following calculations:

RRF = (Ax)(Cis)/(Ais)(Cx)
average RRF = sum of the RRFs/number of standards
%RSD = 100 * (S/X)

Where:
Ax = Area of compound
Cx = Concentration of compound
S = Standard deviation of the RRFs
X = Mean of the RRFs
Ais = Area of associated internal standard
Cis = Concentration of internal Standard

#	Standard ID	Calibration Date	Compound	Reported (RRF 10 std)	Recalculated (RRF10 std)	Reported AverageRRF (Initial)	Recalculated Average RRF (Initial)	Reported %RSD	Recalculated %RSD
	ICAL	12/7/2015	C (IS1)	0.7268	0.7268	0.7332	0.7332	5	5
	MSVOA08		S (IS 2)	0.3705	0.3705	0.3580	0.3580	13	13
			EE (IS3)	1.7950	1.7950	1.8263	1.8263	15	15
			JJJ (IS 4)	1.5560	1.5560	1.5776	1.5776	12	12

LDC #: 35657B1

VALIDATION FINDINGS WORKSHEET
Continuing Calibration Results Verification

Page: 1 of 1
Reviewer: FT
2nd Reviewer: OL

METHOD: GC/MS VOA (EPA Method 8260C)
The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF
RRF = $(A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF
RRF = continuing calibration RRF
A_x = Area of compound, A_{is} = Area of associated internal standard
C_x = Concentration of compound, C_{is} = Concentration of internal standard

#	Standard ID	Calibration Date	Compound (Reference internal Standard)	Average RRF (initial)	Reported RRF (CC)	Recalculated RRF (CC)	Reported %D	Recalculated %D
1	CCV	12/8/15	C (1st internal standard)	0.7332	0.8402	0.8402	15	15
			S (2nd internal standard)	0.3580	0.3957	0.3957	11	11
			EE (3rd internal standard)	1.8263	1.9105	1.9105	5	5
			JJJ (4th internal standard)	1.5776	1.6976	1.6976	8	8
2			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
4			(1st internal standard)					
			(2nd internal standard)					
			(3rd internal standard)					
			(4th internal standard)					
5			(1st internal standard)					
			(2nd internal standard					
			(3rd internal standard)					
			(4th internal standard)					

Comments: Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 35657131

VALIDATION FINDINGS WORKSHEET
Surrogate Results Verification

Reviewer: FT
2nd reviewer: [illegible]

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

The percent recoveries (%R) of surrogates were recalculated for the compounds identified below using the following calculation:

% Recovery: SF/SS * 100

Where: SF = Surrogate Found
SS = Surrogate Spiked

Sample ID: #1

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane	50.0	49.97	100	100	0
1,2-Dichloroethane-d4	↓	54.18	108	108	↓
Toluene-d8	↓	46.04	92	92	↓
Bromofluorobenzene	↓	49.05	98	98	↓

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

Sample ID:

	Surrogate Spiked	Surrogate Found	Percent Recovery Reported	Percent Recovery Recalculated	Percent Difference
Dibromofluoromethane					
1,2-Dichloroethane-d4					
Toluene-d8					
Bromofluorobenzene					

LDC #: 35657B /

VALIDATION FINDINGS WORKSHEET
Matrix Spike/Matrix Spike Duplicates Results Verification

Reviewer: FT
2nd Reviewer: [illegible]

METHOD: GC/MS VOA (EPA Method 8260C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the matrix spike and matrix spike duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration; SA = Spike added; SC = Sample concentration

RPD = I MSC - MSC I * 2/(MSC + MSDC)

MSC = Matrix spike concentration; MSDC = Matrix spike duplicate concentration

MS/MSD sample: 272485-002 MS/MD

Compound	Spike Added (ug/L)		Sample Concentration (ug/L)	Spiked Sample Concentration (ug/L)		Matrix Spike Percent Recovery		Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD	------	MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated
1,1-Dichloroethene	178.6	~~178.9~~ 178.6	ND	204.9	211.2	115	115	118	118	3	3
Trichloroethene	↓		ND	204.1	194.4	114	114	109	109	5	5
Benzene	178.6		1.069	214.0	205.6	119	119	115	115	4	4
Toluene	↓		0.9143	193.6	193.3	108	108	108	108	0	0
Chlorobenzene	↓	↓	23.98	233.1	220.2	117	117	110	110	6	6

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 35657B1

VALIDATION FINDINGS WORKSHEET
Laboratory Control Sample Results Verification

Reviewer: FT
2nd Reviewer: a

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratoy control sample and laboratory control sample duplicate (if applicable) were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * SSC/SA Where: SSC = Spiked sample concentration
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC) LCSC = Laboraotry control sample concentration LCSDC = Laboratory control sample duplicate concentration

LCS ID: 230541-LCS1D

Compound	Spike Added (ug/L)		Spiked Sample Concentration (ug/L)		LCS Percent Recovery		LCSD Percent Recovery		LCS/LCSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
1,1-Dichloroethene	12.50	12.50	14.83	14.20	119	119	114	114	4	4
Trichloroethene	↓	↓	14.52	13.94	116	116	112	112	4	4
Benzene	↓	↓	14.70	14.04	118	118	112	112	5	5
Toluene	↓	↓	13.27	14.44	106	106	115	115	8	8
Chlorobenzene	↓	↓	13.97	14.65	112	112	117	117	5	5

Comments: Refer to Laboratory Control Sample findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 35657B

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Reviewer: FT
2nd reviewer: CN

METHOD: GC/MS VOA (EPA SW 846 Method 8260C)

Y N N/A Were all reported results recalculated and verified for all level IV samples?

Y N N/A Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Concentration = $\frac{(A_x)(I_s)(DF)}{(A_{is})(RRF)(V_o)(\%S)}$

A_x	=	Area of the characteristic ion (EICP) for the compound to be measured
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard
I_s	=	Amount of internal standard added in nanograms (ng)
RRF	=	Relative response factor of the calibration standard.
V_o	=	Volume or weight of sample pruged in milliliters (ml) or grams (g).
Df	=	Dilution factor.
%S	=	Percent solids, applicable to soils and solid matrices only.

Example:

Sample I.D. #1, C:

Conc. = $\frac{(4739)(50)}{(463330)(0.7332)}$

= 0.7 ug/L

#	Sample ID	Compound	Reported Concentration ( )	Calculated Concentration ( )	Qualification

LDC #: 35657

EDD POPULATION COMPLETENESS WORKSHEET

Date: 1/20/16
Page: 1 of 1
2nd Reviewer: [illegible]

The LDC job number listed above was entered by [illegible].

	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	Y	
Ib.	- All samples present/match report?	Y	
Ic.	- All reported analytes present?	Y	
Id.	-10% or 100% verification of EDD?	Y	
II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	Y	
IIb.	- Reason Codes used? If so, note which codes	—	
IIc.	-Additional Information (QC Level, Validator, Date, Validated Y/N, etc.)	Y	
III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (i.e. UJ)?	Y	
IIIb.	- Do all qualified detect results have detect qualifier (i.e. J)?	Y	
IIIc.	- If reason codes used, do all qualified results have reason code field populated?	—	
IIId.	-Does the detect flag require changing for blank qualifiers? If so, are all U results marked ND?	—	
IIIe.	- Do blank concentrations in report match EDD, where data was qualified due to blank?	—	
IIIf.	- Were any results rejected for overall assessment? If so, were results changed to nonreportable?	—	
IIIg.	- Is the readme complete? If applicable, were edits or discrepancies listed in the readme?	Y	

Notes: _____

The attached zipped file contains two files:

File	Format	Description	
1) Readme_Mare_Island_012016.doc	MS Word 2003	A "Readme" file (this document).	
	MS Excel 2003	SDG	LDC#
2) LDC35357_Analytical_Results.xls		272485	35657A
		272486	35657B

No discrepancies were observed between the hardcopy data packages and the electronic data deliverables during EDD population of validation qualifiers. A 100% verification of the EDD was not performed.

Please contact Christina Rink or Judy Ecklund at (760) 827-1100 if you have any questions regarding this electronic data submittal.